

FINLAND'S INFORMATIVE INVENTORY REPORT 2020
Air Pollutant Emissions 1980-2018
under the UNECE CLRTAP and the EU NECD

Part 7 - Annexes

March 2020

FINNISH ENVIRONMENT INSTITUTE
Centre for Sustainable Consumption and Production
Environmental Management in Industry – Air Emissions Team

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Cover photo Part 5: Marja-Leena Nenonen (2006) Kivijäkälä (Stone lichen), Ympäristöhallinnon kuvapankki

Annex 1

Implied emission factor tables for fuel combustion in 2017

NOx implied emission factors in Finnish air pollutant inventory for 2018

2018	Nox	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.058289656	t/TJ
2018	Nox	1A1a	ANIMAL-BASED FUELS	0.071865234	t/TJ
2018	Nox	1A1a	BARK	0.072579941	t/TJ
2018	Nox	1A1a	BIOGAS FROM WASTEWATER TREATMENT	0.069999922	t/TJ
2018	Nox	1A1a	BLAST FURNACE GAS	0.008767392	t/TJ
2018	Nox	1A1a	CHIPS FROM ROUNDWOOD	0.091425570	t/TJ
2018	Nox	1A1a	COAL (S=1.0%)	0.101538210	t/TJ
2018	Nox	1A1a	COKE OVEN GAS	0.008767411	t/TJ
2018	Nox	1A1a	CREOSOTED WOOD	0.055181412	t/TJ
2018	Nox	1A1a	DEINKING WASTE	0.070532640	t/TJ
2018	Nox	1A1a	DEMOLITION WOOD	0.095160294	t/TJ
2018	Nox	1A1a	DIESEL OIL (S=0.01%)	1.832549708	t/TJ
2018	Nox	1A1a	FOREST RESIDUE CHIPS	0.086149905	t/TJ
2018	Nox	1A1a	GASOIL (FOR NON-ROAD USE)	0.130798415	t/TJ
2018	Nox	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.057499419	t/TJ
2018	Nox	1A1a	HEAVY FUEL OIL (S<1%)	0.156502328	t/TJ
2018	Nox	1A1a	HYDROGEN	0.071070157	t/TJ
2018	Nox	1A1a	INDUSTRIAL BIOGAS	0.167506027	t/TJ
2018	Nox	1A1a	INDUSTRIAL WASTE	0.064303516	t/TJ
2018	Nox	1A1a	LANDFILL GAS	0.070067114	t/TJ
2018	Nox	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.658391551	t/TJ
2018	Nox	1A1a	LIQUID GAS	0.056102982	t/TJ
2018	Nox	1A1a	MILLED PEAT	0.089116258	t/TJ
2018	Nox	1A1a	MUNICIPAL WASTE - unsorted	0.104439296	t/TJ
2018	Nox	1A1a	NATURAL GAS	0.047569626	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Nox	1A1a	INDUSTRY	0.069520302	t/TJ
2018	Nox	1A1a	OTHER FOSSIL GAS	1.186679498	t/TJ
2018	Nox	1A1a	OTHER FOSSIL SOLID	0.047689405	t/TJ
2018	Nox	1A1a	OTHER NON-FOSSIL GAS	0.047064861	t/TJ
2018	Nox	1A1a	OTHER NON-FOSSIL LIQUID	0.089665702	t/TJ
2018	Nox	1A1a	OTHER NON-FOSSIL SOLID	0.089673753	t/TJ
2018	Nox	1A1a	OTHER WASTE	0.091585458	t/TJ
2018	Nox	1A1a	OTHER WOOD RESIDUE	0.112951869	t/TJ
2018	Nox	1A1a	OXYGEN STEEL FURNACE GAS	0.069655951	t/TJ
2018	Nox	1A1a	PAPER	0.059147942	t/TJ
2018	Nox	1A1a	PEAT PELLETS AND BRIQUETTES	0.135217715	t/TJ
2018	Nox	1A1a	PLYWOOD RESIDUE	0.045154499	t/TJ
2018	Nox	1A1a	RECOVERED FUEL (REF 1)	0.099788723	t/TJ
2018	Nox	1A1a	RECOVERED FUEL (REF 2)	0.094291036	t/TJ
2018	Nox	1A1a	RECOVERED FUEL (REF 3)	0.063761182	t/TJ
2018	Nox	1A1a	RECOVERED WOOD	0.097999357	t/TJ
2018	Nox	1A1a	RECYCLED AND WASTE OILS	0.081976222	t/TJ
2018	Nox	1A1a	REFINERY GAS	0.032542826	t/TJ
2018	Nox	1A1a	REFUSE-DERIVED FUEL (RDF)	0.024831032	t/TJ
2018	Nox	1A1a	SALT TREATED WOOD	0.057288569	t/TJ
2018	Nox	1A1a	SAWDUST AND CUTTER CHIPS	0.083472082	t/TJ
2018	Nox	1A1a	SOD PEAT	0.183269309	t/TJ
2018	Nox	1A1a	TALL PITCH AND OIL	0.141846296	t/TJ
2018	Nox	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.091347175	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Nox	1A1a	WOOD FUELS)	0.082979986	t/TJ
2018	Nox	1A1a	WOOD RESIDUE CHIPS	0.087907626	t/TJ

2018	Nox	1A1b	COKE (S=1.0%)	0.236775287	t/TJ
2018	Nox	1A1b	GASOIL (FOR NON-ROAD USE)	0.056599601	t/TJ
2018	Nox	1A1b	HEAVY FUEL OIL (S<1%)	0.052308325	t/TJ
2018	Nox	1A1b	INDUSTRIAL BIOGAS	0.042438961	t/TJ
2018	Nox	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.054722863	t/TJ
2018	Nox	1A1b	LIQUID GAS	0.026564756	t/TJ
2018	Nox	1A1b	NATURAL GAS	0.042816185	t/TJ
2018	Nox	1A1b	OTHER FOSSIL GAS	0.047622466	t/TJ
2018	Nox	1A1b	OTHER FOSSIL LIQUID	0.038345323	t/TJ
2018	Nox	1A1b	OTHER HEAVY DISTILLATES	0.054347758	t/TJ
2018	Nox	1A1b	OTHER MEDIUM DISTILLATES	0.054922751	t/TJ
2018	Nox	1A1b	PETROLEUM COKE	0.035267284	t/TJ
2018	Nox	1A1b	REFINERY GAS	0.042435068	t/TJ
2018	Nox	1A2a	BLAST FURNACE GAS	0.027632522	t/TJ
2018	Nox	1A2a	COKE (S=1.0%)	0.845969826	t/TJ
2018	Nox	1A2a	COKE OVEN GAS	0.136289731	t/TJ
2018	Nox	1A2a	DIESEL OIL (S=0.01%)	0.040074820	t/TJ
2018	Nox	1A2a	GASOIL (FOR NON-ROAD USE)	0.096312332	t/TJ
2018	Nox	1A2a	HEAVY FUEL OIL (S<1%)	0.017604045	t/TJ
2018	Nox	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.074534710	t/TJ
2018	Nox	1A2a	LIQUID GAS	0.185323250	t/TJ
2018	Nox	1A2a	NATURAL GAS	0.113218388	t/TJ
2018	Nox	1A2a	OTHER FOSSIL GAS	0.064434680	t/TJ
2018	Nox	1A2a	OTHER FOSSIL SOLID	0.000705931	t/TJ
2018	Nox	1A2a	OXYGEN STEEL FURNACE GAS	0.080262924	t/TJ
2018	Nox	1A2a	WOOD RESIDUE CHIPS	0.312944523	t/TJ
2018	Nox	1A2b	COAL (S=1.0%)	0.169993437	t/TJ
2018	Nox	1A2b	COKE (S=1.0%)	0.169647141	t/TJ
2018	Nox	1A2b	GASOIL (FOR NON-ROAD USE)	0.169647471	t/TJ
2018	Nox	1A2b	HEAVY FUEL OIL (S<1%)	0.182184444	t/TJ
2018	Nox	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.173958973	t/TJ
2018	Nox	1A2b	LIQUID GAS	0.102978014	t/TJ
2018	Nox	1A2b	NATURAL GAS	0.070457653	t/TJ
2018	Nox	1A2b	OTHER FOSSIL SOLID	0.169647073	t/TJ
2018	Nox	1A2b	RECYCLED AND WASTE OILS	0.169647446	t/TJ
2018	Nox	1A2c	COAL (S=1.0%)	0.033058504	t/TJ
2018	Nox	1A2c	DIESEL OIL (S=0.01%)	0.100000000	t/TJ
2018	Nox	1A2c	GASIFIED WASTE	0.024000507	t/TJ
2018	Nox	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.288202692	t/TJ
2018	Nox	1A2c	HEAVY FUEL OIL (S<1%)	0.617345112	t/TJ
2018	Nox	1A2c	HYDROGEN	0.040000000	t/TJ
2018	Nox	1A2c	INDUSTRIAL BIOGAS	0.070000000	t/TJ
2018	Nox	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.098735446	t/TJ
2018	Nox	1A2c	LIQUID GAS	0.056564236	t/TJ
2018	Nox	1A2c	NATURAL GAS	0.080641216	t/TJ
2018	Nox	1A2c	OTHER FOSSIL GAS	0.313315927	t/TJ
2018	Nox	1A2c	OTHER FOSSIL LIQUID	0.036670518	t/TJ
2018	Nox	1A2c	OTHER MEDIUM DISTILLATES	0.036670587	t/TJ
2018	Nox	1A2c	OTHER NON-FOSSIL GAS	0.070000000	t/TJ
2018	Nox	1A2c	PETROLEUM COKE	31752.119402985	t/TJ
2018	Nox	1A2c	REFINERY GAS	0.034433569	t/TJ
2018	Nox	1A2c	SAWDUST AND CUTTER CHIPS	0.026446835	t/TJ
2018	Nox	1A2c	TALL PITCH AND OIL	0.064876693	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Nox	1A2c	WOOD FUELS)	0.013177287	t/TJ
2018	Nox	1A2c	WOOD RESIDUE CHIPS	0.026446835	t/TJ
2018	Nox	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.103385345	t/TJ

2018	Nox	1A2d	ANIMAL-BASED FUELS	0.176754063	t/TJ
2018	Nox	1A2d	AROMATIC GAS	0.141420605	t/TJ
2018	Nox	1A2d	BARK	0.094285524	t/TJ
2018	Nox	1A2d	BIOGAS FROM WASTEWATER TREATMENT	0.081320448	t/TJ
2018	Nox	1A2d	BLACK LIQUOR	0.060223977	t/TJ
2018	Nox	1A2d	CHIPS FROM ROUNDWOOD	0.162363031	t/TJ
2018	Nox	1A2d	COAL (S=1.0%)	0.125314077	t/TJ
2018	Nox	1A2d	CREOSOTED WOOD	0.047708532	t/TJ
2018	Nox	1A2d	DEMOLITION WOOD	0.047708499	t/TJ
2018	Nox	1A2d	FOREST RESIDUE CHIPS	0.117240181	t/TJ
2018	Nox	1A2d	GASOIL (FOR NON-ROAD USE)	0.125238856	t/TJ
2018	Nox	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.372576272	t/TJ
2018	Nox	1A2d	HEAVY FUEL OIL (S<1%)	0.169012097	t/TJ
2018	Nox	1A2d	HYDROGEN	0.156958353	t/TJ
2018	Nox	1A2d	INDUSTRIAL BIOGAS	0.126575297	t/TJ
2018	Nox	1A2d	INDUSTRIAL WASTE	0.088796536	t/TJ
2018	Nox	1A2d	LANDFILL GAS	0.048971785	t/TJ
2018	Nox	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.174627723	t/TJ
2018	Nox	1A2d	LIQUID BIOFUELS	0.066440524	t/TJ
2018	Nox	1A2d	LIQUID GAS	0.098753369	t/TJ
2018	Nox	1A2d	METHANOL	0.157240236	t/TJ
2018	Nox	1A2d	MILLED PEAT	0.113133629	t/TJ
2018	Nox	1A2d	NATURAL GAS	0.077125197	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Nox	1A2d	INDUSTRY	0.125467223	t/TJ
2018	Nox	1A2d	OTHER NON-FOSSIL LIQUID	0.187428078	t/TJ
2018	Nox	1A2d	OTHER NON-FOSSIL SOLID	0.099187897	t/TJ
2018	Nox	1A2d	OTHER WASTE	0.048527408	t/TJ
2018	Nox	1A2d	OTHER WOOD RESIDUE	0.110985024	t/TJ
2018	Nox	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.056332920	t/TJ
2018	Nox	1A2d	PAPER	0.111627359	t/TJ
2018	Nox	1A2d	PLASTIC WASTE	0.110764837	t/TJ
2018	Nox	1A2d	RECOVERED FUEL (REF 1)	0.192532590	t/TJ
2018	Nox	1A2d	RECOVERED FUEL (REF 2)	0.066451644	t/TJ
2018	Nox	1A2d	RECOVERED WOOD	0.062899410	t/TJ
2018	Nox	1A2d	RECYCLED AND WASTE OILS	0.047708407	t/TJ
2018	Nox	1A2d	SALT TREATED WOOD	0.047708528	t/TJ
2018	Nox	1A2d	SAWDUST AND CUTTER CHIPS	0.111529590	t/TJ
2018	Nox	1A2d	SOD PEAT	0.100083360	t/TJ
2018	Nox	1A2d	SULPHITE LIQUOR	0.108512154	t/TJ
2018	Nox	1A2d	TALL PITCH AND OIL	0.127514001	t/TJ
2018	Nox	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.076213601	t/TJ
2018	Nox	1A2d	WOOD RESIDUE CHIPS	0.076451231	t/TJ
2018	Nox	1A2e	ANIMAL-BASED FUELS	0.090975930	t/TJ
2018	Nox	1A2e	BIOGAS FROM WASTEWATER TREATMENT	0.051859461	t/TJ
2018	Nox	1A2e	CHIPS FROM ROUNDWOOD	0.134291898	t/TJ
2018	Nox	1A2e	COAL (S=1.0%)	0.148039621	t/TJ
2018	Nox	1A2e	COKE (S=1.0%)	0.169999953	t/TJ
2018	Nox	1A2e	DIESEL OIL (S=0.01%)	0.100000000	t/TJ
2018	Nox	1A2e	GASOIL (FOR NON-ROAD USE)	0.221267089	t/TJ
2018	Nox	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.100000000	t/TJ
2018	Nox	1A2e	HEAVY FUEL OIL (S<1%)	0.180043863	t/TJ
2018	Nox	1A2e	INDUSTRIAL BIOGAS	0.072621405	t/TJ
2018	Nox	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.127123407	t/TJ
2018	Nox	1A2e	LIQUID GAS	0.054181694	t/TJ
2018	Nox	1A2e	MILLED PEAT	0.224505497	t/TJ
2018	Nox	1A2e	NATURAL GAS	0.056602141	t/TJ

2018	Nox	1A2e	OTHER NON-FOSSIL SOLID	0.177700733	t/TJ
2018	Nox	1A2e	PEAT PELLETS AND BRIQUETTES	0.236934761	t/TJ
2018	Nox	1A2e	RECOVERED WOOD	0.109487857	t/TJ
2018	Nox	1A2e	SAWDUST AND CUTTER CHIPS	0.184508794	t/TJ
2018	Nox	1A2e	TALL PITCH AND OIL	0.082226220	t/TJ
2018	Nox	1A2e	WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	0.100000000	t/TJ
2018	Nox	1A2e	WOOD RESIDUE CHIPS	0.120000041	t/TJ
2018	Nox	1A2f	CHIPS FROM ROUNDWOOD	0.045382238	t/TJ
2018	Nox	1A2f	COAL (S=1.0%)	0.248256118	t/TJ
2018	Nox	1A2f	COKE (S=1.0%)	0.080963154	t/TJ
2018	Nox	1A2f	COKE OVEN GAS	0.023054531	t/TJ
2018	Nox	1A2f	DIESEL OIL (S=0.01%)	0.087680967	t/TJ
2018	Nox	1A2f	FOREST RESIDUE CHIPS	0.113769439	t/TJ
2018	Nox	1A2f	GASOIL (FOR NON-ROAD USE)	0.252613965	t/TJ
2018	Nox	1A2f	HEAVY FUEL OIL (S<1%)	0.266993887	t/TJ
2018	Nox	1A2f	INDUSTRIAL BIOGAS	0.080044356	t/TJ
2018	Nox	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.102803094	t/TJ
2018	Nox	1A2f	LIQUID GAS	0.108287500	t/TJ
2018	Nox	1A2f	NATURAL GAS	0.160173475	t/TJ
2018	Nox	1A2f	OTHER FOSSIL LIQUID	0.071213821	t/TJ
2018	Nox	1A2f	OTHER FOSSIL SOLID	0.075153160	t/TJ
2018	Nox	1A2f	OTHER HEAVY DISTILLATES	0.087855375	t/TJ
2018	Nox	1A2f	OTHER NON-FOSSIL GAS	0.070000000	t/TJ
2018	Nox	1A2f	OXYGEN STEEL FURNACE GAS	0.219999980	t/TJ
2018	Nox	1A2f	PETROLEUM COKE	0.278319347	t/TJ
2018	Nox	1A2f	RECOVERED FUEL (REF 1)	0.131200904	t/TJ
2018	Nox	1A2f	RECOVERED FUEL (REF 2)	0.251130109	t/TJ
2018	Nox	1A2f	RECYCLED AND WASTE OILS	0.217768676	t/TJ
2018	Nox	1A2f	RUBBER WASTE	0.313898705	t/TJ
2018	Nox	1A2f	SAWDUST AND CUTTER CHIPS	0.204117377	t/TJ
2018	Nox	1A2f	TALL PITCH AND OIL	0.164423523	t/TJ
2018	Nox	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.398856992	t/TJ
2018	Nox	1A2gvii	LIQUID GAS	0.527710079	t/TJ
2018	Nox	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.264035721	t/TJ
2018	Nox	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.131672580	t/TJ
2018	Nox	1A2gviii	BARK	0.069049808	t/TJ
2018	Nox	1A2gviii	BIOGAS FROM WASTEWATER TREATMENT	0.096776347	t/TJ
2018	Nox	1A2gviii	CHIPS FROM ROUNDWOOD	0.090182210	t/TJ
2018	Nox	1A2gviii	COAL (S=1.0%)	0.058616393	t/TJ
2018	Nox	1A2gviii	DIESEL OIL (S=0.01%)	0.386418905	t/TJ
2018	Nox	1A2gviii	FOREST RESIDUE CHIPS	0.086985839	t/TJ
2018	Nox	1A2gviii	GASIFIED WASTE	0.014335470	t/TJ
2018	Nox	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.784139011	t/TJ
2018	Nox	1A2gviii	HEAVY FUEL OIL (S<1%)	0.290313218	t/TJ
2018	Nox	1A2gviii	INDUSTRIAL BIOGAS	0.070000000	t/TJ
2018	Nox	1A2gviii	INDUSTRIAL WASTE	0.032119156	t/TJ
2018	Nox	1A2gviii	LANDFILL GAS	0.132738283	t/TJ
2018	Nox	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.232732923	t/TJ
2018	Nox	1A2gviii	LIQUID GAS	0.061966663	t/TJ
2018	Nox	1A2gviii	MILLED PEAT	0.161638935	t/TJ
2018	Nox	1A2gviii	MUNICIPAL WASTE - unsorted	0.136144564	t/TJ
2018	Nox	1A2gviii	NATURAL GAS	0.511362686	t/TJ
2018	Nox	1A2gviii	OTHER HEAVY DISTILLATES	0.150000000	t/TJ
2018	Nox	1A2gviii	OTHER NON-FOSSIL GAS	0.076492736	t/TJ
2018	Nox	1A2gviii	OTHER NON-FOSSIL LIQUID	0.117004421	t/TJ
2018	Nox	1A2gviii	OTHER NON-FOSSIL SOLID	0.109650992	t/TJ

2018	Nox	1A2gviii	OTHER WOOD RESIDUE	0.123724684	t/TJ
2018	Nox	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.112195579	t/TJ
2018	Nox	1A2gviii	RECOVERED FUEL (REF 2)	0.132077636	t/TJ
2018	Nox	1A2gviii	RECOVERED WOOD	0.131979028	t/TJ
2018	Nox	1A2gviii	SAWDUST AND CUTTER CHIPS	0.094628383	t/TJ
2018	Nox	1A2gviii	SOD PEAT	0.120745164	t/TJ
2018	Nox	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	0.086905256	t/TJ
2018	Nox	1A2gviii	WOOD RESIDUE CHIPS	0.105060444	t/TJ
2018	Nox	1A2gviii	WOOD RESIDUE CHIPS	0.078406316	t/TJ
2018	Nox	1A3ai(i)	KEROSENE (JET FUEL)	0.315953388	t/TJ
2018	Nox	1A3aii(i)	AVIATION GASOLINE	0.106360886	t/TJ
2018	Nox	1A3aii(i)	KEROSENE (JET FUEL)	0.277764589	t/TJ
2018	Nox	1A3bi	DIESEL OIL (S=0.001%)	0.277469058	t/TJ
2018	Nox	1A3bi	MOTOR GASOLINE (S=0.001%)	0.063120520	t/TJ
2018	Nox	1A3bi	NATURAL GAS	0.009329374	t/TJ
2018	Nox	1A3bii	DIESEL OIL (S=0.001%)	0.328179703	t/TJ
2018	Nox	1A3bii	MOTOR GASOLINE (S=0.001%)	0.691084669	t/TJ
2018	Nox	1A3bii	NATURAL GAS	0.009778414	t/TJ
2018	Nox	1A3biii	DIESEL OIL (S=0.001%)	0.210635095	t/TJ
2018	Nox	1A3biii	NATURAL GAS	0.090936170	t/TJ
2018	Nox	1A3biv	DIESEL OIL (S=0.001%)	0.138428158	t/TJ
2018	Nox	1A3biv	MOTOR GASOLINE (S=0.001%)	0.119016667	t/TJ
2018	Nox	1A3c	GASOIL (FOR NON-ROAD USE)	1.649199447	t/TJ
2018	Nox	1A3dii	DIESEL OIL (S=0.001%)	1.244525448	t/TJ
2018	Nox	1A3dii	GASOIL (FOR NON-ROAD USE)	1.440565458	t/TJ
2018	Nox	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.976401203	t/TJ
2018	Nox	1A3dii	MOTOR GASOLINE (S=0.001%)	0.379542555	t/TJ
2018	Nox	1A3ei	NATURAL GAS	0.060400629	t/TJ
2018	Nox	1A4ai	FOREST WOODFUEL	0.080000000	t/TJ
2018	Nox	1A4ai	HEAVY FUEL OIL (S<1%)	0.080000000	t/TJ
2018	Nox	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.081898999	t/TJ
2018	Nox	1A4ai	NATURAL GAS	0.050748373	t/TJ
2018	Nox	1A4ai	SOD PEAT	0.119512195	t/TJ
2018	Nox	1A4aii	GASOIL (FOR NON-ROAD USE)	0.381894404	t/TJ
2018	Nox	1A4aii	MOTOR GASOLINE (S=0.001%)	0.115458917	t/TJ
2018	Nox	1A4bi	COAL (S=1.0%)	0.050000000	t/TJ
2018	Nox	1A4bi	FOREST WOODFUEL	0.080000000	t/TJ
2018	Nox	1A4bi	HEAVY FUEL OIL (S<1%)	0.080000000	t/TJ
2018	Nox	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.080000000	t/TJ
2018	Nox	1A4bi	LIQUID GAS	0.050000000	t/TJ
2018	Nox	1A4bi	NATURAL GAS	0.050000000	t/TJ
2018	Nox	1A4bi	PARAFFIN	0.080000000	t/TJ
2018	Nox	1A4bi	SOD PEAT	0.100000000	t/TJ
2018	Nox	1A4bii	GASOIL (FOR NON-ROAD USE)	0.902171873	t/TJ
2018	Nox	1A4bii	MOTOR GASOLINE (S=0.001%)	0.173932233	t/TJ
2018	Nox	1A4ci	ANIMAL-BASED FUELS	0.120000000	t/TJ
2018	Nox	1A4ci	CHIPS FROM ROUNDWOOD	0.098146197	t/TJ
2018	Nox	1A4ci	COAL (S=1.0%)	0.170000000	t/TJ
2018	Nox	1A4ci	FOREST WOODFUEL	0.080000000	t/TJ
2018	Nox	1A4ci	HEAVY FUEL OIL (S<1%)	0.080000000	t/TJ
2018	Nox	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.080000000	t/TJ
2018	Nox	1A4ci	LIQUID GAS	0.050000000	t/TJ
2018	Nox	1A4ci	NATURAL GAS	0.050000000	t/TJ
2018	Nox	1A4ci	OTHER NON-FOSSIL SOLID	0.120000000	t/TJ
2018	Nox	1A4ci	RECOVERED WOOD	0.088915956	t/TJ
2018	Nox	1A4ci	SOD PEAT	0.100023103	t/TJ

2018	Nox	1A4ci	WOOD RESIDUE CHIPS	0.120000000	t/TJ
2018	Nox	1A4cii	GASOIL (FOR NON-ROAD USE)	0.299532959	t/TJ
2018	Nox	1A4cii	MOTOR GASOLINE (S=0.001%)	0.067098658	t/TJ
2018	Nox	1A4ciii	GASOIL (FOR NON-ROAD USE)	1.333333333	t/TJ
2018	Nox	1A5a	FOREST WOODFUEL	0.100000000	t/TJ
2018	Nox	1A5a	HEAVY FUEL OIL (S<1%)	0.080000000	t/TJ
2018	Nox	1A5a	LANDFILL GAS	0.050000000	t/TJ
2018	Nox	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.194982419	t/TJ
2018	Nox	1A5a	LIQUID GAS	0.050000000	t/TJ
2018	Nox	1A5a	NATURAL GAS	0.050000000	t/TJ
2018	Nox	1A5a	OTHER PETROLEUM PRODUCTS	0.080000000	t/TJ

NMVOC implied emission factors in Finnish air pollutant inventory for 2018

2018	NMVOC	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.007713472	t/TJ
2018	NMVOC	1A1a	ANIMAL-BASED FUELS	0.001994588	t/TJ
2018	NMVOC	1A1a	BARK	0.003600510	t/TJ
2018	NMVOC	1A1a	BIOGAS FROM WASTEWATER TREATMENT	0.000999999	t/TJ
2018	NMVOC	1A1a	BLAST FURNACE GAS	0.001000001	t/TJ
2018	NMVOC	1A1a	CHIPS FROM ROUNDWOOD	0.004199595	t/TJ
2018	NMVOC	1A1a	COAL (S=1.0%)	0.002258674	t/TJ
2018	NMVOC	1A1a	COKE OVEN GAS	0.001000000	t/TJ
2018	NMVOC	1A1a	CREOSOTED WOOD	0.003000000	t/TJ
2018	NMVOC	1A1a	DEINKING WASTE	0.003000001	t/TJ
2018	NMVOC	1A1a	DEMOLITION WOOD	0.003085706	t/TJ
2018	NMVOC	1A1a	DIESEL OIL (S=001%)	0.003733223	t/TJ
2018	NMVOC	1A1a	FOREST RESIDUE CHIPS	0.007014812	t/TJ
2018	NMVOC	1A1a	GASOIL (FOR NON-ROAD USE)	0.003913037	t/TJ
2018	NMVOC	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.003235440	t/TJ
2018	NMVOC	1A1a	HEAVY FUEL OIL (S<1%)	0.001445147	t/TJ
2018	NMVOC	1A1a	HYDROGEN	0.001000000	t/TJ
2018	NMVOC	1A1a	INDUSTRIAL BIOGAS	0.002663657	t/TJ
2018	NMVOC	1A1a	INDUSTRIAL WASTE	0.009812491	t/TJ
2018	NMVOC	1A1a	LANDFILL GAS	0.001398772	t/TJ
2018	NMVOC	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.002825371	t/TJ
2018	NMVOC	1A1a	LIQUID GAS	0.001028588	t/TJ
2018	NMVOC	1A1a	MILLED PEAT	0.003171499	t/TJ
2018	NMVOC	1A1a	MUNICIPAL WASTE - unsorted	0.022171410	t/TJ
2018	NMVOC	1A1a	NATURAL GAS	0.002210870	t/TJ
2018	NMVOC	1A1a	OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	NMVOC	1A1a	INDUSTRY	0.003000002	t/TJ
2018	NMVOC	1A1a	OTHER FOSSIL GAS	0.139113110	t/TJ
2018	NMVOC	1A1a	OTHER FOSSIL SOLID	0.002964529	t/TJ
2018	NMVOC	1A1a	OTHER NON-FOSSIL GAS	0.001391396	t/TJ
2018	NMVOC	1A1a	OTHER NON-FOSSIL LIQUID	0.050000000	t/TJ
2018	NMVOC	1A1a	OTHER NON-FOSSIL SOLID	0.005391359	t/TJ
2018	NMVOC	1A1a	OTHER WASTE	0.002999986	t/TJ
2018	NMVOC	1A1a	OTHER WOOD RESIDUE	0.008466212	t/TJ
2018	NMVOC	1A1a	OXYGEN STEEL FURNACE GAS	0.003000004	t/TJ
2018	NMVOC	1A1a	PAPER	0.010000000	t/TJ
2018	NMVOC	1A1a	PEAT PELLETS AND BRIQUETTES	0.002174342	t/TJ
2018	NMVOC	1A1a	PLYWOOD RESIDUE	0.002586826	t/TJ
2018	NMVOC	1A1a	RECOVERED FUEL (REF 1)	0.010000010	t/TJ
2018	NMVOC	1A1a	RECOVERED FUEL (REF 2)	0.021395171	t/TJ
2018	NMVOC	1A1a	RECOVERED FUEL (REF 3)	0.010021115	t/TJ
2018	NMVOC	1A1a	RECOVERED WOOD	0.021270912	t/TJ
2018	NMVOC	1A1a	RECYCLED AND WASTE OILS	0.002999997	t/TJ
2018	NMVOC	1A1a	REFINERY GAS	0.000482981	t/TJ
2018	NMVOC	1A1a	REFUSE-DERIVED FUEL (RDF)	0.003000001	t/TJ
2018	NMVOC	1A1a	SALT TREATED WOOD	0.003000004	t/TJ
2018	NMVOC	1A1a	SAWDUST AND CUTTER CHIPS	0.004831555	t/TJ
2018	NMVOC	1A1a	SOD PEAT	0.014724864	t/TJ
2018	NMVOC	1A1a	TALL PITCH AND OIL	0.004608897	t/TJ
2018	NMVOC	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.010382473	t/TJ
2018	NMVOC	1A1a	WOOD PELLETS AND BRIQUETTES (REFINED		
2018	NMVOC	1A1a	WOOD FUELS)	0.031529368	t/TJ
2018	NMVOC	1A1a	WOOD RESIDUE CHIPS	0.031288623	t/TJ
2018	NMVOC	1A1b	COKE (S=1.0%)	0.000812500	t/TJ
2018	NMVOC	1A1b	GASOIL (FOR NON-ROAD USE)	0.005420515	t/TJ

2018	NMVOC	1A1b	HEAVY FUEL OIL (S<1%)	0.004984866	t/TJ
2018	NMVOC	1A1b	INDUSTRIAL BIOGAS	0.001000000	t/TJ
2018	NMVOC	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.005291959	t/TJ
2018	NMVOC	1A1b	NATURAL GAS	0.001562804	t/TJ
2018	NMVOC	1A1b	OTHER FOSSIL GAS	0.001000000	t/TJ
2018	NMVOC	1A1b	OTHER FOSSIL LIQUID	0.005322564	t/TJ
2018	NMVOC	1A1b	OTHER HEAVY DISTILLATES	0.005087569	t/TJ
2018	NMVOC	1A1b	OTHER MEDIUM DISTILLATES	0.005272062	t/TJ
2018	NMVOC	1A1b	PETROLEUM COKE	0.004000000	t/TJ
2018	NMVOC	1A1b	REFINERY GAS	0.001072743	t/TJ
2018	NMVOC	1A2a	BLAST FURNACE GAS	0.000904093	t/TJ
2018	NMVOC	1A2a	COKE OVEN GAS	0.000608284	t/TJ
2018	NMVOC	1A2a	DIESEL OIL (S=001%)	0.001000000	t/TJ
2018	NMVOC	1A2a	GASOIL (FOR NON-ROAD USE)	0.001590624	t/TJ
2018	NMVOC	1A2a	HEAVY FUEL OIL (S<1%)	0.001000000	t/TJ
2018	NMVOC	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.001131650	t/TJ
2018	NMVOC	1A2a	LIQUID GAS	0.000561344	t/TJ
2018	NMVOC	1A2a	NATURAL GAS	0.000900259	t/TJ
2018	NMVOC	1A2a	OTHER FOSSIL GAS	0.000494193	t/TJ
2018	NMVOC	1A2a	OXYGEN STEEL FURNACE GAS	0.001000000	t/TJ
2018	NMVOC	1A2a	WOOD RESIDUE CHIPS	0.050000000	t/TJ
2018	NMVOC	1A2b	COAL (S=1.0%)	0.000017918	t/TJ
2018	NMVOC	1A2b	COKE (S=1.0%)	0.000999998	t/TJ
2018	NMVOC	1A2b	GASOIL (FOR NON-ROAD USE)	0.001000000	t/TJ
2018	NMVOC	1A2b	HEAVY FUEL OIL (S<1%)	0.001000000	t/TJ
2018	NMVOC	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.000972990	t/TJ
2018	NMVOC	1A2b	LIQUID GAS	0.001128934	t/TJ
2018	NMVOC	1A2b	NATURAL GAS	0.001000000	t/TJ
2018	NMVOC	1A2b	OTHER FOSSIL SOLID	0.000999998	t/TJ
2018	NMVOC	1A2b	RECYCLED AND WASTE OILS	0.001000000	t/TJ
2018	NMVOC	1A2c	COAL (S=1.0%)	0.001000000	t/TJ
2018	NMVOC	1A2c	DIESEL OIL (S=001%)	0.000272727	t/TJ
2018	NMVOC	1A2c	GASIFIED WASTE	0.003999998	t/TJ
2018	NMVOC	1A2c	HEAVY FUEL OIL (S<1%)	0.000950599	t/TJ
2018	NMVOC	1A2c	HYDROGEN	0.001000000	t/TJ
2018	NMVOC	1A2c	INDUSTRIAL BIOGAS	0.001000000	t/TJ
2018	NMVOC	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.000424362	t/TJ
2018	NMVOC	1A2c	LIQUID GAS	0.000263060	t/TJ
2018	NMVOC	1A2c	NATURAL GAS	0.001000000	t/TJ
2018	NMVOC	1A2c	OTHER FOSSIL GAS	0.001000000	t/TJ
2018	NMVOC	1A2c	OTHER NON-FOSSIL GAS	0.001000000	t/TJ
2018	NMVOC	1A2c	REFINERY GAS	0.000182241	t/TJ
2018	NMVOC	1A2c	SAWDUST AND CUTTER CHIPS	0.004000000	t/TJ
2018	NMVOC	1A2c	TALL PITCH AND OIL	0.000717608	t/TJ
2018	NMVOC	1A2c	WOOD RESIDUE CHIPS	0.050000000	t/TJ
2018	NMVOC	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.009349974	t/TJ
2018	NMVOC	1A2d	ANIMAL-BASED FUELS	0.003425665	t/TJ
2018	NMVOC	1A2d	AROMATIC GAS	0.000861172	t/TJ
2018	NMVOC	1A2d	BARK	0.002917409	t/TJ
2018	NMVOC	1A2d	BIOGAS FROM WASTEWATER TREATMENT	0.001000000	t/TJ
2018	NMVOC	1A2d	BLACK LIQUOR	0.000913213	t/TJ
2018	NMVOC	1A2d	CHIPS FROM ROUNDWOOD	0.004163591	t/TJ
2018	NMVOC	1A2d	COAL (S=1.0%)	0.003000000	t/TJ
2018	NMVOC	1A2d	CREOSOTED WOOD	0.003000000	t/TJ
2018	NMVOC	1A2d	DEMOLITION WOOD	0.003000002	t/TJ
2018	NMVOC	1A2d	FOREST RESIDUE CHIPS	0.003451268	t/TJ

2018	NMVOC	1A2d	GASOIL (FOR NON-ROAD USE)	0.002107862	t/TJ
2018	NMVOC	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.001000000	t/TJ
2018	NMVOC	1A2d	HEAVY FUEL OIL (S<1%)	0.001420359	t/TJ
2018	NMVOC	1A2d	HYDROGEN	0.010161361	t/TJ
2018	NMVOC	1A2d	INDUSTRIAL BIOGAS	0.001000000	t/TJ
2018	NMVOC	1A2d	INDUSTRIAL WASTE	0.005392612	t/TJ
2018	NMVOC	1A2d	LANDFILL GAS	0.003000000	t/TJ
2018	NMVOC	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.001815650	t/TJ
2018	NMVOC	1A2d	LIQUID BIOFUELS	0.001000000	t/TJ
2018	NMVOC	1A2d	LIQUID GAS	0.000968451	t/TJ
2018	NMVOC	1A2d	METHANOL	0.001103717	t/TJ
2018	NMVOC	1A2d	MILLED PEAT	0.002439666	t/TJ
2018	NMVOC	1A2d	NATURAL GAS	0.000968908	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	NMVOC	1A2d	INDUSTRY	0.003184623	t/TJ
2018	NMVOC	1A2d	OTHER NON-FOSSIL LIQUID	0.050000000	t/TJ
2018	NMVOC	1A2d	OTHER NON-FOSSIL SOLID	0.003248639	t/TJ
2018	NMVOC	1A2d	OTHER WASTE	0.002999998	t/TJ
2018	NMVOC	1A2d	OTHER WOOD RESIDUE	0.010786009	t/TJ
2018	NMVOC	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.003000000	t/TJ
2018	NMVOC	1A2d	PAPER	0.010000000	t/TJ
2018	NMVOC	1A2d	PLASTIC WASTE	0.005704625	t/TJ
2018	NMVOC	1A2d	RECOVERED FUEL (REF 1)	0.010000000	t/TJ
2018	NMVOC	1A2d	RECOVERED FUEL (REF 2)	0.003318956	t/TJ
2018	NMVOC	1A2d	RECOVERED WOOD	0.003000000	t/TJ
2018	NMVOC	1A2d	RECYCLED AND WASTE OILS	0.003000002	t/TJ
2018	NMVOC	1A2d	SALT TREATED WOOD	0.003000004	t/TJ
2018	NMVOC	1A2d	SAWDUST AND CUTTER CHIPS	0.005268774	t/TJ
2018	NMVOC	1A2d	SOD PEAT	0.001347940	t/TJ
2018	NMVOC	1A2d	SULPHITE LIQUOR	0.002999997	t/TJ
2018	NMVOC	1A2d	TALL PITCH AND OIL	0.001942772	t/TJ
2018	NMVOC	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.009558247	t/TJ
2018	NMVOC	1A2d	WOOD RESIDUE CHIPS	0.029767658	t/TJ
2018	NMVOC	1A2e	ANIMAL-BASED FUELS	0.046385819	t/TJ
2018	NMVOC	1A2e	BIOGAS FROM WASTEWATER TREATMENT	0.001000000	t/TJ
2018	NMVOC	1A2e	CHIPS FROM ROUNDWOOD	0.004000000	t/TJ
2018	NMVOC	1A2e	COAL (S=1.0%)	0.004000009	t/TJ
2018	NMVOC	1A2e	COKE (S=1.0%)	0.004000002	t/TJ
2018	NMVOC	1A2e	DIESEL OIL (S=0.01%)	0.001000000	t/TJ
2018	NMVOC	1A2e	GASOIL (FOR NON-ROAD USE)	0.003656756	t/TJ
2018	NMVOC	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.001000000	t/TJ
2018	NMVOC	1A2e	HEAVY FUEL OIL (S<1%)	0.001000000	t/TJ
2018	NMVOC	1A2e	INDUSTRIAL BIOGAS	0.001000000	t/TJ
2018	NMVOC	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.001466835	t/TJ
2018	NMVOC	1A2e	LIQUID GAS	0.001000053	t/TJ
2018	NMVOC	1A2e	MILLED PEAT	0.018179395	t/TJ
2018	NMVOC	1A2e	NATURAL GAS	0.001000000	t/TJ
2018	NMVOC	1A2e	OTHER NON-FOSSIL SOLID	0.004000000	t/TJ
2018	NMVOC	1A2e	PEAT PELLETS AND BRIQUETTES	0.004000000	t/TJ
2018	NMVOC	1A2e	RECOVERED WOOD	0.003000000	t/TJ
2018	NMVOC	1A2e	SAWDUST AND CUTTER CHIPS	0.032582093	t/TJ
2018	NMVOC	1A2e	TALL PITCH AND OIL	0.001000000	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	NMVOC	1A2e	WOOD FUELS)	0.050000000	t/TJ
2018	NMVOC	1A2e	WOOD RESIDUE CHIPS	0.003999998	t/TJ
2018	NMVOC	1A2f	CHIPS FROM ROUNDWOOD	0.035580722	t/TJ
2018	NMVOC	1A2f	COAL (S=1.0%)	0.001710489	t/TJ

2018	NMVOC	1A2f	COKE OVEN GAS	0.001000000	t/TJ
2018	NMVOC	1A2f	DIESEL OIL (S=001%)	0.001000000	t/TJ
2018	NMVOC	1A2f	FOREST RESIDUE CHIPS	0.050000000	t/TJ
2018	NMVOC	1A2f	GASOIL (FOR NON-ROAD USE)	0.001051896	t/TJ
2018	NMVOC	1A2f	HEAVY FUEL OIL (S<1%)	0.000232646	t/TJ
2018	NMVOC	1A2f	INDUSTRIAL BIOGAS	0.000629641	t/TJ
2018	NMVOC	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.000751873	t/TJ
2018	NMVOC	1A2f	LIQUID GAS	0.000574089	t/TJ
2018	NMVOC	1A2f	NATURAL GAS	0.000836578	t/TJ
2018	NMVOC	1A2f	OTHER FOSSIL LIQUID	0.001000000	t/TJ
2018	NMVOC	1A2f	OTHER FOSSIL SOLID	0.000046158	t/TJ
2018	NMVOC	1A2f	OTHER HEAVY DISTILLATES	0.001000000	t/TJ
2018	NMVOC	1A2f	OTHER NON-FOSSIL GAS	0.001000000	t/TJ
2018	NMVOC	1A2f	OXYGEN STEEL FURNACE GAS	0.000999999	t/TJ
2018	NMVOC	1A2f	PETROLEUM COKE	0.000394961	t/TJ
2018	NMVOC	1A2f	RECOVERED FUEL (REF 1)	0.007029549	t/TJ
2018	NMVOC	1A2f	RECOVERED FUEL (REF 2)	0.000696780	t/TJ
2018	NMVOC	1A2f	RECYCLED AND WASTE OILS	0.000997369	t/TJ
2018	NMVOC	1A2f	SAWDUST AND CUTTER CHIPS	0.000999999	t/TJ
2018	NMVOC	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.069703260	t/TJ
2018	NMVOC	1A2gvii	LIQUID GAS	0.797538474	t/TJ
2018	NMVOC	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.966786066	t/TJ
2018	NMVOC	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.010000000	t/TJ
2018	NMVOC	1A2gviii	BARK	0.016513798	t/TJ
2018	NMVOC	1A2gviii	BIOGAS FROM WASTEWATER TREATMENT	0.002142430	t/TJ
2018	NMVOC	1A2gviii	CHIPS FROM ROUNDWOOD	0.041476365	t/TJ
2018	NMVOC	1A2gviii	COAL (S=1.0%)	0.050000000	t/TJ
2018	NMVOC	1A2gviii	DIESEL OIL (S=001%)	0.032636152	t/TJ
2018	NMVOC	1A2gviii	FOREST RESIDUE CHIPS	0.032066544	t/TJ
2018	NMVOC	1A2gviii	GASIFIED WASTE	0.004680130	t/TJ
2018	NMVOC	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.003707523	t/TJ
2018	NMVOC	1A2gviii	HEAVY FUEL OIL (S<1%)	0.001560038	t/TJ
2018	NMVOC	1A2gviii	INDUSTRIAL BIOGAS	0.001000000	t/TJ
2018	NMVOC	1A2gviii	INDUSTRIAL WASTE	0.004000002	t/TJ
2018	NMVOC	1A2gviii	LANDFILL GAS	0.010238144	t/TJ
2018	NMVOC	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.002226184	t/TJ
2018	NMVOC	1A2gviii	LIQUID GAS	0.048936223	t/TJ
2018	NMVOC	1A2gviii	MILLED PEAT	0.004012176	t/TJ
2018	NMVOC	1A2gviii	MUNICIPAL WASTE - unsorted	0.002000000	t/TJ
2018	NMVOC	1A2gviii	NATURAL GAS	0.001587363	t/TJ
2018	NMVOC	1A2gviii	OTHER HEAVY DISTILLATES	0.001000000	t/TJ
2018	NMVOC	1A2gviii	OTHER NON-FOSSIL GAS	0.001000000	t/TJ
2018	NMVOC	1A2gviii	OTHER NON-FOSSIL LIQUID	0.043765495	t/TJ
2018	NMVOC	1A2gviii	OTHER NON-FOSSIL SOLID	0.009668883	t/TJ
2018	NMVOC	1A2gviii	OTHER WOOD RESIDUE	0.018004682	t/TJ
2018	NMVOC	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.001000000	t/TJ
2018	NMVOC	1A2gviii	RECOVERED FUEL (REF 2)	0.050000006	t/TJ
2018	NMVOC	1A2gviii	RECOVERED WOOD	0.038541147	t/TJ
2018	NMVOC	1A2gviii	SAWDUST AND CUTTER CHIPS	0.018216303	t/TJ
2018	NMVOC	1A2gviii	SOD PEAT	0.047161399	t/TJ
2018	NMVOC	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.010610185	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	NMVOC	1A2gviii	WOOD FUELS)	0.057204646	t/TJ
2018	NMVOC	1A2gviii	WOOD RESIDUE CHIPS	0.036426643	t/TJ
2018	NMVOC	1A3ai(i)	KEROSENE (JET FUEL)	0.041278880	t/TJ
2018	NMVOC	1A3aii(i)	AVIATION GASOLINE	0.469805512	t/TJ
2018	NMVOC	1A3aii(i)	KEROSENE (JET FUEL)	0.044749758	t/TJ

2018	NMVOC	1A3bi	DIESEL OIL (S=001%)	0.003340620	t/TJ
2018	NMVOC	1A3bi	MOTOR GASOLINE (S=0.001%)	0.029824452	t/TJ
2018	NMVOC	1A3bi	NATURAL GAS	0.004382681	t/TJ
2018	NMVOC	1A3bii	DIESEL OIL (S=001%)	0.022312397	t/TJ
2018	NMVOC	1A3bii	MOTOR GASOLINE (S=0.001%)	0.224058349	t/TJ
2018	NMVOC	1A3bii	NATURAL GAS	0.004825252	t/TJ
2018	NMVOC	1A3biii	DIESEL OIL (S=001%)	0.005957636	t/TJ
2018	NMVOC	1A3biii	NATURAL GAS	0.004741720	t/TJ
2018	NMVOC	1A3biv	DIESEL OIL (S=001%)	0.691985374	t/TJ
2018	NMVOC	1A3biv	MOTOR GASOLINE (S=0.001%)	0.798299422	t/TJ
2018	NMVOC	1A3c	GASOIL (FOR NON-ROAD USE)	0.088933974	t/TJ
2018	NMVOC	1A3dii	DIESEL OIL (S=001%)	0.069807409	t/TJ
2018	NMVOC	1A3dii	GASOIL (FOR NON-ROAD USE)	0.054600449	t/TJ
2018	NMVOC	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.040736383	t/TJ
2018	NMVOC	1A3dii	MOTOR GASOLINE (S=0.001%)	1.869919192	t/TJ
2018	NMVOC	1A3ei	NATURAL GAS	0.001000000	t/TJ
2018	NMVOC	1A4ai	FOREST WOODFUEL	0.003000000	t/TJ
2018	NMVOC	1A4ai	HEAVY FUEL OIL (S<1%)	0.005000000	t/TJ
2018	NMVOC	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.004964758	t/TJ
2018	NMVOC	1A4ai	NATURAL GAS	0.004850325	t/TJ
2018	NMVOC	1A4ai	SOD PEAT	0.170731707	t/TJ
2018	NMVOC	1A4aai	GASOIL (FOR NON-ROAD USE)	0.063503071	t/TJ
2018	NMVOC	1A4aai	MOTOR GASOLINE (S=0.001%)	0.379332650	t/TJ
2018	NMVOC	1A4bi	COAL (S=1.0%)	0.100000000	t/TJ
2018	NMVOC	1A4bi	FOREST WOODFUEL	0.406254570	t/TJ
2018	NMVOC	1A4bi	HEAVY FUEL OIL (S<1%)	0.005000000	t/TJ
2018	NMVOC	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.005000000	t/TJ
2018	NMVOC	1A4bi	LIQUID GAS	0.005000000	t/TJ
2018	NMVOC	1A4bi	NATURAL GAS	0.005000000	t/TJ
2018	NMVOC	1A4bi	PARAFFIN	0.005000000	t/TJ
2018	NMVOC	1A4bi	SOD PEAT	0.200000000	t/TJ
2018	NMVOC	1A4bii	GASOIL (FOR NON-ROAD USE)	0.167766773	t/TJ
2018	NMVOC	1A4bii	MOTOR GASOLINE (S=0.001%)	1.342303289	t/TJ
2018	NMVOC	1A4ci	ANIMAL-BASED FUELS	0.003000000	t/TJ
2018	NMVOC	1A4ci	CHIPS FROM ROUNDWOOD	0.004000000	t/TJ
2018	NMVOC	1A4ci	COAL (S=1.0%)	0.004000000	t/TJ
2018	NMVOC	1A4ci	FOREST WOODFUEL	0.003000000	t/TJ
2018	NMVOC	1A4ci	HEAVY FUEL OIL (S<1%)	0.005000000	t/TJ
2018	NMVOC	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.005000000	t/TJ
2018	NMVOC	1A4ci	LIQUID GAS	0.005000000	t/TJ
2018	NMVOC	1A4ci	NATURAL GAS	0.005000000	t/TJ
2018	NMVOC	1A4ci	OTHER NON-FOSSIL SOLID	0.004000000	t/TJ
2018	NMVOC	1A4ci	RECOVERED WOOD	0.003000000	t/TJ
2018	NMVOC	1A4ci	SOD PEAT	0.199826731	t/TJ
2018	NMVOC	1A4ci	WOOD RESIDUE CHIPS	0.050000000	t/TJ
2018	NMVOC	1A4cii	GASOIL (FOR NON-ROAD USE)	0.051191650	t/TJ
2018	NMVOC	1A4cii	MOTOR GASOLINE (S=0.001%)	2.377228521	t/TJ
2018	NMVOC	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.059390257	t/TJ
2018	NMVOC	1A5a	FOREST WOODFUEL	0.010000000	t/TJ
2018	NMVOC	1A5a	HEAVY FUEL OIL (S<1%)	0.005000000	t/TJ
2018	NMVOC	1A5a	LANDFILL GAS	0.005000000	t/TJ
2018	NMVOC	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.009055164	t/TJ
2018	NMVOC	1A5a	LIQUID GAS	0.005000000	t/TJ
2018	NMVOC	1A5a	NATURAL GAS	0.005000000	t/TJ
2018	NMVOC	1A5a	OTHER PETROLEUM PRODUCTS	0.005000000	t/TJ

SOx implied emission factors in Finnish air pollutant inventory for 2018

2018	SO2	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.008376795	t/TJ
2018	SO2	1A1a	ANIMAL-BASED FUELS	0.026808503	t/TJ
2018	SO2	1A1a	BARK	0.016984605	t/TJ
2018	SO2	1A1a	BIOGAS FROM WASTEWATER TREATMENT	0.009999989	t/TJ
2018	SO2	1A1a	BLAST FURNACE GAS	0.000088520	t/TJ
2018	SO2	1A1a	CHIPS FROM ROUNDWOOD	0.008511118	t/TJ
2018	SO2	1A1a	COAL (S=1.0%)	0.085941977	t/TJ
2018	SO2	1A1a	COKE OVEN GAS	0.379371951	t/TJ
2018	SO2	1A1a	CREOSOTED WOOD	0.027268476	t/TJ
2018	SO2	1A1a	DEINKING WASTE	0.017409204	t/TJ
2018	SO2	1A1a	DEMOLITION WOOD	0.015122496	t/TJ
2018	SO2	1A1a	DIESEL OIL (S=0.01%)	0.000466254	t/TJ
2018	SO2	1A1a	FOREST RESIDUE CHIPS	0.008191748	t/TJ
2018	SO2	1A1a	GASOIL (FOR NON-ROAD USE)	0.022903135	t/TJ
2018	SO2	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.056444500	t/TJ
2018	SO2	1A1a	HEAVY FUEL OIL (S<1%)	0.255608112	t/TJ
2018	SO2	1A1a	HYDROGEN	0.000000207	t/TJ
2018	SO2	1A1a	INDUSTRIAL BIOGAS	0.007000000	t/TJ
2018	SO2	1A1a	INDUSTRIAL WASTE	0.022236701	t/TJ
2018	SO2	1A1a	LANDFILL GAS	0.012284698	t/TJ
2018	SO2	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.038363861	t/TJ
2018	SO2	1A1a	LIQUID GAS	0.000239175	t/TJ
2018	SO2	1A1a	MILLED PEAT	0.082849498	t/TJ
2018	SO2	1A1a	MUNICIPAL WASTE - unsorted	0.004003876	t/TJ
2018	SO2	1A1a	NATURAL GAS	0.000042107	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	SO2	1A1a	INDUSTRY	0.005207447	t/TJ
2018	SO2	1A1a	OTHER FOSSIL GAS	0.010517015	t/TJ
2018	SO2	1A1a	OTHER FOSSIL SOLID	0.234673189	t/TJ
2018	SO2	1A1a	OTHER NON-FOSSIL GAS	0.010274984	t/TJ
2018	SO2	1A1a	OTHER NON-FOSSIL LIQUID	0.070140002	t/TJ
2018	SO2	1A1a	OTHER NON-FOSSIL SOLID	0.093838549	t/TJ
2018	SO2	1A1a	OTHER WASTE	0.141055802	t/TJ
2018	SO2	1A1a	OTHER WOOD RESIDUE	0.011253534	t/TJ
2018	SO2	1A1a	OXYGEN STEEL FURNACE GAS	0.000003018	t/TJ
2018	SO2	1A1a	PAPER	0.006661650	t/TJ
2018	SO2	1A1a	PEAT PELLETS AND BRIQUETTES	0.054421609	t/TJ
2018	SO2	1A1a	PLYWOOD RESIDUE	0.012797438	t/TJ
2018	SO2	1A1a	RECOVERED FUEL (REF 1)	0.030618202	t/TJ
2018	SO2	1A1a	RECOVERED FUEL (REF 2)	0.035473912	t/TJ
2018	SO2	1A1a	RECOVERED FUEL (REF 3)	0.001087509	t/TJ
2018	SO2	1A1a	RECOVERED WOOD	0.056978224	t/TJ
2018	SO2	1A1a	RECYCLED AND WASTE OILS	0.144221023	t/TJ
2018	SO2	1A1a	REFINERY GAS	0.000969058	t/TJ
2018	SO2	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000236924	t/TJ
2018	SO2	1A1a	SALT TREATED WOOD	0.026914864	t/TJ
2018	SO2	1A1a	SAWDUST AND CUTTER CHIPS	0.010698989	t/TJ
2018	SO2	1A1a	SOD PEAT	0.135680386	t/TJ
2018	SO2	1A1a	TALL PITCH AND OIL	0.129924464	t/TJ
2018	SO2	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.012355021	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	SO2	1A1a	WOOD FUELS)	0.006337265	t/TJ
2018	SO2	1A1a	WOOD RESIDUE CHIPS	0.010631433	t/TJ
2018	SO2	1A1b	COKE (S=1.0%)	2.268854026	t/TJ
2018	SO2	1A1b	GASOIL (FOR NON-ROAD USE)	0.016059472	t/TJ

2018	SO2	1A1b	HEAVY FUEL OIL (S<1%)	0.392802041	t/TJ
2018	SO2	1A1b	INDUSTRIAL BIOGAS	0.004964480	t/TJ
2018	SO2	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.015944489	t/TJ
2018	SO2	1A1b	LIQUID GAS	0.000229520	t/TJ
2018	SO2	1A1b	NATURAL GAS	0.004129001	t/TJ
2018	SO2	1A1b	OTHER FOSSIL GAS	0.001615144	t/TJ
2018	SO2	1A1b	OTHER FOSSIL LIQUID	0.248863919	t/TJ
2018	SO2	1A1b	OTHER HEAVY DISTILLATES	0.253286331	t/TJ
2018	SO2	1A1b	OTHER MEDIUM DISTILLATES	0.020741739	t/TJ
2018	SO2	1A1b	PETROLEUM COKE	0.072008360	t/TJ
2018	SO2	1A1b	REFINERY GAS	0.176224103	t/TJ
2018	SO2	1A2a	BLAST FURNACE GAS	0.000007664	t/TJ
2018	SO2	1A2a	COKE (S=1.0%)	0.334437771	t/TJ
2018	SO2	1A2a	COKE OVEN GAS	0.011207913	t/TJ
2018	SO2	1A2a	DIESEL OIL (S=001%)	0.000470000	t/TJ
2018	SO2	1A2a	GASOIL (FOR NON-ROAD USE)	0.043000000	t/TJ
2018	SO2	1A2a	HEAVY FUEL OIL (S<1%)	0.485634641	t/TJ
2018	SO2	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.086116976	t/TJ
2018	SO2	1A2a	LIQUID GAS	0.000003056	t/TJ
2018	SO2	1A2a	NATURAL GAS	0.000083331	t/TJ
2018	SO2	1A2a	OTHER FOSSIL GAS	0.002202655	t/TJ
2018	SO2	1A2a	OTHER FOSSIL SOLID	0.044555252	t/TJ
2018	SO2	1A2a	OXYGEN STEEL FURNACE GAS	0.000011109	t/TJ
2018	SO2	1A2a	WOOD RESIDUE CHIPS	0.123608182	t/TJ
2018	SO2	1A2b	COAL (S=1.0%)	6.040766902	t/TJ
2018	SO2	1A2b	COKE (S=1.0%)	6.716080342	t/TJ
2018	SO2	1A2b	GASOIL (FOR NON-ROAD USE)	0.422830148	t/TJ
2018	SO2	1A2b	HEAVY FUEL OIL (S<1%)	2.918285034	t/TJ
2018	SO2	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.028026104	t/TJ
2018	SO2	1A2b	LIQUID GAS	0.000706669	t/TJ
2018	SO2	1A2b	NATURAL GAS	0.002965022	t/TJ
2018	SO2	1A2b	OTHER FOSSIL SOLID	19.666475302	t/TJ
2018	SO2	1A2b	RECYCLED AND WASTE OILS	4.316792467	t/TJ
2018	SO2	1A2c	COAL (S=1.0%)	0.035091992	t/TJ
2018	SO2	1A2c	DIESEL OIL (S=001%)	0.000470000	t/TJ
2018	SO2	1A2c	GASIFIED WASTE	0.000458706	t/TJ
2018	SO2	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.225632021	t/TJ
2018	SO2	1A2c	HEAVY FUEL OIL (S<1%)	0.494884937	t/TJ
2018	SO2	1A2c	HYDROGEN	0.000000200	t/TJ
2018	SO2	1A2c	INDUSTRIAL BIOGAS	0.007000000	t/TJ
2018	SO2	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.077309890	t/TJ
2018	SO2	1A2c	LIQUID GAS	0.000008167	t/TJ
2018	SO2	1A2c	NATURAL GAS	0.000105091	t/TJ
2018	SO2	1A2c	OTHER FOSSIL GAS	0.003700000	t/TJ
2018	SO2	1A2c	OTHER FOSSIL LIQUID	0.037011394	t/TJ
2018	SO2	1A2c	OTHER MEDIUM DISTILLATES	0.003093481	t/TJ
2018	SO2	1A2c	OTHER NON-FOSSIL GAS	0.010000000	t/TJ
2018	SO2	1A2c	REFINERY GAS	0.001601680	t/TJ
2018	SO2	1A2c	SAWDUST AND CUTTER CHIPS	0.003051484	t/TJ
2018	SO2	1A2c	TALL PITCH AND OIL	0.239550210	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	SO2	1A2c	WOOD FUELS)	0.010000000	t/TJ
2018	SO2	1A2c	WOOD RESIDUE CHIPS	0.003051484	t/TJ
2018	SO2	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.009003969	t/TJ
2018	SO2	1A2d	ANIMAL-BASED FUELS	0.022199626	t/TJ
2018	SO2	1A2d	AROMATIC GAS	0.437975359	t/TJ
2018	SO2	1A2d	BARK	0.010996747	t/TJ

2018	SO2	1A2d	BIOGAS FROM WASTEWATER TREATMENT	0.000501622	t/TJ
2018	SO2	1A2d	BLACK LIQUOR	0.002787980	t/TJ
2018	SO2	1A2d	CHIPS FROM ROUNDWOOD	0.007666040	t/TJ
2018	SO2	1A2d	COAL (S=1.0%)	0.026041348	t/TJ
2018	SO2	1A2d	CREOSOTED WOOD	0.005549273	t/TJ
2018	SO2	1A2d	DEMOLITION WOOD	0.024046859	t/TJ
2018	SO2	1A2d	FOREST RESIDUE CHIPS	0.005540679	t/TJ
2018	SO2	1A2d	GASOIL (FOR NON-ROAD USE)	1.034467906	t/TJ
2018	SO2	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.061923761	t/TJ
2018	SO2	1A2d	HEAVY FUEL OIL (S<1%)	0.067861091	t/TJ
2018	SO2	1A2d	HYDROGEN	0.000000001	t/TJ
2018	SO2	1A2d	INDUSTRIAL BIOGAS	0.001085194	t/TJ
2018	SO2	1A2d	INDUSTRIAL WASTE	0.405159858	t/TJ
2018	SO2	1A2d	LANDFILL GAS	0.012346154	t/TJ
2018	SO2	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.088184443	t/TJ
2018	SO2	1A2d	LIQUID BIOFUELS	0.000083069	t/TJ
2018	SO2	1A2d	LIQUID GAS	0.000073484	t/TJ
2018	SO2	1A2d	METHANOL	0.061219177	t/TJ
2018	SO2	1A2d	MILLED PEAT	0.084050362	t/TJ
2018	SO2	1A2d	NATURAL GAS	0.000029853	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	SO2	1A2d	INDUSTRY	0.010026168	t/TJ
2018	SO2	1A2d	OTHER NON-FOSSIL LIQUID	0.097896075	t/TJ
2018	SO2	1A2d	OTHER NON-FOSSIL SOLID	0.017766999	t/TJ
2018	SO2	1A2d	OTHER WASTE	0.107177236	t/TJ
2018	SO2	1A2d	OTHER WOOD RESIDUE	0.000624874	t/TJ
2018	SO2	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.001257376	t/TJ
2018	SO2	1A2d	PAPER	0.004366770	t/TJ
2018	SO2	1A2d	PLASTIC WASTE	0.036869061	t/TJ
2018	SO2	1A2d	RECOVERED FUEL (REF 1)	0.014641719	t/TJ
2018	SO2	1A2d	RECOVERED FUEL (REF 2)	0.014503921	t/TJ
2018	SO2	1A2d	RECOVERED WOOD	0.020110141	t/TJ
2018	SO2	1A2d	RECYCLED AND WASTE OILS	0.036995099	t/TJ
2018	SO2	1A2d	SALT TREATED WOOD	0.003699510	t/TJ
2018	SO2	1A2d	SAWDUST AND CUTTER CHIPS	0.004341813	t/TJ
2018	SO2	1A2d	SOD PEAT	0.136811068	t/TJ
2018	SO2	1A2d	SULPHITE LIQUOR	0.003802156	t/TJ
2018	SO2	1A2d	TALL PITCH AND OIL	0.079439964	t/TJ
2018	SO2	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.012524822	t/TJ
2018	SO2	1A2d	WOOD RESIDUE CHIPS	0.012676585	t/TJ
2018	SO2	1A2e	ANIMAL-BASED FUELS	0.038740901	t/TJ
2018	SO2	1A2e	BIOGAS FROM WASTEWATER TREATMENT	0.003207161	t/TJ
2018	SO2	1A2e	CHIPS FROM ROUNDWOOD	0.007812625	t/TJ
2018	SO2	1A2e	COAL (S=1.0%)	0.390843629	t/TJ
2018	SO2	1A2e	COKE (S=1.0%)	0.365404796	t/TJ
2018	SO2	1A2e	DIESEL OIL (S=0.01%)	0.000470000	t/TJ
2018	SO2	1A2e	GASOIL (FOR NON-ROAD USE)	0.040808797	t/TJ
2018	SO2	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.691000000	t/TJ
2018	SO2	1A2e	HEAVY FUEL OIL (S<1%)	1.065271851	t/TJ
2018	SO2	1A2e	INDUSTRIAL BIOGAS	0.002409026	t/TJ
2018	SO2	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.065083726	t/TJ
2018	SO2	1A2e	LIQUID GAS	0.004752927	t/TJ
2018	SO2	1A2e	MILLED PEAT	0.116787781	t/TJ
2018	SO2	1A2e	NATURAL GAS	0.000040000	t/TJ
2018	SO2	1A2e	OTHER NON-FOSSIL SOLID	0.141368666	t/TJ
2018	SO2	1A2e	PEAT PELLETS AND BRIQUETTES	0.131944088	t/TJ
2018	SO2	1A2e	RECOVERED WOOD	0.166137083	t/TJ

2018	SO2	1A2e	SAWDUST AND CUTTER CHIPS	0.012427380	t/TJ
2018	SO2	1A2e	TALL PITCH AND OIL	0.063558235	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	SO2	1A2e	WOOD FUELS)	0.010000000	t/TJ
2018	SO2	1A2e	WOOD RESIDUE CHIPS	0.019999990	t/TJ
2018	SO2	1A2f	CHIPS FROM ROUNDWOOD	0.005648965	t/TJ
2018	SO2	1A2f	COAL (S=1.0%)	0.156200896	t/TJ
2018	SO2	1A2f	COKE (S=1.0%)	0.689349834	t/TJ
2018	SO2	1A2f	COKE OVEN GAS	0.004638927	t/TJ
2018	SO2	1A2f	DIESEL OIL (S=0.01%)	0.014885164	t/TJ
2018	SO2	1A2f	FOREST RESIDUE CHIPS	0.018961566	t/TJ
2018	SO2	1A2f	GASOIL (FOR NON-ROAD USE)	0.012313567	t/TJ
2018	SO2	1A2f	HEAVY FUEL OIL (S<1%)	0.056019157	t/TJ
2018	SO2	1A2f	INDUSTRIAL BIOGAS	0.007000003	t/TJ
2018	SO2	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.023470074	t/TJ
2018	SO2	1A2f	LIQUID GAS	0.056363918	t/TJ
2018	SO2	1A2f	NATURAL GAS	0.000307747	t/TJ
2018	SO2	1A2f	OTHER FOSSIL LIQUID	0.020593715	t/TJ
2018	SO2	1A2f	OTHER FOSSIL SOLID	0.004525714	t/TJ
2018	SO2	1A2f	OTHER HEAVY DISTILLATES	0.037565237	t/TJ
2018	SO2	1A2f	OTHER NON-FOSSIL GAS	0.010000000	t/TJ
2018	SO2	1A2f	OXYGEN STEEL FURNACE GAS	0.000007000	t/TJ
2018	SO2	1A2f	PETROLEUM COKE	0.010394560	t/TJ
2018	SO2	1A2f	RECOVERED FUEL (REF 1)	0.003145307	t/TJ
2018	SO2	1A2f	RECOVERED FUEL (REF 2)	0.003127621	t/TJ
2018	SO2	1A2f	RECYCLED AND WASTE OILS	0.323520072	t/TJ
2018	SO2	1A2f	RUBBER WASTE	0.007928423	t/TJ
2018	SO2	1A2f	SAWDUST AND CUTTER CHIPS	0.076799918	t/TJ
2018	SO2	1A2f	TALL PITCH AND OIL	0.002352392	t/TJ
2018	SO2	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.000277778	t/TJ
2018	SO2	1A2gvii	LIQUID GAS	0.000032544	t/TJ
2018	SO2	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.000345855	t/TJ
2018	SO2	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.040356344	t/TJ
2018	SO2	1A2gviii	BARK	0.024527837	t/TJ
2018	SO2	1A2gviii	BIOGAS FROM WASTEWATER TREATMENT	0.037674310	t/TJ
2018	SO2	1A2gviii	CHIPS FROM ROUNDWOOD	0.014123824	t/TJ
2018	SO2	1A2gviii	COAL (S=1.0%)	0.015765889	t/TJ
2018	SO2	1A2gviii	DIESEL OIL (S=0.01%)	0.020479862	t/TJ
2018	SO2	1A2gviii	FOREST RESIDUE CHIPS	0.011161310	t/TJ
2018	SO2	1A2gviii	GASIFIED WASTE	0.004999994	t/TJ
2018	SO2	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.020251162	t/TJ
2018	SO2	1A2gviii	HEAVY FUEL OIL (S<1%)	0.394502035	t/TJ
2018	SO2	1A2gviii	INDUSTRIAL BIOGAS	0.007000000	t/TJ
2018	SO2	1A2gviii	INDUSTRIAL WASTE	0.055294672	t/TJ
2018	SO2	1A2gviii	LANDFILL GAS	0.016999994	t/TJ
2018	SO2	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.046546358	t/TJ
2018	SO2	1A2gviii	LIQUID GAS	0.007426458	t/TJ
2018	SO2	1A2gviii	MILLED PEAT	0.129581597	t/TJ
2018	SO2	1A2gviii	MUNICIPAL WASTE - unsorted	0.014423080	t/TJ
2018	SO2	1A2gviii	NATURAL GAS	0.016591531	t/TJ
2018	SO2	1A2gviii	OTHER HEAVY DISTILLATES	0.047524752	t/TJ
2018	SO2	1A2gviii	OTHER NON-FOSSIL GAS	0.010505426	t/TJ
2018	SO2	1A2gviii	OTHER NON-FOSSIL LIQUID	0.892097919	t/TJ
2018	SO2	1A2gviii	OTHER NON-FOSSIL SOLID	0.056059449	t/TJ
2018	SO2	1A2gviii	OTHER WOOD RESIDUE	0.028639207	t/TJ
2018	SO2	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.010651889	t/TJ
2018	SO2	1A2gviii	RECOVERED FUEL (REF 2)	0.004355067	t/TJ

2018	SO2	1A2gviii	RECOVERED WOOD	0.055021928	t/TJ
2018	SO2	1A2gviii	SAWDUST AND CUTTER CHIPS	0.033472966	t/TJ
2018	SO2	1A2gviii	SOD PEAT	0.170626598	t/TJ
2018	SO2	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	0.018160815	t/TJ
2018	SO2	1A2gviii	WOOD RESIDUE CHIPS	0.010231187	t/TJ
2018	SO2	1A2gviii	WOOD RESIDUE CHIPS	0.012331615	t/TJ
2018	SO2	1A3ai(i)	KEROSENE (JET FUEL)	0.019400000	t/TJ
2018	SO2	1A3aii(i)	AVIATION GASOLINE	0.000920000	t/TJ
2018	SO2	1A3aii(i)	KEROSENE (JET FUEL)	0.019399532	t/TJ
2018	SO2	1A3bi	DIESEL OIL (S=0.001%)	0.000254106	t/TJ
2018	SO2	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000344543	t/TJ
2018	SO2	1A3bi	NATURAL GAS	0.000030427	t/TJ
2018	SO2	1A3bii	DIESEL OIL (S=0.001%)	0.000254106	t/TJ
2018	SO2	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000345855	t/TJ
2018	SO2	1A3bii	NATURAL GAS	0.000030427	t/TJ
2018	SO2	1A3biii	DIESEL OIL (S=0.001%)	0.000254106	t/TJ
2018	SO2	1A3biii	NATURAL GAS	0.000030427	t/TJ
2018	SO2	1A3biv	DIESEL OIL (S=0.001%)	0.000253892	t/TJ
2018	SO2	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000345855	t/TJ
2018	SO2	1A3c	GASOIL (FOR NON-ROAD USE)	0.000277778	t/TJ
2018	SO2	1A3dii	DIESEL OIL (S=0.001%)	0.000255363	t/TJ
2018	SO2	1A3dii	GASOIL (FOR NON-ROAD USE)	0.019302561	t/TJ
2018	SO2	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.030884189	t/TJ
2018	SO2	1A3dii	MOTOR GASOLINE (S=0.001%)	0.000345296	t/TJ
2018	SO2	1A3ei	NATURAL GAS	0.000040000	t/TJ
2018	SO2	1A4ai	FOREST WOODFUEL	0.005000000	t/TJ
2018	SO2	1A4ai	HEAVY FUEL OIL (S<1%)	0.438000000	t/TJ
2018	SO2	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.042978611	t/TJ
2018	SO2	1A4ai	NATURAL GAS	0.000040000	t/TJ
2018	SO2	1A4ai	SOD PEAT	0.180000000	t/TJ
2018	SO2	1A4aii	GASOIL (FOR NON-ROAD USE)	0.000277778	t/TJ
2018	SO2	1A4aii	MOTOR GASOLINE (S=0.001%)	0.000345855	t/TJ
2018	SO2	1A4bi	COAL (S=1.0%)	0.313500000	t/TJ
2018	SO2	1A4bi	FOREST WOODFUEL	0.005000000	t/TJ
2018	SO2	1A4bi	HEAVY FUEL OIL (S<1%)	0.438000000	t/TJ
2018	SO2	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.043000000	t/TJ
2018	SO2	1A4bi	LIQUID GAS	0.000009000	t/TJ
2018	SO2	1A4bi	NATURAL GAS	0.000040000	t/TJ
2018	SO2	1A4bi	PARAFFIN	0.009300000	t/TJ
2018	SO2	1A4bi	SOD PEAT	0.180000000	t/TJ
2018	SO2	1A4bii	GASOIL (FOR NON-ROAD USE)	0.000277778	t/TJ
2018	SO2	1A4bii	MOTOR GASOLINE (S=0.001%)	0.000345855	t/TJ
2018	SO2	1A4ci	ANIMAL-BASED FUELS	0.150000000	t/TJ
2018	SO2	1A4ci	CHIPS FROM ROUNDWOOD	0.049573049	t/TJ
2018	SO2	1A4ci	COAL (S=1.0%)	0.627000000	t/TJ
2018	SO2	1A4ci	FOREST WOODFUEL	0.005000000	t/TJ
2018	SO2	1A4ci	HEAVY FUEL OIL (S<1%)	0.438000000	t/TJ
2018	SO2	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.043000000	t/TJ
2018	SO2	1A4ci	LIQUID GAS	0.000009000	t/TJ
2018	SO2	1A4ci	NATURAL GAS	0.000040000	t/TJ
2018	SO2	1A4ci	OTHER NON-FOSSIL SOLID	0.150000000	t/TJ
2018	SO2	1A4ci	RECOVERED WOOD	0.465477114	t/TJ
2018	SO2	1A4ci	SOD PEAT	0.180000000	t/TJ
2018	SO2	1A4ci	WOOD RESIDUE CHIPS	0.020000000	t/TJ
2018	SO2	1A4cii	GASOIL (FOR NON-ROAD USE)	0.000277778	t/TJ
2018	SO2	1A4cii	MOTOR GASOLINE (S=0.001%)	0.000345855	t/TJ

2018	SO2	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000277778	t/TJ
2018	SO2	1A5a	FOREST WOODFUEL	0.020000000	t/TJ
2018	SO2	1A5a	HEAVY FUEL OIL (S<1%)	0.438000000	t/TJ
2018	SO2	1A5a	LANDFILL GAS	0.017000000	t/TJ
2018	SO2	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.045438912	t/TJ
2018	SO2	1A5a	LIQUID GAS	0.000009000	t/TJ
2018	SO2	1A5a	NATURAL GAS	0.000040000	t/TJ
2018	SO2	1A5a	OTHER PETROLEUM PRODUCTS	0.100000000	t/TJ

NH3 implied emission factors in Finnish air pollutant inventory for 2018

2018	NH3	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.000185185	t/TJ
2018	NH3	1A2gvii	LIQUID GAS	0.000217391	t/TJ
2018	NH3	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.000095429	t/TJ
2018	NH3	1A3c	GASOIL (FOR NON-ROAD USE)	0.000162037	t/TJ
2018	NH3	1A3dii	DIESEL OIL (S=0.001%)	0.000185026	t/TJ
2018	NH3	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000193845	t/TJ
			HEAVY FUEL OIL (normal, S>1%)		
2018	NH3	1A3dii		0.000136224	t/TJ
2018	NH3	1A3dii	MOTOR GASOLINE (S=0.001%)	0.000112235	t/TJ
2018	NH3	1A4ai	FOREST WOODFUEL	0.001633579	t/TJ
2018	NH3	1A4aii	GASOIL (FOR NON-ROAD USE)	0.000185185	t/TJ
2018	NH3	1A4aii	MOTOR GASOLINE (S=0.001%)	0.000083033	t/TJ
2018	NH3	1A4bi	COAL (S=1.0%)	0.000150000	t/TJ
2018	NH3	1A4bi	FOREST WOODFUEL	0.022051844	t/TJ
2018	NH3	1A4bii	GASOIL (FOR NON-ROAD USE)	0.000185185	t/TJ
2018	NH3	1A4bii	MOTOR GASOLINE (S=0.001%)	0.000086979	t/TJ
2018	NH3	1A4ci	FOREST WOODFUEL	0.001700900	t/TJ
2018	NH3	1A4cii	GASOIL (FOR NON-ROAD USE)	0.000185185	t/TJ
2018	NH3	1A4cii	MOTOR GASOLINE (S=0.001%)	0.000071800	t/TJ
2018	NH3	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000182870	t/TJ
2018	NH3	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000016771	t/TJ

PM2.5 implied emission factors in Finnish air pollutant inventory for 2018

2018	PM 2.5	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000183824	t/TJ
2018	PM 2.5	1A1a	ANIMAL-BASED FUELS	0.000050916	t/TJ
2018	PM 2.5	1A1a	BARK	0.000975601	t/TJ
2018	PM 2.5	1A1a	CHIPS FROM ROUNDWOOD	0.003123180	t/TJ
2018	PM 2.5	1A1a	COAL (S=1.0%)	0.000539399	t/TJ
2018	PM 2.5	1A1a	CREOSOTED WOOD	0.000551502	t/TJ
2018	PM 2.5	1A1a	DEINKING WASTE	0.000108117	t/TJ
2018	PM 2.5	1A1a	DEMOLITION WOOD	0.000512618	t/TJ
2018	PM 2.5	1A1a	DIESEL OIL (S=0.01%)	0.002256600	t/TJ
2018	PM 2.5	1A1a	FOREST RESIDUE CHIPS	0.002079520	t/TJ
2018	PM 2.5	1A1a	GASOIL (FOR NON-ROAD USE)	0.001461779	t/TJ
2018	PM 2.5	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.001239306	t/TJ
2018	PM 2.5	1A1a	HEAVY FUEL OIL (S<1%)	0.008149547	t/TJ
2018	PM 2.5	1A1a	INDUSTRIAL WASTE	0.000025308	t/TJ
2018	PM 2.5	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.003678832	t/TJ
2018	PM 2.5	1A1a	MILLED PEAT	0.001053221	t/TJ
2018	PM 2.5	1A1a	MUNICIPAL WASTE - unsorted	0.000025323	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PM 2.5	1A1a	INDUSTRY	0.000703245	t/TJ
2018	PM 2.5	1A1a	OTHER FOSSIL SOLID	0.001790057	t/TJ
2018	PM 2.5	1A1a	OTHER NON-FOSSIL LIQUID	0.003263972	t/TJ
2018	PM 2.5	1A1a	OTHER NON-FOSSIL SOLID	0.000771064	t/TJ
2018	PM 2.5	1A1a	OTHER WASTE	0.000049635	t/TJ
2018	PM 2.5	1A1a	OTHER WOOD RESIDUE	0.001732831	t/TJ
2018	PM 2.5	1A1a	PAPER	0.000166164	t/TJ
2018	PM 2.5	1A1a	PEAT PELLETS AND BRIQUETTES	0.002102277	t/TJ
2018	PM 2.5	1A1a	PLYWOOD RESIDUE	0.000094263	t/TJ
2018	PM 2.5	1A1a	RECOVERED FUEL (REF 1)	0.000216288	t/TJ
2018	PM 2.5	1A1a	RECOVERED FUEL (REF 2)	0.000408737	t/TJ
2018	PM 2.5	1A1a	RECOVERED FUEL (REF 3)	0.000012482	t/TJ
2018	PM 2.5	1A1a	RECOVERED WOOD	0.001820632	t/TJ
2018	PM 2.5	1A1a	RECYCLED AND WASTE OILS	0.000558008	t/TJ
2018	PM 2.5	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000020861	t/TJ
2018	PM 2.5	1A1a	SALT TREATED WOOD	0.000543785	t/TJ
2018	PM 2.5	1A1a	SAWDUST AND CUTTER CHIPS	0.002456614	t/TJ
2018	PM 2.5	1A1a	SOD PEAT	0.008798194	t/TJ
2018	PM 2.5	1A1a	TALL PITCH AND OIL	0.005627924	t/TJ
2018	PM 2.5	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.001319227	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 2.5	1A1a	WOOD FUELS)	0.002965502	t/TJ
2018	PM 2.5	1A1a	WOOD RESIDUE CHIPS	0.002007450	t/TJ
2018	PM 2.5	1A1b	COKE (S=1.0%)	0.007500007	t/TJ
2018	PM 2.5	1A1b	GASOIL (FOR NON-ROAD USE)	0.000086710	t/TJ
2018	PM 2.5	1A1b	HEAVY FUEL OIL (S<1%)	0.002997216	t/TJ
2018	PM 2.5	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.000084994	t/TJ
2018	PM 2.5	1A1b	OTHER FOSSIL LIQUID	0.004270113	t/TJ
2018	PM 2.5	1A1b	OTHER HEAVY DISTILLATES	0.004113194	t/TJ
2018	PM 2.5	1A1b	OTHER MEDIUM DISTILLATES	0.000084728	t/TJ
2018	PM 2.5	1A1b	PETROLEUM COKE	0.001272044	t/TJ
2018	PM 2.5	1A2a	COKE (S=1.0%)	0.001497970	t/TJ
2018	PM 2.5	1A2a	DIESEL OIL (S=0.01%)	0.000840000	t/TJ
2018	PM 2.5	1A2a	GASOIL (FOR NON-ROAD USE)	0.000840000	t/TJ
2018	PM 2.5	1A2a	HEAVY FUEL OIL (S<1%)	0.016004561	t/TJ
2018	PM 2.5	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.000891076	t/TJ
2018	PM 2.5	1A2a	LIQUID GAS	0.000000264	t/TJ

2018	PM 2.5	1A2a	OTHER FOSSIL SOLID	0.001154201	t/TJ
2018	PM 2.5	1A2a	WOOD RESIDUE CHIPS	0.007014274	t/TJ
2018	PM 2.5	1A2b	COAL (S=1.0%)	0.007382134	t/TJ
2018	PM 2.5	1A2b	COKE (S=1.0%)	0.000922350	t/TJ
2018	PM 2.5	1A2b	GASOIL (FOR NON-ROAD USE)	0.000103304	t/TJ
2018	PM 2.5	1A2b	HEAVY FUEL OIL (S<1%)	0.008687660	t/TJ
2018	PM 2.5	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.000124531	t/TJ
2018	PM 2.5	1A2b	OTHER FOSSIL SOLID	0.000922355	t/TJ
2018	PM 2.5	1A2b	RECYCLED AND WASTE OILS	0.005165168	t/TJ
2018	PM 2.5	1A2c	COAL (S=1.0%)	0.000350907	t/TJ
2018	PM 2.5	1A2c	DIESEL OIL (S=0.01%)	0.000840000	t/TJ
2018	PM 2.5	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.004011350	t/TJ
2018	PM 2.5	1A2c	HEAVY FUEL OIL (S<1%)	0.037045687	t/TJ
2018	PM 2.5	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.001986684	t/TJ
2018	PM 2.5	1A2c	OTHER FOSSIL LIQUID	0.001517042	t/TJ
2018	PM 2.5	1A2c	OTHER MEDIUM DISTILLATES	0.000030341	t/TJ
2018	PM 2.5	1A2c	SAWDUST AND CUTTER CHIPS	0.000491271	t/TJ
2018	PM 2.5	1A2c	TALL PITCH AND OIL	0.012890877	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 2.5	1A2c	WOOD FUELS)	0.000171651	t/TJ
2018	PM 2.5	1A2c	WOOD RESIDUE CHIPS	0.000491270	t/TJ
2018	PM 2.5	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000400705	t/TJ
2018	PM 2.5	1A2d	ANIMAL-BASED FUELS	0.000423435	t/TJ
2018	PM 2.5	1A2d	BARK	0.001585637	t/TJ
2018	PM 2.5	1A2d	BLACK LIQUOR	0.006737013	t/TJ
2018	PM 2.5	1A2d	CHIPS FROM ROUNDWOOD	0.003223819	t/TJ
2018	PM 2.5	1A2d	COAL (S=1.0%)	0.000264367	t/TJ
2018	PM 2.5	1A2d	CREOSOTED WOOD	0.000351092	t/TJ
2018	PM 2.5	1A2d	DEMOLITION WOOD	0.000351091	t/TJ
2018	PM 2.5	1A2d	FOREST RESIDUE CHIPS	0.000665900	t/TJ
2018	PM 2.5	1A2d	GASOIL (FOR NON-ROAD USE)	0.013403503	t/TJ
2018	PM 2.5	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.041543664	t/TJ
2018	PM 2.5	1A2d	HEAVY FUEL OIL (S<1%)	0.007543577	t/TJ
2018	PM 2.5	1A2d	HYDROGEN	0.000883360	t/TJ
2018	PM 2.5	1A2d	INDUSTRIAL BIOGAS	0.034196345	t/TJ
2018	PM 2.5	1A2d	INDUSTRIAL WASTE	0.010500148	t/TJ
2018	PM 2.5	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.001307320	t/TJ
2018	PM 2.5	1A2d	LIQUID GAS	0.000000122	t/TJ
2018	PM 2.5	1A2d	METHANOL	0.005739945	t/TJ
2018	PM 2.5	1A2d	MILLED PEAT	0.001236149	t/TJ
2018	PM 2.5	1A2d	NATURAL GAS	0.000916740	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PM 2.5	1A2d	INDUSTRY	0.001026772	t/TJ
2018	PM 2.5	1A2d	OTHER NON-FOSSIL LIQUID	0.019470574	t/TJ
2018	PM 2.5	1A2d	OTHER NON-FOSSIL SOLID	0.000353613	t/TJ
2018	PM 2.5	1A2d	OTHER WASTE	0.000219711	t/TJ
2018	PM 2.5	1A2d	OTHER WOOD RESIDUE	0.000234277	t/TJ
2018	PM 2.5	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000212387	t/TJ
2018	PM 2.5	1A2d	PAPER	0.000190064	t/TJ
2018	PM 2.5	1A2d	PLASTIC WASTE	0.003153578	t/TJ
2018	PM 2.5	1A2d	RECOVERED FUEL (REF 1)	0.000040868	t/TJ
2018	PM 2.5	1A2d	RECOVERED FUEL (REF 2)	0.000587636	t/TJ
2018	PM 2.5	1A2d	RECOVERED WOOD	0.000285218	t/TJ
2018	PM 2.5	1A2d	RECYCLED AND WASTE OILS	0.000706993	t/TJ
2018	PM 2.5	1A2d	SALT TREATED WOOD	0.000351091	t/TJ
2018	PM 2.5	1A2d	SAWDUST AND CUTTER CHIPS	0.004971236	t/TJ
2018	PM 2.5	1A2d	SOD PEAT	0.000294189	t/TJ

2018	PM 2.5	1A2d	SULPHITE LIQUOR	0.011024729	t/TJ
2018	PM 2.5	1A2d	TALL PITCH AND OIL	0.001500607	t/TJ
2018	PM 2.5	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.001130690	t/TJ
2018	PM 2.5	1A2d	WOOD RESIDUE CHIPS	0.000536810	t/TJ
2018	PM 2.5	1A2e	ANIMAL-BASED FUELS	0.002893472	t/TJ
2018	PM 2.5	1A2e	CHIPS FROM ROUNDWOOD	0.000111698	t/TJ
2018	PM 2.5	1A2e	COAL (S=1.0%)	0.000943763	t/TJ
2018	PM 2.5	1A2e	COKE (S=1.0%)	0.007500004	t/TJ
2018	PM 2.5	1A2e	DIESEL OIL (S=001%)	0.000840000	t/TJ
2018	PM 2.5	1A2e	GASOIL (FOR NON-ROAD USE)	0.000219158	t/TJ
2018	PM 2.5	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.042000000	t/TJ
2018	PM 2.5	1A2e	HEAVY FUEL OIL (S<1%)	0.029417396	t/TJ
2018	PM 2.5	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.000814331	t/TJ
2018	PM 2.5	1A2e	MILLED PEAT	0.000585392	t/TJ
2018	PM 2.5	1A2e	OTHER NON-FOSSIL SOLID	0.000578944	t/TJ
2018	PM 2.5	1A2e	PEAT PELLETS AND BRIQUETTES	0.000578944	t/TJ
2018	PM 2.5	1A2e	RECOVERED WOOD	0.000192410	t/TJ
2018	PM 2.5	1A2e	SAWDUST AND CUTTER CHIPS	0.001807553	t/TJ
2018	PM 2.5	1A2e	TALL PITCH AND OIL	0.007108187	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 2.5	1A2e	WOOD FUELS)	0.010000000	t/TJ
2018	PM 2.5	1A2e	WOOD RESIDUE CHIPS	0.004250002	t/TJ
2018	PM 2.5	1A2f	CHIPS FROM ROUNDWOOD	0.011809632	t/TJ
2018	PM 2.5	1A2f	COAL (S=1.0%)	0.004298424	t/TJ
2018	PM 2.5	1A2f	COKE (S=1.0%)	0.005482468	t/TJ
2018	PM 2.5	1A2f	DIESEL OIL (S=001%)	0.000624480	t/TJ
2018	PM 2.5	1A2f	FOREST RESIDUE CHIPS	0.006788241	t/TJ
2018	PM 2.5	1A2f	GASOIL (FOR NON-ROAD USE)	0.000163830	t/TJ
2018	PM 2.5	1A2f	HEAVY FUEL OIL (S<1%)	0.008359573	t/TJ
2018	PM 2.5	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.002999306	t/TJ
2018	PM 2.5	1A2f	OTHER FOSSIL LIQUID	0.001141697	t/TJ
2018	PM 2.5	1A2f	OTHER FOSSIL SOLID	0.000602653	t/TJ
2018	PM 2.5	1A2f	OTHER HEAVY DISTILLATES	0.010398065	t/TJ
2018	PM 2.5	1A2f	PETROLEUM COKE	0.006022522	t/TJ
2018	PM 2.5	1A2f	RECOVERED FUEL (REF 1)	0.000320976	t/TJ
2018	PM 2.5	1A2f	RECOVERED FUEL (REF 2)	0.003994562	t/TJ
2018	PM 2.5	1A2f	RECYCLED AND WASTE OILS	0.002078796	t/TJ
2018	PM 2.5	1A2f	RUBBER WASTE	0.008676320	t/TJ
2018	PM 2.5	1A2f	SAWDUST AND CUTTER CHIPS	0.003172213	t/TJ
2018	PM 2.5	1A2f	TALL PITCH AND OIL	0.010264933	t/TJ
2018	PM 2.5	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.022516507	t/TJ
2018	PM 2.5	1A2gvii	LIQUID GAS	0.004126625	t/TJ
2018	PM 2.5	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.003913174	t/TJ
2018	PM 2.5	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000209965	t/TJ
2018	PM 2.5	1A2gviii	BARK	0.006484252	t/TJ
2018	PM 2.5	1A2gviii	CHIPS FROM ROUNDWOOD	0.012251963	t/TJ
2018	PM 2.5	1A2gviii	COAL (S=1.0%)	0.000200722	t/TJ
2018	PM 2.5	1A2gviii	DIESEL OIL (S=001%)	0.000832878	t/TJ
2018	PM 2.5	1A2gviii	FOREST RESIDUE CHIPS	0.006309313	t/TJ
2018	PM 2.5	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.001067095	t/TJ
2018	PM 2.5	1A2gviii	HEAVY FUEL OIL (S<1%)	0.025920755	t/TJ
2018	PM 2.5	1A2gviii	INDUSTRIAL WASTE	0.000043081	t/TJ
2018	PM 2.5	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.002092981	t/TJ
2018	PM 2.5	1A2gviii	MILLED PEAT	0.000265168	t/TJ
2018	PM 2.5	1A2gviii	MUNICIPAL WASTE - unsorted	0.000065847	t/TJ
2018	PM 2.5	1A2gviii	OTHER HEAVY DISTILLATES	0.021346535	t/TJ
2018	PM 2.5	1A2gviii	OTHER NON-FOSSIL LIQUID	0.008476928	t/TJ

2018	PM 2.5	1A2gviii	OTHER NON-FOSSIL SOLID	0.000860635	t/TJ
2018	PM 2.5	1A2gviii	OTHER WOOD RESIDUE	0.003530981	t/TJ
2018	PM 2.5	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.005778273	t/TJ
2018	PM 2.5	1A2gviii	RECOVERED FUEL (REF 2)	0.000064613	t/TJ
2018	PM 2.5	1A2gviii	RECOVERED WOOD	0.000100050	t/TJ
2018	PM 2.5	1A2gviii	SAWDUST AND CUTTER CHIPS	0.008373350	t/TJ
2018	PM 2.5	1A2gviii	SOD PEAT	0.004791868	t/TJ
2018	PM 2.5	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.008482117	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 2.5	1A2gviii	WOOD FUELS)	0.006895943	t/TJ
2018	PM 2.5	1A2gviii	WOOD RESIDUE CHIPS	0.004635799	t/TJ
2018	PM 2.5	1A3ai(i)	KEROSENE (JET FUEL)	0.002311783	t/TJ
2018	PM 2.5	1A3aii(i)	AVIATION GASOLINE	0.008000000	t/TJ
2018	PM 2.5	1A3aii(i)	KEROSENE (JET FUEL)	0.002002682	t/TJ
2018	PM 2.5	1A3bi	DIESEL OIL (S=0.001%)	0.007594082	t/TJ
2018	PM 2.5	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000621173	t/TJ
2018	PM 2.5	1A3bi	NATURAL GAS	0.000418396	t/TJ
2018	PM 2.5	1A3bii	DIESEL OIL (S=0.001%)	0.020569161	t/TJ
2018	PM 2.5	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000681358	t/TJ
2018	PM 2.5	1A3bii	NATURAL GAS	0.000460118	t/TJ
2018	PM 2.5	1A3biii	DIESEL OIL (S=0.001%)	0.003335656	t/TJ
2018	PM 2.5	1A3biii	NATURAL GAS	0.000200277	t/TJ
2018	PM 2.5	1A3biv	DIESEL OIL (S=0.001%)	0.018180980	t/TJ
2018	PM 2.5	1A3biv	MOTOR GASOLINE (S=0.001%)	0.012063132	t/TJ
2018	PM 2.5	1A3c	GASOIL (FOR NON-ROAD USE)	0.029837254	t/TJ
2018	PM 2.5	1A3dii	DIESEL OIL (S=0.001%)	0.080291964	t/TJ
2018	PM 2.5	1A3dii	GASOIL (FOR NON-ROAD USE)	0.026974200	t/TJ
2018	PM 2.5	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.027902273	t/TJ
2018	PM 2.5	1A3dii	MOTOR GASOLINE (S=0.001%)	0.110124835	t/TJ
2018	PM 2.5	1A4ai	FOREST WOODFUEL	0.015859600	t/TJ
2018	PM 2.5	1A4ai	HEAVY FUEL OIL (S<1%)	0.050400000	t/TJ
2018	PM 2.5	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.000840754	t/TJ
2018	PM 2.5	1A4ai	SOD PEAT	0.018048780	t/TJ
2018	PM 2.5	1A4aii	GASOIL (FOR NON-ROAD USE)	0.017993253	t/TJ
2018	PM 2.5	1A4aii	MOTOR GASOLINE (S=0.001%)	0.058962034	t/TJ
2018	PM 2.5	1A4bi	COAL (S=1.0%)	0.160000000	t/TJ
2018	PM 2.5	1A4bi	FOREST WOODFUEL	0.171165422	t/TJ
2018	PM 2.5	1A4bi	HEAVY FUEL OIL (S<1%)	0.020700000	t/TJ
2018	PM 2.5	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.004900000	t/TJ
2018	PM 2.5	1A4bi	PARAFFIN	0.004900000	t/TJ
2018	PM 2.5	1A4bi	SOD PEAT	0.320000000	t/TJ
2018	PM 2.5	1A4bii	GASOIL (FOR NON-ROAD USE)	0.067901850	t/TJ
2018	PM 2.5	1A4bii	MOTOR GASOLINE (S=0.001%)	0.051709780	t/TJ
2018	PM 2.5	1A4ci	ANIMAL-BASED FUELS	0.010000000	t/TJ
2018	PM 2.5	1A4ci	CHIPS FROM ROUNDWOOD	0.034308129	t/TJ
2018	PM 2.5	1A4ci	COAL (S=1.0%)	0.003453947	t/TJ
2018	PM 2.5	1A4ci	FOREST WOODFUEL	0.015500000	t/TJ
2018	PM 2.5	1A4ci	HEAVY FUEL OIL (S<1%)	0.050400000	t/TJ
2018	PM 2.5	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.000840000	t/TJ
2018	PM 2.5	1A4ci	OTHER NON-FOSSIL SOLID	0.003500000	t/TJ
2018	PM 2.5	1A4ci	RECOVERED WOOD	0.047320341	t/TJ
2018	PM 2.5	1A4ci	SOD PEAT	0.019988449	t/TJ
2018	PM 2.5	1A4ci	WOOD RESIDUE CHIPS	0.003500000	t/TJ
2018	PM 2.5	1A4cii	GASOIL (FOR NON-ROAD USE)	0.017824596	t/TJ
2018	PM 2.5	1A4cii	MOTOR GASOLINE (S=0.001%)	0.117259946	t/TJ
2018	PM 2.5	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.029793907	t/TJ
2018	PM 2.5	1A5a	FOREST WOODFUEL	0.010000000	t/TJ

2018	PM 2.5	1A5a	HEAVY FUEL OIL (S<1%)	0.050400000	t/TJ
2018	PM 2.5	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.002773257	t/TJ
2018	PM 2.5	1A5a	OTHER PETROLEUM PRODUCTS	0.000840000	t/TJ

PM10 implied emission factors in Finnish air pollutant inventory for 2018

2018	PM 10	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000444910	t/TJ
2018	PM 10	1A1a	ANIMAL-BASED FUELS	0.000264763	t/TJ
2018	PM 10	1A1a	BARK	0.003381829	t/TJ
2018	PM 10	1A1a	CHIPS FROM ROUNDWOOD	0.007199213	t/TJ
2018	PM 10	1A1a	COAL (S=1.0%)	0.002670155	t/TJ
2018	PM 10	1A1a	CREOSOTED WOOD	0.001165653	t/TJ
2018	PM 10	1A1a	DEINKING WASTE	0.000263891	t/TJ
2018	PM 10	1A1a	DEMOLITION WOOD	0.001573658	t/TJ
2018	PM 10	1A1a	DIESEL OIL (S=001%)	0.009402519	t/TJ
2018	PM 10	1A1a	FOREST RESIDUE CHIPS	0.006471748	t/TJ
2018	PM 10	1A1a	GASOIL (FOR NON-ROAD USE)	0.006090745	t/TJ
2018	PM 10	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.001713531	t/TJ
2018	PM 10	1A1a	HEAVY FUEL OIL (S<1%)	0.012517009	t/TJ
2018	PM 10	1A1a	INDUSTRIAL WASTE	0.000120349	t/TJ
2018	PM 10	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.015328466	t/TJ
2018	PM 10	1A1a	MILLED PEAT	0.003208717	t/TJ
2018	PM 10	1A1a	MUNICIPAL WASTE - unsorted	0.000131681	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PM 10	1A1a	INDUSTRY	0.001709889	t/TJ
2018	PM 10	1A1a	OTHER FOSSIL SOLID	0.026305696	t/TJ
2018	PM 10	1A1a	OTHER NON-FOSSIL LIQUID	0.005012529	t/TJ
2018	PM 10	1A1a	OTHER NON-FOSSIL SOLID	0.003736402	t/TJ
2018	PM 10	1A1a	OTHER WASTE	0.000258103	t/TJ
2018	PM 10	1A1a	OTHER WOOD RESIDUE	0.007687234	t/TJ
2018	PM 10	1A1a	PAPER	0.000402168	t/TJ
2018	PM 10	1A1a	PEAT PELLETS AND BRIQUETTES	0.006590766	t/TJ
2018	PM 10	1A1a	PLYWOOD RESIDUE	0.000228145	t/TJ
2018	PM 10	1A1a	RECOVERED FUEL (REF 1)	0.001124695	t/TJ
2018	PM 10	1A1a	RECOVERED FUEL (REF 2)	0.001438385	t/TJ
2018	PM 10	1A1a	RECOVERED FUEL (REF 3)	0.000064905	t/TJ
2018	PM 10	1A1a	RECOVERED WOOD	0.003187331	t/TJ
2018	PM 10	1A1a	RECYCLED AND WASTE OILS	0.000803791	t/TJ
2018	PM 10	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000047146	t/TJ
2018	PM 10	1A1a	SALT TREATED WOOD	0.001329190	t/TJ
2018	PM 10	1A1a	SAWDUST AND CUTTER CHIPS	0.006087080	t/TJ
2018	PM 10	1A1a	SOD PEAT	0.045626052	t/TJ
2018	PM 10	1A1a	TALL PITCH AND OIL	0.008642881	t/TJ
2018	PM 10	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.006433153	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 10	1A1a	WOOD FUELS)	0.018706753	t/TJ
2018	PM 10	1A1a	WOOD RESIDUE CHIPS	0.009020115	t/TJ
2018	PM 10	1A1b	COKE (S=1.0%)	0.038999929	t/TJ
2018	PM 10	1A1b	GASOIL (FOR NON-ROAD USE)	0.000361293	t/TJ
2018	PM 10	1A1b	HEAVY FUEL OIL (S<1%)	0.004602876	t/TJ
2018	PM 10	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.000354140	t/TJ
2018	PM 10	1A1b	OTHER FOSSIL LIQUID	0.006557673	t/TJ
2018	PM 10	1A1b	OTHER HEAVY DISTILLATES	0.006316686	t/TJ
2018	PM 10	1A1b	OTHER MEDIUM DISTILLATES	0.000353032	t/TJ
2018	PM 10	1A1b	PETROLEUM COKE	0.006614629	t/TJ
2018	PM 10	1A2a	COKE (S=1.0%)	0.006737741	t/TJ
2018	PM 10	1A2a	DIESEL OIL (S=001%)	0.003500000	t/TJ
2018	PM 10	1A2a	GASOIL (FOR NON-ROAD USE)	0.003500000	t/TJ
2018	PM 10	1A2a	HEAVY FUEL OIL (S<1%)	0.024578390	t/TJ
2018	PM 10	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.003712817	t/TJ
2018	PM 10	1A2a	LIQUID GAS	0.000001024	t/TJ

2018	PM 10	1A2a	OTHER FOSSIL SOLID	0.006001852	t/TJ
2018	PM 10	1A2a	WOOD RESIDUE CHIPS	0.036474224	t/TJ
2018	PM 10	1A2b	COAL (S=1.0%)	0.038387093	t/TJ
2018	PM 10	1A2b	COKE (S=1.0%)	0.004796227	t/TJ
2018	PM 10	1A2b	GASOIL (FOR NON-ROAD USE)	0.000430431	t/TJ
2018	PM 10	1A2b	HEAVY FUEL OIL (S<1%)	0.013341769	t/TJ
2018	PM 10	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.000518879	t/TJ
2018	PM 10	1A2b	OTHER FOSSIL SOLID	0.004796226	t/TJ
2018	PM 10	1A2b	RECYCLED AND WASTE OILS	0.007932224	t/TJ
2018	PM 10	1A2c	COAL (S=1.0%)	0.001057401	t/TJ
2018	PM 10	1A2c	DIESEL OIL (S=0.01%)	0.003500000	t/TJ
2018	PM 10	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.006160302	t/TJ
2018	PM 10	1A2c	HEAVY FUEL OIL (S<1%)	0.056854807	t/TJ
2018	PM 10	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.008277849	t/TJ
2018	PM 10	1A2c	OTHER FOSSIL LIQUID	0.002329748	t/TJ
2018	PM 10	1A2c	OTHER MEDIUM DISTILLATES	0.000126420	t/TJ
2018	PM 10	1A2c	SAWDUST AND CUTTER CHIPS	0.002554604	t/TJ
2018	PM 10	1A2c	TALL PITCH AND OIL	0.019796703	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 10	1A2c	WOOD FUELS)	0.002533507	t/TJ
2018	PM 10	1A2c	WOOD RESIDUE CHIPS	0.007298874	t/TJ
2018	PM 10	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000969828	t/TJ
2018	PM 10	1A2d	ANIMAL-BASED FUELS	0.001529321	t/TJ
2018	PM 10	1A2d	BARK	0.002640084	t/TJ
2018	PM 10	1A2d	BLACK LIQUOR	0.009239383	t/TJ
2018	PM 10	1A2d	CHIPS FROM ROUNDWOOD	0.004257902	t/TJ
2018	PM 10	1A2d	COAL (S=1.0%)	0.000837892	t/TJ
2018	PM 10	1A2d	CREOSOTED WOOD	0.000742067	t/TJ
2018	PM 10	1A2d	DEMOLITION WOOD	0.000793468	t/TJ
2018	PM 10	1A2d	FOREST RESIDUE CHIPS	0.001839082	t/TJ
2018	PM 10	1A2d	GASOIL (FOR NON-ROAD USE)	0.019860184	t/TJ
2018	PM 10	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.061962784	t/TJ
2018	PM 10	1A2d	HEAVY FUEL OIL (S<1%)	0.010923024	t/TJ
2018	PM 10	1A2d	HYDROGEN	0.001118923	t/TJ
2018	PM 10	1A2d	INDUSTRIAL BIOGAS	0.038974940	t/TJ
2018	PM 10	1A2d	INDUSTRIAL WASTE	0.054600819	t/TJ
2018	PM 10	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.005343090	t/TJ
2018	PM 10	1A2d	LIQUID GAS	0.000000181	t/TJ
2018	PM 10	1A2d	METHANOL	0.008522006	t/TJ
2018	PM 10	1A2d	MILLED PEAT	0.002824143	t/TJ
2018	PM 10	1A2d	NATURAL GAS	0.001092178	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PM 10	1A2d	INDUSTRY	0.002549513	t/TJ
2018	PM 10	1A2d	OTHER NON-FOSSIL LIQUID	0.029901243	t/TJ
2018	PM 10	1A2d	OTHER NON-FOSSIL SOLID	0.001056932	t/TJ
2018	PM 10	1A2d	OTHER WASTE	0.000511974	t/TJ
2018	PM 10	1A2d	OTHER WOOD RESIDUE	0.001124951	t/TJ
2018	PM 10	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000479995	t/TJ
2018	PM 10	1A2d	PAPER	0.000460012	t/TJ
2018	PM 10	1A2d	PLASTIC WASTE	0.015720740	t/TJ
2018	PM 10	1A2d	RECOVERED FUEL (REF 1)	0.000212514	t/TJ
2018	PM 10	1A2d	RECOVERED FUEL (REF 2)	0.002340120	t/TJ
2018	PM 10	1A2d	RECOVERED WOOD	0.000645270	t/TJ
2018	PM 10	1A2d	RECYCLED AND WASTE OILS	0.000977525	t/TJ
2018	PM 10	1A2d	SALT TREATED WOOD	0.000793467	t/TJ
2018	PM 10	1A2d	SAWDUST AND CUTTER CHIPS	0.006492561	t/TJ
2018	PM 10	1A2d	SOD PEAT	0.000712028	t/TJ

2018	PM 10	1A2d	SULPHITE LIQUOR	0.026683263	t/TJ
2018	PM 10	1A2d	TALL PITCH AND OIL	0.001943930	t/TJ
2018	PM 10	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.004792829	t/TJ
2018	PM 10	1A2d	WOOD RESIDUE CHIPS	0.001632030	t/TJ
2018	PM 10	1A2e	ANIMAL-BASED FUELS	0.015046055	t/TJ
2018	PM 10	1A2e	CHIPS FROM ROUNDWOOD	0.000580831	t/TJ
2018	PM 10	1A2e	COAL (S=1.0%)	0.004907565	t/TJ
2018	PM 10	1A2e	COKE (S=1.0%)	0.038999993	t/TJ
2018	PM 10	1A2e	DIESEL OIL (S=001%)	0.003500000	t/TJ
2018	PM 10	1A2e	GASOIL (FOR NON-ROAD USE)	0.000913160	t/TJ
2018	PM 10	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.064500000	t/TJ
2018	PM 10	1A2e	HEAVY FUEL OIL (S<1%)	0.045176690	t/TJ
2018	PM 10	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.003393048	t/TJ
2018	PM 10	1A2e	MILLED PEAT	0.003044040	t/TJ
2018	PM 10	1A2e	OTHER NON-FOSSIL SOLID	0.002802449	t/TJ
2018	PM 10	1A2e	PEAT PELLETS AND BRIQUETTES	0.003010508	t/TJ
2018	PM 10	1A2e	RECOVERED WOOD	0.000465691	t/TJ
2018	PM 10	1A2e	SAWDUST AND CUTTER CHIPS	0.009399298	t/TJ
2018	PM 10	1A2e	TALL PITCH AND OIL	0.010916122	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 10	1A2e	WOOD FUELS)	0.052000000	t/TJ
2018	PM 10	1A2e	WOOD RESIDUE CHIPS	0.022100006	t/TJ
2018	PM 10	1A2f	CHIPS FROM ROUNDWOOD	0.061410084	t/TJ
2018	PM 10	1A2f	COAL (S=1.0%)	0.011542884	t/TJ
2018	PM 10	1A2f	COKE (S=1.0%)	0.028508945	t/TJ
2018	PM 10	1A2f	DIESEL OIL (S=001%)	0.002602001	t/TJ
2018	PM 10	1A2f	FOREST RESIDUE CHIPS	0.035298851	t/TJ
2018	PM 10	1A2f	GASOIL (FOR NON-ROAD USE)	0.000465764	t/TJ
2018	PM 10	1A2f	HEAVY FUEL OIL (S<1%)	0.015258500	t/TJ
2018	PM 10	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.012496569	t/TJ
2018	PM 10	1A2f	OTHER FOSSIL LIQUID	0.001753320	t/TJ
2018	PM 10	1A2f	OTHER FOSSIL SOLID	0.009401384	t/TJ
2018	PM 10	1A2f	OTHER HEAVY DISTILLATES	0.015968426	t/TJ
2018	PM 10	1A2f	PETROLEUM COKE	0.008753762	t/TJ
2018	PM 10	1A2f	RECOVERED FUEL (REF 1)	0.001669075	t/TJ
2018	PM 10	1A2f	RECOVERED FUEL (REF 2)	0.006665118	t/TJ
2018	PM 10	1A2f	RECYCLED AND WASTE OILS	0.002923868	t/TJ
2018	PM 10	1A2f	RUBBER WASTE	0.011486950	t/TJ
2018	PM 10	1A2f	SAWDUST AND CUTTER CHIPS	0.008834950	t/TJ
2018	PM 10	1A2f	TALL PITCH AND OIL	0.015764012	t/TJ
2018	PM 10	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.022516507	t/TJ
2018	PM 10	1A2gvii	LIQUID GAS	0.004126625	t/TJ
2018	PM 10	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.003913174	t/TJ
2018	PM 10	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000508179	t/TJ
2018	PM 10	1A2gviii	BARK	0.013439928	t/TJ
2018	PM 10	1A2gviii	CHIPS FROM ROUNDWOOD	0.031646133	t/TJ
2018	PM 10	1A2gviii	COAL (S=1.0%)	0.001043756	t/TJ
2018	PM 10	1A2gviii	DIESEL OIL (S=001%)	0.003470325	t/TJ
2018	PM 10	1A2gviii	FOREST RESIDUE CHIPS	0.023912451	t/TJ
2018	PM 10	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.004446228	t/TJ
2018	PM 10	1A2gviii	HEAVY FUEL OIL (S<1%)	0.040074633	t/TJ
2018	PM 10	1A2gviii	INDUSTRIAL WASTE	0.000185452	t/TJ
2018	PM 10	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.008720752	t/TJ
2018	PM 10	1A2gviii	MILLED PEAT	0.001288340	t/TJ
2018	PM 10	1A2gviii	MUNICIPAL WASTE - unsorted	0.000241993	t/TJ
2018	PM 10	1A2gviii	OTHER HEAVY DISTILLATES	0.032782178	t/TJ
2018	PM 10	1A2gviii	OTHER NON-FOSSIL LIQUID	0.013018167	t/TJ

2018	PM 10	1A2gviii	OTHER NON-FOSSIL SOLID	0.001392606	t/TJ
2018	PM 10	1A2gviii	OTHER WOOD RESIDUE	0.018361100	t/TJ
2018	PM 10	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.008873772	t/TJ
2018	PM 10	1A2gviii	RECOVERED FUEL (REF 2)	0.000335986	t/TJ
2018	PM 10	1A2gviii	RECOVERED WOOD	0.000377968	t/TJ
2018	PM 10	1A2gviii	SAWDUST AND CUTTER CHIPS	0.021824224	t/TJ
2018	PM 10	1A2gviii	SOD PEAT	0.018568041	t/TJ
2018	PM 10	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.022869281	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PM 10	1A2gviii	WOOD FUELS)	0.052151196	t/TJ
2018	PM 10	1A2gviii	WOOD RESIDUE CHIPS	0.022715687	t/TJ
2018	PM 10	1A3ai(i)	KEROSENE (JET FUEL)	0.002311783	t/TJ
2018	PM 10	1A3aii(i)	AVIATION GASOLINE	0.008000000	t/TJ
2018	PM 10	1A3aii(i)	KEROSENE (JET FUEL)	0.002002682	t/TJ
2018	PM 10	1A3bi	DIESEL OIL (S=0.001%)	0.007594082	t/TJ
2018	PM 10	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000621173	t/TJ
2018	PM 10	1A3bi	NATURAL GAS	0.000418396	t/TJ
2018	PM 10	1A3bii	DIESEL OIL (S=0.001%)	0.020569161	t/TJ
2018	PM 10	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000681358	t/TJ
2018	PM 10	1A3bii	NATURAL GAS	0.000460118	t/TJ
2018	PM 10	1A3biii	DIESEL OIL (S=0.001%)	0.003335656	t/TJ
2018	PM 10	1A3biii	NATURAL GAS	0.000200277	t/TJ
2018	PM 10	1A3biv	DIESEL OIL (S=0.001%)	0.018180980	t/TJ
2018	PM 10	1A3biv	MOTOR GASOLINE (S=0.001%)	0.012063132	t/TJ
2018	PM 10	1A3c	GASOIL (FOR NON-ROAD USE)	0.031361785	t/TJ
2018	PM 10	1A3dii	DIESEL OIL (S=0.001%)	0.088894675	t/TJ
2018	PM 10	1A3dii	GASOIL (FOR NON-ROAD USE)	0.029864293	t/TJ
2018	PM 10	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.030891803	t/TJ
2018	PM 10	1A3dii	MOTOR GASOLINE (S=0.001%)	0.121923925	t/TJ
2018	PM 10	1A4ai	FOREST WOODFUEL	0.016371200	t/TJ
2018	PM 10	1A4ai	HEAVY FUEL OIL (S<1%)	0.077400000	t/TJ
2018	PM 10	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.003503142	t/TJ
2018	PM 10	1A4ai	SOD PEAT	0.093853659	t/TJ
2018	PM 10	1A4aii	GASOIL (FOR NON-ROAD USE)	0.017993253	t/TJ
2018	PM 10	1A4aii	MOTOR GASOLINE (S=0.001%)	0.058962034	t/TJ
2018	PM 10	1A4bi	COAL (S=1.0%)	0.180000000	t/TJ
2018	PM 10	1A4bi	FOREST WOODFUEL	0.176686887	t/TJ
2018	PM 10	1A4bi	HEAVY FUEL OIL (S<1%)	0.055800000	t/TJ
2018	PM 10	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.006300000	t/TJ
2018	PM 10	1A4bi	PARAFFIN	0.006300000	t/TJ
2018	PM 10	1A4bi	SOD PEAT	0.360000000	t/TJ
2018	PM 10	1A4bii	GASOIL (FOR NON-ROAD USE)	0.067901850	t/TJ
2018	PM 10	1A4bii	MOTOR GASOLINE (S=0.001%)	0.051709780	t/TJ
2018	PM 10	1A4ci	ANIMAL-BASED FUELS	0.052000000	t/TJ
2018	PM 10	1A4ci	CHIPS FROM ROUNDWOOD	0.178402247	t/TJ
2018	PM 10	1A4ci	COAL (S=1.0%)	0.017960526	t/TJ
2018	PM 10	1A4ci	FOREST WOODFUEL	0.016000000	t/TJ
2018	PM 10	1A4ci	HEAVY FUEL OIL (S<1%)	0.077400000	t/TJ
2018	PM 10	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.003500000	t/TJ
2018	PM 10	1A4ci	OTHER NON-FOSSIL SOLID	0.016942123	t/TJ
2018	PM 10	1A4ci	RECOVERED WOOD	0.114529684	t/TJ
2018	PM 10	1A4ci	SOD PEAT	0.103939933	t/TJ
2018	PM 10	1A4ci	WOOD RESIDUE CHIPS	0.052000000	t/TJ
2018	PM 10	1A4cii	GASOIL (FOR NON-ROAD USE)	0.017824596	t/TJ
2018	PM 10	1A4cii	MOTOR GASOLINE (S=0.001%)	0.117259946	t/TJ
2018	PM 10	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.032986111	t/TJ
2018	PM 10	1A5a	FOREST WOODFUEL	0.052000000	t/TJ

2018	PM 10	1A5a	HEAVY FUEL OIL (S<1%)	0.077400000	t/TJ
2018	PM 10	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.005626606	t/TJ
2018	PM 10	1A5a	OTHER PETROLEUM PRODUCTS	0.003500000	t/TJ

TSP implied emission factors in Finnish air pollutant inventory for 2018

2018	TSP	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000525211	t/TJ
2018	TSP	1A1a	ANIMAL-BASED FUELS	0.000513737	t/TJ
2018	TSP	1A1a	BARK	0.007352368	t/TJ
2018	TSP	1A1a	CHIPS FROM ROUNDWOOD	0.014299271	t/TJ
2018	TSP	1A1a	COAL (S=1.0%)	0.003317906	t/TJ
2018	TSP	1A1a	CREOSOTED WOOD	0.001654504	t/TJ
2018	TSP	1A1a	DEINKING WASTE	0.000322556	t/TJ
2018	TSP	1A1a	DEMOLITION WOOD	0.001865796	t/TJ
2018	TSP	1A1a	DIESEL OIL (S=001%)	0.018804983	t/TJ
2018	TSP	1A1a	FOREST RESIDUE CHIPS	0.018457110	t/TJ
2018	TSP	1A1a	GASOIL (FOR NON-ROAD USE)	0.012181491	t/TJ
2018	TSP	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.001846313	t/TJ
2018	TSP	1A1a	HEAVY FUEL OIL (S<1%)	0.014596689	t/TJ
2018	TSP	1A1a	INDUSTRIAL WASTE	0.000326618	t/TJ
2018	TSP	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.030656933	t/TJ
2018	TSP	1A1a	MILLED PEAT	0.004840617	t/TJ
2018	TSP	1A1a	MUNICIPAL WASTE - unsorted	0.000269474	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	TSP	1A1a	INDUSTRY	0.002029751	t/TJ
2018	TSP	1A1a	OTHER FOSSIL SOLID	0.007182575	t/TJ
2018	TSP	1A1a	OTHER NON-FOSSIL LIQUID	0.005828522	t/TJ
2018	TSP	1A1a	OTHER NON-FOSSIL SOLID	0.005062807	t/TJ
2018	TSP	1A1a	OTHER WASTE	0.000502972	t/TJ
2018	TSP	1A1a	OTHER WOOD RESIDUE	0.008189960	t/TJ
2018	TSP	1A1a	PAPER	0.000474754	t/TJ
2018	TSP	1A1a	PEAT PELLETS AND BRIQUETTES	0.011854852	t/TJ
2018	TSP	1A1a	PLYWOOD RESIDUE	0.000269322	t/TJ
2018	TSP	1A1a	RECOVERED FUEL (REF 1)	0.004325750	t/TJ
2018	TSP	1A1a	RECOVERED FUEL (REF 2)	0.002705703	t/TJ
2018	TSP	1A1a	RECOVERED FUEL (REF 3)	0.000249636	t/TJ
2018	TSP	1A1a	RECOVERED WOOD	0.004063540	t/TJ
2018	TSP	1A1a	RECYCLED AND WASTE OILS	0.000858561	t/TJ
2018	TSP	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000062583	t/TJ
2018	TSP	1A1a	SALT TREATED WOOD	0.001587857	t/TJ
2018	TSP	1A1a	SAWDUST AND CUTTER CHIPS	0.011429026	t/TJ
2018	TSP	1A1a	SOD PEAT	0.174766819	t/TJ
2018	TSP	1A1a	TALL PITCH AND OIL	0.010049867	t/TJ
2018	TSP	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.020568646	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	TSP	1A1a	WOOD FUELS)	0.064923609	t/TJ
2018	TSP	1A1a	WOOD RESIDUE CHIPS	0.024156091	t/TJ
2018	TSP	1A1b	COKE (S=1.0%)	0.150000000	t/TJ
2018	TSP	1A1b	GASOIL (FOR NON-ROAD USE)	0.000722587	t/TJ
2018	TSP	1A1b	HEAVY FUEL OIL (S<1%)	0.005352179	t/TJ
2018	TSP	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.000708279	t/TJ
2018	TSP	1A1b	OTHER FOSSIL LIQUID	0.007625202	t/TJ
2018	TSP	1A1b	OTHER HEAVY DISTILLATES	0.007344975	t/TJ
2018	TSP	1A1b	OTHER MEDIUM DISTILLATES	0.000706065	t/TJ
2018	TSP	1A1b	PETROLEUM COKE	0.025440879	t/TJ
2018	TSP	1A2a	COKE (S=1.0%)	0.018258300	t/TJ
2018	TSP	1A2a	DIESEL OIL (S=001%)	0.007000000	t/TJ
2018	TSP	1A2a	GASOIL (FOR NON-ROAD USE)	0.007000000	t/TJ
2018	TSP	1A2a	HEAVY FUEL OIL (S<1%)	0.028579529	t/TJ
2018	TSP	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.007425631	t/TJ
2018	TSP	1A2a	LIQUID GAS	0.000001662	t/TJ

2018	TSP	1A2a	OTHER FOSSIL SOLID	0.011695906	t/TJ
2018	TSP	1A2a	WOOD RESIDUE CHIPS	0.140285476	t/TJ
2018	TSP	1A2b	COAL (S=1.0%)	0.147642202	t/TJ
2018	TSP	1A2b	COKE (S=1.0%)	0.018447054	t/TJ
2018	TSP	1A2b	GASOIL (FOR NON-ROAD USE)	0.000860862	t/TJ
2018	TSP	1A2b	HEAVY FUEL OIL (S<1%)	0.015513684	t/TJ
2018	TSP	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.001037755	t/TJ
2018	TSP	1A2b	OTHER FOSSIL SOLID	0.018447028	t/TJ
2018	TSP	1A2b	RECYCLED AND WASTE OILS	0.009223513	t/TJ
2018	TSP	1A2c	COAL (S=1.0%)	0.001403628	t/TJ
2018	TSP	1A2c	DIESEL OIL (S=0.01%)	0.007000000	t/TJ
2018	TSP	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.007163126	t/TJ
2018	TSP	1A2c	HEAVY FUEL OIL (S<1%)	0.066081929	t/TJ
2018	TSP	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.016555698	t/TJ
2018	TSP	1A2c	OTHER FOSSIL LIQUID	0.002709014	t/TJ
2018	TSP	1A2c	OTHER MEDIUM DISTILLATES	0.000252841	t/TJ
2018	TSP	1A2c	SAWDUST AND CUTTER CHIPS	0.001403629	t/TJ
2018	TSP	1A2c	TALL PITCH AND OIL	0.023019422	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	TSP	1A2c	WOOD FUELS)	0.009744257	t/TJ
2018	TSP	1A2c	WOOD RESIDUE CHIPS	0.028072572	t/TJ
2018	TSP	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.001144870	t/TJ
2018	TSP	1A2d	ANIMAL-BASED FUELS	0.001872311	t/TJ
2018	TSP	1A2d	BARK	0.004338994	t/TJ
2018	TSP	1A2d	BLACK LIQUOR	0.010045293	t/TJ
2018	TSP	1A2d	CHIPS FROM ROUNDWOOD	0.004459907	t/TJ
2018	TSP	1A2d	COAL (S=1.0%)	0.001057467	t/TJ
2018	TSP	1A2d	CREOSOTED WOOD	0.001053275	t/TJ
2018	TSP	1A2d	DEMOLITION WOOD	0.001053275	t/TJ
2018	TSP	1A2d	FOREST RESIDUE CHIPS	0.003710373	t/TJ
2018	TSP	1A2d	GASOIL (FOR NON-ROAD USE)	0.023786151	t/TJ
2018	TSP	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.069139298	t/TJ
2018	TSP	1A2d	HEAVY FUEL OIL (S<1%)	0.018506156	t/TJ
2018	TSP	1A2d	HYDROGEN	0.005889063	t/TJ
2018	TSP	1A2d	INDUSTRIAL BIOGAS	0.039335795	t/TJ
2018	TSP	1A2d	INDUSTRIAL WASTE	0.210002953	t/TJ
2018	TSP	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.010671517	t/TJ
2018	TSP	1A2d	LIQUID GAS	0.000000264	t/TJ
2018	TSP	1A2d	METHANOL	0.013484339	t/TJ
2018	TSP	1A2d	MILLED PEAT	0.003693725	t/TJ
2018	TSP	1A2d	NATURAL GAS	0.001357788	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	TSP	1A2d	INDUSTRY	0.003016653	t/TJ
2018	TSP	1A2d	OTHER NON-FOSSIL LIQUID	0.034768891	t/TJ
2018	TSP	1A2d	OTHER NON-FOSSIL SOLID	0.001331958	t/TJ
2018	TSP	1A2d	OTHER WASTE	0.000645384	t/TJ
2018	TSP	1A2d	OTHER WOOD RESIDUE	0.004146117	t/TJ
2018	TSP	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000637161	t/TJ
2018	TSP	1A2d	PAPER	0.000543039	t/TJ
2018	TSP	1A2d	PLASTIC WASTE	0.030311526	t/TJ
2018	TSP	1A2d	RECOVERED FUEL (REF 1)	0.000817358	t/TJ
2018	TSP	1A2d	RECOVERED FUEL (REF 2)	0.003947333	t/TJ
2018	TSP	1A2d	RECOVERED WOOD	0.000855048	t/TJ
2018	TSP	1A2d	RECYCLED AND WASTE OILS	0.001053273	t/TJ
2018	TSP	1A2d	SALT TREATED WOOD	0.001053275	t/TJ
2018	TSP	1A2d	SAWDUST AND CUTTER CHIPS	0.008084844	t/TJ
2018	TSP	1A2d	SOD PEAT	0.000840537	t/TJ

2018	TSP	1A2d	SULPHITE LIQUOR	0.031499285	t/TJ
2018	TSP	1A2d	TALL PITCH AND OIL	0.008778558	t/TJ
2018	TSP	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.015962909	t/TJ
2018	TSP	1A2d	WOOD RESIDUE CHIPS	0.003364261	t/TJ
2018	TSP	1A2e	ANIMAL-BASED FUELS	0.057066242	t/TJ
2018	TSP	1A2e	CHIPS FROM ROUNDWOOD	0.000319138	t/TJ
2018	TSP	1A2e	COAL (S=1.0%)	0.007550110	t/TJ
2018	TSP	1A2e	COKE (S=1.0%)	0.150000089	t/TJ
2018	TSP	1A2e	DIESEL OIL (S=001%)	0.007000000	t/TJ
2018	TSP	1A2e	GASOIL (FOR NON-ROAD USE)	0.001826321	t/TJ
2018	TSP	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.075000000	t/TJ
2018	TSP	1A2e	HEAVY FUEL OIL (S<1%)	0.052531021	t/TJ
2018	TSP	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.006786095	t/TJ
2018	TSP	1A2e	MILLED PEAT	0.010392246	t/TJ
2018	TSP	1A2e	OTHER NON-FOSSIL SOLID	0.003308253	t/TJ
2018	TSP	1A2e	PEAT PELLETS AND BRIQUETTES	0.007443570	t/TJ
2018	TSP	1A2e	RECOVERED WOOD	0.000549742	t/TJ
2018	TSP	1A2e	SAWDUST AND CUTTER CHIPS	0.036151157	t/TJ
2018	TSP	1A2e	TALL PITCH AND OIL	0.012693190	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	TSP	1A2e	WOOD FUELS)	0.200000000	t/TJ
2018	TSP	1A2e	WOOD RESIDUE CHIPS	0.084999944	t/TJ
2018	TSP	1A2f	CHIPS FROM ROUNDWOOD	0.236192648	t/TJ
2018	TSP	1A2f	COAL (S=1.0%)	0.033571474	t/TJ
2018	TSP	1A2f	COKE (S=1.0%)	0.109649825	t/TJ
2018	TSP	1A2f	DIESEL OIL (S=001%)	0.005204003	t/TJ
2018	TSP	1A2f	FOREST RESIDUE CHIPS	0.135764813	t/TJ
2018	TSP	1A2f	GASOIL (FOR NON-ROAD USE)	0.001036671	t/TJ
2018	TSP	1A2f	HEAVY FUEL OIL (S<1%)	0.016845232	t/TJ
2018	TSP	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.024993399	t/TJ
2018	TSP	1A2f	OTHER FOSSIL LIQUID	0.002038744	t/TJ
2018	TSP	1A2f	OTHER FOSSIL SOLID	0.002410611	t/TJ
2018	TSP	1A2f	OTHER HEAVY DISTILLATES	0.018567973	t/TJ
2018	TSP	1A2f	PETROLEUM COKE	0.011688217	t/TJ
2018	TSP	1A2f	RECOVERED FUEL (REF 1)	0.006419518	t/TJ
2018	TSP	1A2f	RECOVERED FUEL (REF 2)	0.011281697	t/TJ
2018	TSP	1A2f	RECYCLED AND WASTE OILS	0.003277579	t/TJ
2018	TSP	1A2f	RUBBER WASTE	0.012220166	t/TJ
2018	TSP	1A2f	SAWDUST AND CUTTER CHIPS	0.026298414	t/TJ
2018	TSP	1A2f	TALL PITCH AND OIL	0.018330245	t/TJ
2018	TSP	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.022516507	t/TJ
2018	TSP	1A2gvii	LIQUID GAS	0.004126625	t/TJ
2018	TSP	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.003913174	t/TJ
2018	TSP	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000599900	t/TJ
2018	TSP	1A2gviii	BARK	0.030320639	t/TJ
2018	TSP	1A2gviii	CHIPS FROM ROUNDWOOD	0.096373256	t/TJ
2018	TSP	1A2gviii	COAL (S=1.0%)	0.004014441	t/TJ
2018	TSP	1A2gviii	DIESEL OIL (S=001%)	0.006940649	t/TJ
2018	TSP	1A2gviii	FOREST RESIDUE CHIPS	0.077822986	t/TJ
2018	TSP	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.008892457	t/TJ
2018	TSP	1A2gviii	HEAVY FUEL OIL (S<1%)	0.046953631	t/TJ
2018	TSP	1A2gviii	INDUSTRIAL WASTE	0.000246176	t/TJ
2018	TSP	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.017441504	t/TJ
2018	TSP	1A2gviii	MILLED PEAT	0.001699806	t/TJ
2018	TSP	1A2gviii	MUNICIPAL WASTE - unsorted	0.000404409	t/TJ
2018	TSP	1A2gviii	OTHER HEAVY DISTILLATES	0.038118812	t/TJ
2018	TSP	1A2gviii	OTHER NON-FOSSIL LIQUID	0.015137371	t/TJ

2018	TSP	1A2gviii	OTHER NON-FOSSIL SOLID	0.001801300	t/TJ
2018	TSP	1A2gviii	OTHER WOOD RESIDUE	0.053413152	t/TJ
2018	TSP	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.010318327	t/TJ
2018	TSP	1A2gviii	RECOVERED FUEL (REF 2)	0.001292256	t/TJ
2018	TSP	1A2gviii	RECOVERED WOOD	0.001123454	t/TJ
2018	TSP	1A2gviii	SAWDUST AND CUTTER CHIPS	0.054948201	t/TJ
2018	TSP	1A2gviii	SOD PEAT	0.036771979	t/TJ
2018	TSP	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	0.059944595	t/TJ
2018	TSP	1A2gviii	WOOD RESIDUE CHIPS	0.200400085	t/TJ
2018	TSP	1A2gviii	WOOD RESIDUE CHIPS	0.063216088	t/TJ
2018	TSP	1A3ai(i)	KEROSENE (JET FUEL)	0.002311783	t/TJ
2018	TSP	1A3aii(i)	AVIATION GASOLINE	0.008000000	t/TJ
2018	TSP	1A3aii(i)	KEROSENE (JET FUEL)	0.002002682	t/TJ
2018	TSP	1A3bi	DIESEL OIL (S=0.001%)	0.007594082	t/TJ
2018	TSP	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000621173	t/TJ
2018	TSP	1A3bi	NATURAL GAS	0.000418396	t/TJ
2018	TSP	1A3bii	DIESEL OIL (S=0.001%)	0.020569161	t/TJ
2018	TSP	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000681358	t/TJ
2018	TSP	1A3bii	NATURAL GAS	0.000460118	t/TJ
2018	TSP	1A3biii	DIESEL OIL (S=0.001%)	0.003335656	t/TJ
2018	TSP	1A3biii	NATURAL GAS	0.000200277	t/TJ
2018	TSP	1A3biv	DIESEL OIL (S=0.001%)	0.018180980	t/TJ
2018	TSP	1A3biv	MOTOR GASOLINE (S=0.001%)	0.012063132	t/TJ
2018	TSP	1A3c	GASOIL (FOR NON-ROAD USE)	0.033104107	t/TJ
2018	TSP	1A3dii	DIESEL OIL (S=0.001%)	0.088894675	t/TJ
2018	TSP	1A3dii	GASOIL (FOR NON-ROAD USE)	0.029864293	t/TJ
2018	TSP	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.030891803	t/TJ
2018	TSP	1A3dii	MOTOR GASOLINE (S=0.001%)	0.121923925	t/TJ
2018	TSP	1A4ai	FOREST WOODFUEL	0.017053333	t/TJ
2018	TSP	1A4ai	HEAVY FUEL OIL (S<1%)	0.090000000	t/TJ
2018	TSP	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.007006284	t/TJ
2018	TSP	1A4ai	SOD PEAT	0.360975610	t/TJ
2018	TSP	1A4aii	GASOIL (FOR NON-ROAD USE)	0.017993253	t/TJ
2018	TSP	1A4aii	MOTOR GASOLINE (S=0.001%)	0.058962034	t/TJ
2018	TSP	1A4bi	COAL (S=1.0%)	0.200000000	t/TJ
2018	TSP	1A4bi	FOREST WOODFUEL	0.184048841	t/TJ
2018	TSP	1A4bi	HEAVY FUEL OIL (S<1%)	0.090000000	t/TJ
2018	TSP	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.007000000	t/TJ
2018	TSP	1A4bi	PARAFFIN	0.007000000	t/TJ
2018	TSP	1A4bi	SOD PEAT	0.400000000	t/TJ
2018	TSP	1A4bii	GASOIL (FOR NON-ROAD USE)	0.067901850	t/TJ
2018	TSP	1A4bii	MOTOR GASOLINE (S=0.001%)	0.051709780	t/TJ
2018	TSP	1A4ci	ANIMAL-BASED FUELS	0.010000000	t/TJ
2018	TSP	1A4ci	CHIPS FROM ROUNDWOOD	0.098023213	t/TJ
2018	TSP	1A4ci	COAL (S=1.0%)	0.035000000	t/TJ
2018	TSP	1A4ci	FOREST WOODFUEL	0.016666667	t/TJ
2018	TSP	1A4ci	HEAVY FUEL OIL (S<1%)	0.090000000	t/TJ
2018	TSP	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.007000000	t/TJ
2018	TSP	1A4ci	OTHER NON-FOSSIL SOLID	0.020000000	t/TJ
2018	TSP	1A4ci	RECOVERED WOOD	0.135200974	t/TJ
2018	TSP	1A4ci	SOD PEAT	0.399768975	t/TJ
2018	TSP	1A4ci	WOOD RESIDUE CHIPS	0.200000000	t/TJ
2018	TSP	1A4cii	GASOIL (FOR NON-ROAD USE)	0.017824596	t/TJ
2018	TSP	1A4cii	MOTOR GASOLINE (S=0.001%)	0.117259946	t/TJ
2018	TSP	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.032986111	t/TJ
2018	TSP	1A5a	FOREST WOODFUEL	0.200000000	t/TJ

2018	TSP	1A5a	HEAVY FUEL OIL (S<1%)	0.090000000	t/TJ
2018	TSP	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.009126606	t/TJ
2018	TSP	1A5a	OTHER PETROLEUM PRODUCTS	0.007000000	t/TJ

BC implied emission factors in Finnish air pollutant inventory for 2018

2018	BC	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000006066	t/TJ
2018	BC	1A1a	ANIMAL-BASED FUELS	0.000036659	t/TJ
2018	BC	1A1a	BARK	0.000032308	t/TJ
2018	BC	1A1a	CHIPS FROM ROUNDWOOD	0.000103374	t/TJ
2018	BC	1A1a	COAL (S=1.0%)	0.000011927	t/TJ
2018	BC	1A1a	CREOSOTED WOOD	0.000018200	t/TJ
2018	BC	1A1a	DEMOLITION WOOD	0.000016916	t/TJ
2018	BC	1A1a	DIESEL OIL (S=001%)	0.000755961	t/TJ
2018	BC	1A1a	FOREST RESIDUE CHIPS	0.000068853	t/TJ
2018	BC	1A1a	GASOIL (FOR NON-ROAD USE)	0.000504565	t/TJ
2018	BC	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000154913	t/TJ
2018	BC	1A1a	HEAVY FUEL OIL (S<1%)	0.002242986	t/TJ
2018	BC	1A1a	INDUSTRIAL WASTE	0.000003037	t/TJ
2018	BC	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.001239159	t/TJ
2018	BC	1A1a	MILLED PEAT	0.000034782	t/TJ
2018	BC	1A1a	MUNICIPAL WASTE - unsorted	0.000000228	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	BC	1A1a	INDUSTRY	0.000023207	t/TJ
2018	BC	1A1a	OTHER FOSSIL SOLID	0.000039381	t/TJ
2018	BC	1A1a	OTHER NON-FOSSIL LIQUID	0.000218302	t/TJ
2018	BC	1A1a	OTHER NON-FOSSIL SOLID	0.000025445	t/TJ
2018	BC	1A1a	OTHER WASTE	0.000016628	t/TJ
2018	BC	1A1a	OTHER WOOD RESIDUE	0.000057183	t/TJ
2018	BC	1A1a	PAPER	0.000005483	t/TJ
2018	BC	1A1a	PEAT PELLETS AND BRIQUETTES	0.000069375	t/TJ
2018	BC	1A1a	PLYWOOD RESIDUE	0.000003111	t/TJ
2018	BC	1A1a	RECOVERED FUEL (REF 1)	0.000012112	t/TJ
2018	BC	1A1a	RECOVERED FUEL (REF 2)	0.000021044	t/TJ
2018	BC	1A1a	RECOVERED FUEL (REF 3)	0.000000250	t/TJ
2018	BC	1A1a	RECOVERED WOOD	0.000060653	t/TJ
2018	BC	1A1a	RECYCLED AND WASTE OILS	0.000186933	t/TJ
2018	BC	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000000417	t/TJ
2018	BC	1A1a	SALT TREATED WOOD	0.000017945	t/TJ
2018	BC	1A1a	SAWDUST AND CUTTER CHIPS	0.000081199	t/TJ
2018	BC	1A1a	SOD PEAT	0.000290340	t/TJ
2018	BC	1A1a	TALL PITCH AND OIL	0.000315164	t/TJ
2018	BC	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000043535	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	BC	1A1a	WOOD FUELS)	0.000097862	t/TJ
2018	BC	1A1a	WOOD RESIDUE CHIPS	0.000066246	t/TJ
2018	BC	1A1b	COKE (S=1.0%)	0.000150000	t/TJ
2018	BC	1A1b	GASOIL (FOR NON-ROAD USE)	0.000029048	t/TJ
2018	BC	1A1b	HEAVY FUEL OIL (S<1%)	0.000523017	t/TJ
2018	BC	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.000028473	t/TJ
2018	BC	1A1b	OTHER FOSSIL LIQUID	0.000239126	t/TJ
2018	BC	1A1b	OTHER HEAVY DISTILLATES	0.000230339	t/TJ
2018	BC	1A1b	OTHER MEDIUM DISTILLATES	0.000025418	t/TJ
2018	BC	1A1b	PETROLEUM COKE	0.000025441	t/TJ
2018	BC	1A2a	COKE (S=1.0%)	0.000029959	t/TJ
2018	BC	1A2a	DIESEL OIL (S=001%)	0.000281400	t/TJ
2018	BC	1A2a	GASOIL (FOR NON-ROAD USE)	0.000281400	t/TJ
2018	BC	1A2a	HEAVY FUEL OIL (S<1%)	0.002155157	t/TJ
2018	BC	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.000298510	t/TJ
2018	BC	1A2a	LIQUID GAS	0.000000018	t/TJ
2018	BC	1A2a	OTHER FOSSIL SOLID	0.000064635	t/TJ

2018	BC	1A2a	WOOD RESIDUE CHIPS	0.000231471	t/TJ
2018	BC	1A2b	COAL (S=1.0%)	0.000162407	t/TJ
2018	BC	1A2b	COKE (S=1.0%)	0.000018447	t/TJ
2018	BC	1A2b	GASOIL (FOR NON-ROAD USE)	0.000034607	t/TJ
2018	BC	1A2b	HEAVY FUEL OIL (S<1%)	0.002285408	t/TJ
2018	BC	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.000041718	t/TJ
2018	BC	1A2b	OTHER FOSSIL SOLID	0.000020292	t/TJ
2018	BC	1A2b	RECYCLED AND WASTE OILS	0.001730331	t/TJ
2018	BC	1A2c	COAL (S=1.0%)	0.000007720	t/TJ
2018	BC	1A2c	DIESEL OIL (S=0.01%)	0.000281400	t/TJ
2018	BC	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.001203405	t/TJ
2018	BC	1A2c	HEAVY FUEL OIL (S<1%)	0.011113706	t/TJ
2018	BC	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.000665539	t/TJ
2018	BC	1A2c	OTHER FOSSIL LIQUID	0.000084954	t/TJ
2018	BC	1A2c	OTHER MEDIUM DISTILLATES	0.000009102	t/TJ
2018	BC	1A2c	SAWDUST AND CUTTER CHIPS	0.000016212	t/TJ
2018	BC	1A2c	TALL PITCH AND OIL	0.000721889	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	BC	1A2c	WOOD FUELS)	0.000005664	t/TJ
2018	BC	1A2c	WOOD RESIDUE CHIPS	0.000016212	t/TJ
2018	BC	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000013223	t/TJ
2018	BC	1A2d	ANIMAL-BASED FUELS	0.000304873	t/TJ
2018	BC	1A2d	BARK	0.000052326	t/TJ
2018	BC	1A2d	CHIPS FROM ROUNDWOOD	0.000106386	t/TJ
2018	BC	1A2d	COAL (S=1.0%)	0.000005816	t/TJ
2018	BC	1A2d	CREOSOTED WOOD	0.000011586	t/TJ
2018	BC	1A2d	DEMOLITION WOOD	0.000011586	t/TJ
2018	BC	1A2d	FOREST RESIDUE CHIPS	0.000021975	t/TJ
2018	BC	1A2d	GASOIL (FOR NON-ROAD USE)	0.004490173	t/TJ
2018	BC	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.005204405	t/TJ
2018	BC	1A2d	HEAVY FUEL OIL (S<1%)	0.000790825	t/TJ
2018	BC	1A2d	INDUSTRIAL BIOGAS	0.002393744	t/TJ
2018	BC	1A2d	INDUSTRIAL WASTE	0.001260018	t/TJ
2018	BC	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.000437952	t/TJ
2018	BC	1A2d	LIQUID GAS	0.000000009	t/TJ
2018	BC	1A2d	METHANOL	0.000143499	t/TJ
2018	BC	1A2d	MILLED PEAT	0.000040793	t/TJ
2018	BC	1A2d	NATURAL GAS	0.000064172	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	BC	1A2d	INDUSTRY	0.000033883	t/TJ
2018	BC	1A2d	OTHER NON-FOSSIL LIQUID	0.000642529	t/TJ
2018	BC	1A2d	OTHER NON-FOSSIL SOLID	0.000011669	t/TJ
2018	BC	1A2d	OTHER WASTE	0.000073603	t/TJ
2018	BC	1A2d	OTHER WOOD RESIDUE	0.000007731	t/TJ
2018	BC	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000011894	t/TJ
2018	BC	1A2d	PAPER	0.000006272	t/TJ
2018	BC	1A2d	PLASTIC WASTE	0.002270576	t/TJ
2018	BC	1A2d	RECOVERED FUEL (REF 1)	0.000000817	t/TJ
2018	BC	1A2d	RECOVERED FUEL (REF 2)	0.000011753	t/TJ
2018	BC	1A2d	RECOVERED WOOD	0.000009412	t/TJ
2018	BC	1A2d	RECYCLED AND WASTE OILS	0.000236843	t/TJ
2018	BC	1A2d	SALT TREATED WOOD	0.000011586	t/TJ
2018	BC	1A2d	SAWDUST AND CUTTER CHIPS	0.000164051	t/TJ
2018	BC	1A2d	SOD PEAT	0.000009708	t/TJ
2018	BC	1A2d	TALL PITCH AND OIL	0.000455094	t/TJ
2018	BC	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000037313	t/TJ
2018	BC	1A2d	WOOD RESIDUE CHIPS	0.000017715	t/TJ

2018	BC	1A2e	ANIMAL-BASED FUELS	0.002083300	t/TJ
2018	BC	1A2e	CHIPS FROM ROUNDWOOD	0.000003686	t/TJ
2018	BC	1A2e	COAL (S=1.0%)	0.000020763	t/TJ
2018	BC	1A2e	COKE (S=1.0%)	0.000150000	t/TJ
2018	BC	1A2e	DIESEL OIL (S=001%)	0.000281400	t/TJ
2018	BC	1A2e	GASOIL (FOR NON-ROAD USE)	0.000073418	t/TJ
2018	BC	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.012600000	t/TJ
2018	BC	1A2e	HEAVY FUEL OIL (S<1%)	0.008825219	t/TJ
2018	BC	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.000272801	t/TJ
2018	BC	1A2e	MILLED PEAT	0.000019318	t/TJ
2018	BC	1A2e	OTHER NON-FOSSIL SOLID	0.000019105	t/TJ
2018	BC	1A2e	PEAT PELLETS AND BRIQUETTES	0.000019105	t/TJ
2018	BC	1A2e	RECOVERED WOOD	0.000006350	t/TJ
2018	BC	1A2e	SAWDUST AND CUTTER CHIPS	0.000059649	t/TJ
2018	BC	1A2e	TALL PITCH AND OIL	0.000398058	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	BC	1A2e	WOOD FUELS)	0.000330000	t/TJ
2018	BC	1A2e	WOOD RESIDUE CHIPS	0.000140250	t/TJ
2018	BC	1A2f	CHIPS FROM ROUNDWOOD	0.000389718	t/TJ
2018	BC	1A2f	COAL (S=1.0%)	0.000094565	t/TJ
2018	BC	1A2f	COKE (S=1.0%)	0.000109649	t/TJ
2018	BC	1A2f	DIESEL OIL (S=001%)	0.000209201	t/TJ
2018	BC	1A2f	FOREST RESIDUE CHIPS	0.000224012	t/TJ
2018	BC	1A2f	GASOIL (FOR NON-ROAD USE)	0.000054883	t/TJ
2018	BC	1A2f	HEAVY FUEL OIL (S<1%)	0.002507872	t/TJ
2018	BC	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.001004767	t/TJ
2018	BC	1A2f	OTHER FOSSIL LIQUID	0.000382468	t/TJ
2018	BC	1A2f	OTHER FOSSIL SOLID	0.000013258	t/TJ
2018	BC	1A2f	OTHER HEAVY DISTILLATES	0.000582292	t/TJ
2018	BC	1A2f	PETROLEUM COKE	0.000120450	t/TJ
2018	BC	1A2f	RECOVERED FUEL (REF 1)	0.000006420	t/TJ
2018	BC	1A2f	RECOVERED FUEL (REF 2)	0.000079891	t/TJ
2018	BC	1A2f	RECYCLED AND WASTE OILS	0.000696397	t/TJ
2018	BC	1A2f	RUBBER WASTE	0.002906567	t/TJ
2018	BC	1A2f	SAWDUST AND CUTTER CHIPS	0.000104683	t/TJ
2018	BC	1A2f	TALL PITCH AND OIL	0.000574836	t/TJ
2018	BC	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.013708595	t/TJ
2018	BC	1A2gvii	LIQUID GAS	0.000206331	t/TJ
2018	BC	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.000195659	t/TJ
2018	BC	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000006929	t/TJ
2018	BC	1A2gviii	BARK	0.000213980	t/TJ
2018	BC	1A2gviii	CHIPS FROM ROUNDWOOD	0.000404315	t/TJ
2018	BC	1A2gviii	COAL (S=1.0%)	0.000004416	t/TJ
2018	BC	1A2gviii	DIESEL OIL (S=001%)	0.000279014	t/TJ
2018	BC	1A2gviii	FOREST RESIDUE CHIPS	0.000208207	t/TJ
2018	BC	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.000786070	t/TJ
2018	BC	1A2gviii	HEAVY FUEL OIL (S<1%)	0.007776226	t/TJ
2018	BC	1A2gviii	INDUSTRIAL WASTE	0.000005170	t/TJ
2018	BC	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.000700993	t/TJ
2018	BC	1A2gviii	MILLED PEAT	0.000008751	t/TJ
2018	BC	1A2gviii	MUNICIPAL WASTE - unsorted	0.000000593	t/TJ
2018	BC	1A2gviii	OTHER HEAVY DISTILLATES	0.001195406	t/TJ
2018	BC	1A2gviii	OTHER NON-FOSSIL LIQUID	0.000279739	t/TJ
2018	BC	1A2gviii	OTHER NON-FOSSIL SOLID	0.000028401	t/TJ
2018	BC	1A2gviii	OTHER WOOD RESIDUE	0.000116522	t/TJ
2018	BC	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.000323583	t/TJ
2018	BC	1A2gviii	RECOVERED FUEL (REF 2)	0.000001292	t/TJ

2018	BC	1A2gviii	RECOVERED WOOD	0.000003302	t/TJ
2018	BC	1A2gviii	SAWDUST AND CUTTER CHIPS	0.000276321	t/TJ
2018	BC	1A2gviii	SOD PEAT	0.000158132	t/TJ
2018	BC	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	0.000279910	t/TJ
2018	BC	1A2gviii	WOOD RESIDUE CHIPS	0.000385849	t/TJ
2018	BC	1A2gviii	WOOD RESIDUE CHIPS	0.000152981	t/TJ
2018	BC	1A3ai(i)	KEROSENE (JET FUEL)	0.001155892	t/TJ
2018	BC	1A3aii(i)	AVIATION GASOLINE	0.004000000	t/TJ
2018	BC	1A3aii(i)	KEROSENE (JET FUEL)	0.001001341	t/TJ
2018	BC	1A3bi	DIESEL OIL (S=0.001%)	0.004328627	t/TJ
2018	BC	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000074541	t/TJ
2018	BC	1A3bii	DIESEL OIL (S=0.001%)	0.011313039	t/TJ
2018	BC	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000034068	t/TJ
2018	BC	1A3biii	DIESEL OIL (S=0.001%)	0.001767898	t/TJ
2018	BC	1A3biv	DIESEL OIL (S=0.001%)	0.010363159	t/TJ
2018	BC	1A3biv	MOTOR GASOLINE (S=0.001%)	0.001326944	t/TJ
2018	BC	1A3c	GASOIL (FOR NON-ROAD USE)	0.019394215	t/TJ
2018	BC	1A3dii	DIESEL OIL (S=0.001%)	0.048892071	t/TJ
2018	BC	1A3dii	GASOIL (FOR NON-ROAD USE)	0.009257931	t/TJ
2018	BC	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.003707016	t/TJ
2018	BC	1A3dii	MOTOR GASOLINE (S=0.001%)	0.006096196	t/TJ
2018	BC	1A4ai	FOREST WOODFUEL	0.000508700	t/TJ
2018	BC	1A4ai	HEAVY FUEL OIL (S<1%)	0.015120000	t/TJ
2018	BC	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.000281653	t/TJ
2018	BC	1A4ai	SOD PEAT	0.000595610	t/TJ
2018	BC	1A4aii	GASOIL (FOR NON-ROAD USE)	0.007377234	t/TJ
2018	BC	1A4aii	MOTOR GASOLINE (S=0.001%)	0.002948102	t/TJ
2018	BC	1A4bi	COAL (S=1.0%)	0.003520000	t/TJ
2018	BC	1A4bi	FOREST WOODFUEL	0.049630318	t/TJ
2018	BC	1A4bi	HEAVY FUEL OIL (S<1%)	0.006210000	t/TJ
2018	BC	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.001641500	t/TJ
2018	BC	1A4bi	PARAFFIN	0.003528000	t/TJ
2018	BC	1A4bi	SOD PEAT	0.010560000	t/TJ
2018	BC	1A4bii	GASOIL (FOR NON-ROAD USE)	0.027839758	t/TJ
2018	BC	1A4bii	MOTOR GASOLINE (S=0.001%)	0.002585489	t/TJ
2018	BC	1A4ci	ANIMAL-BASED FUELS	0.007200000	t/TJ
2018	BC	1A4ci	CHIPS FROM ROUNDWOOD	0.001132168	t/TJ
2018	BC	1A4ci	COAL (S=1.0%)	0.000075987	t/TJ
2018	BC	1A4ci	FOREST WOODFUEL	0.000500000	t/TJ
2018	BC	1A4ci	HEAVY FUEL OIL (S<1%)	0.015120000	t/TJ
2018	BC	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.000281400	t/TJ
2018	BC	1A4ci	OTHER NON-FOSSIL SOLID	0.000115500	t/TJ
2018	BC	1A4ci	RECOVERED WOOD	0.001561571	t/TJ
2018	BC	1A4ci	SOD PEAT	0.000659619	t/TJ
2018	BC	1A4ci	WOOD RESIDUE CHIPS	0.000115500	t/TJ
2018	BC	1A4cii	GASOIL (FOR NON-ROAD USE)	0.010218430	t/TJ
2018	BC	1A4cii	MOTOR GASOLINE (S=0.001%)	0.005862997	t/TJ
2018	BC	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.010225694	t/TJ
2018	BC	1A5a	FOREST WOODFUEL	0.002800000	t/TJ
2018	BC	1A5a	HEAVY FUEL OIL (S<1%)	0.015120000	t/TJ
2018	BC	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000953514	t/TJ
2018	BC	1A5a	OTHER PETROLEUM PRODUCTS	0.000047040	t/TJ

CO implied emission factors in Finnish air pollutant inventory for 2018

2018	CO	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.234433882	t/TJ
2018	CO	1A1a	ANIMAL-BASED FUELS	0.022541316	t/TJ
2018	CO	1A1a	BARK	0.073564226	t/TJ
2018	CO	1A1a	BIOGAS FROM WASTEWATER TREATMENT	0.020000006	t/TJ
2018	CO	1A1a	BLAST FURNACE GAS	0.019999988	t/TJ
2018	CO	1A1a	CHIPS FROM ROUNDWOOD	0.116030931	t/TJ
2018	CO	1A1a	COAL (S=1.0%)	0.015223854	t/TJ
2018	CO	1A1a	COKE OVEN GAS	0.020000000	t/TJ
2018	CO	1A1a	CREOSOTED WOOD	0.144898706	t/TJ
2018	CO	1A1a	DEINKING WASTE	0.025022453	t/TJ
2018	CO	1A1a	DEMOLITION WOOD	0.036735265	t/TJ
2018	CO	1A1a	DIESEL OIL (S=0.01%)	0.043607375	t/TJ
2018	CO	1A1a	FOREST RESIDUE CHIPS	0.103949628	t/TJ
2018	CO	1A1a	GASOIL (FOR NON-ROAD USE)	0.043439218	t/TJ
2018	CO	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.005679604	t/TJ
2018	CO	1A1a	HEAVY FUEL OIL (S<1%)	0.024052113	t/TJ
2018	CO	1A1a	HYDROGEN	0.020000021	t/TJ
2018	CO	1A1a	INDUSTRIAL BIOGAS	0.340976259	t/TJ
2018	CO	1A1a	INDUSTRIAL WASTE	0.010118864	t/TJ
2018	CO	1A1a	LANDFILL GAS	0.022439498	t/TJ
2018	CO	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.029502841	t/TJ
2018	CO	1A1a	LIQUID GAS	0.020554874	t/TJ
2018	CO	1A1a	MILLED PEAT	0.042013278	t/TJ
2018	CO	1A1a	MUNICIPAL WASTE - unsorted	0.004808057	t/TJ
2018	CO	1A1a	NATURAL GAS	0.011787481	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	CO	1A1a	INDUSTRY	0.126619159	t/TJ
2018	CO	1A1a	OTHER FOSSIL GAS	0.254961034	t/TJ
2018	CO	1A1a	OTHER FOSSIL SOLID	0.007461693	t/TJ
2018	CO	1A1a	OTHER NON-FOSSIL GAS	0.020378141	t/TJ
2018	CO	1A1a	OTHER NON-FOSSIL LIQUID	0.236604502	t/TJ
2018	CO	1A1a	OTHER NON-FOSSIL SOLID	0.154066578	t/TJ
2018	CO	1A1a	OTHER WASTE	0.019228315	t/TJ
2018	CO	1A1a	OTHER WOOD RESIDUE	0.227543324	t/TJ
2018	CO	1A1a	OXYGEN STEEL FURNACE GAS	0.030000045	t/TJ
2018	CO	1A1a	PAPER	0.423399454	t/TJ
2018	CO	1A1a	PEAT PELLETS AND BRIQUETTES	0.117919090	t/TJ
2018	CO	1A1a	PLYWOOD RESIDUE	0.130317077	t/TJ
2018	CO	1A1a	RECOVERED FUEL (REF 1)	0.008872877	t/TJ
2018	CO	1A1a	RECOVERED FUEL (REF 2)	0.010407448	t/TJ
2018	CO	1A1a	RECOVERED FUEL (REF 3)	0.002569170	t/TJ
2018	CO	1A1a	RECOVERED WOOD	0.038053978	t/TJ
2018	CO	1A1a	RECYCLED AND WASTE OILS	0.032818860	t/TJ
2018	CO	1A1a	REFINERY GAS	0.009659624	t/TJ
2018	CO	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000538188	t/TJ
2018	CO	1A1a	SALT TREATED WOOD	0.065195352	t/TJ
2018	CO	1A1a	SAWDUST AND CUTTER CHIPS	0.113985544	t/TJ
2018	CO	1A1a	SOD PEAT	0.140377688	t/TJ
2018	CO	1A1a	TALL PITCH AND OIL	0.200456265	t/TJ
2018	CO	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.201799749	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	CO	1A1a	WOOD FUELS)	0.279882283	t/TJ
2018	CO	1A1a	WOOD RESIDUE CHIPS	0.215154633	t/TJ
2018	CO	1A1b	COKE (S=1.0%)	1.997596222	t/TJ
2018	CO	1A1b	GASOIL (FOR NON-ROAD USE)	0.020000004	t/TJ

2018	CO	1A1b	HEAVY FUEL OIL (S<1%)	0.020714269	t/TJ
2018	CO	1A1b	INDUSTRIAL BIOGAS	0.020000000	t/TJ
2018	CO	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.020000000	t/TJ
2018	CO	1A1b	LIQUID GAS	0.055384620	t/TJ
2018	CO	1A1b	NATURAL GAS	0.020337224	t/TJ
2018	CO	1A1b	OTHER FOSSIL GAS	0.020000009	t/TJ
2018	CO	1A1b	OTHER FOSSIL LIQUID	0.020000000	t/TJ
2018	CO	1A1b	OTHER HEAVY DISTILLATES	0.019999998	t/TJ
2018	CO	1A1b	OTHER MEDIUM DISTILLATES	0.020000000	t/TJ
2018	CO	1A1b	PETROLEUM COKE	0.030000000	t/TJ
2018	CO	1A1b	REFINERY GAS	0.026317800	t/TJ
2018	CO	1A2a	BLAST FURNACE GAS	0.020000007	t/TJ
2018	CO	1A2a	COKE (S=1.0%)	0.671605163	t/TJ
2018	CO	1A2a	COKE OVEN GAS	0.020000006	t/TJ
2018	CO	1A2a	DIESEL OIL (S=001%)	0.020000000	t/TJ
2018	CO	1A2a	GASOIL (FOR NON-ROAD USE)	0.020000000	t/TJ
2018	CO	1A2a	HEAVY FUEL OIL (S<1%)	0.020000000	t/TJ
2018	CO	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.017693046	t/TJ
2018	CO	1A2a	LIQUID GAS	0.017798244	t/TJ
2018	CO	1A2a	NATURAL GAS	0.019274435	t/TJ
2018	CO	1A2a	OTHER FOSSIL GAS	0.020000000	t/TJ
2018	CO	1A2a	OTHER FOSSIL SOLID	1.500000000	t/TJ
2018	CO	1A2a	OXYGEN STEEL FURNACE GAS	0.020000017	t/TJ
2018	CO	1A2a	WOOD RESIDUE CHIPS	0.026487468	t/TJ
2018	CO	1A2b	COAL (S=1.0%)	0.029820821	t/TJ
2018	CO	1A2b	COKE (S=1.0%)	0.020000005	t/TJ
2018	CO	1A2b	GASOIL (FOR NON-ROAD USE)	0.020000000	t/TJ
2018	CO	1A2b	HEAVY FUEL OIL (S<1%)	0.019999998	t/TJ
2018	CO	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.020204419	t/TJ
2018	CO	1A2b	LIQUID GAS	0.187914040	t/TJ
2018	CO	1A2b	NATURAL GAS	0.020000000	t/TJ
2018	CO	1A2b	OTHER FOSSIL SOLID	0.020000012	t/TJ
2018	CO	1A2b	RECYCLED AND WASTE OILS	0.019999997	t/TJ
2018	CO	1A2c	COAL (S=1.0%)	0.029999964	t/TJ
2018	CO	1A2c	DIESEL OIL (S=001%)	2.369090909	t/TJ
2018	CO	1A2c	GASIFIED WASTE	0.000450627	t/TJ
2018	CO	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.014383742	t/TJ
2018	CO	1A2c	HEAVY FUEL OIL (S<1%)	0.019907604	t/TJ
2018	CO	1A2c	HYDROGEN	0.020000000	t/TJ
2018	CO	1A2c	INDUSTRIAL BIOGAS	0.020000000	t/TJ
2018	CO	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.019670849	t/TJ
2018	CO	1A2c	LIQUID GAS	0.019851164	t/TJ
2018	CO	1A2c	NATURAL GAS	0.008095710	t/TJ
2018	CO	1A2c	OTHER FOSSIL GAS	0.020000000	t/TJ
2018	CO	1A2c	OTHER FOSSIL LIQUID	0.020000000	t/TJ
2018	CO	1A2c	OTHER MEDIUM DISTILLATES	0.020000000	t/TJ
2018	CO	1A2c	OTHER NON-FOSSIL GAS	0.020000000	t/TJ
2018	CO	1A2c	PETROLEUM COKE	0.020000000	t/TJ
2018	CO	1A2c	REFINERY GAS	0.020000017	t/TJ
2018	CO	1A2c	SAWDUST AND CUTTER CHIPS	0.499998758	t/TJ
2018	CO	1A2c	TALL PITCH AND OIL	0.020000000	t/TJ
2018	CO	1A2c	WOOD PELLETS AND BRIQUETTES (REFINED		
2018	CO	1A2c	WOOD FUELS)	0.030515821	t/TJ
2018	CO	1A2c	WOOD RESIDUE CHIPS	0.500000000	t/TJ
2018	CO	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.347666257	t/TJ
2018	CO	1A2d	ANIMAL-BASED FUELS	0.069160227	t/TJ
2018	CO	1A2d	AROMATIC GAS	0.013252629	t/TJ

2018	CO	1A2d	BARK	0.089569177	t/TJ
2018	CO	1A2d	BIOGAS FROM WASTEWATER TREATMENT	0.002437103	t/TJ
2018	CO	1A2d	BLACK LIQUOR	0.099771141	t/TJ
2018	CO	1A2d	CHIPS FROM ROUNDWOOD	0.207897105	t/TJ
2018	CO	1A2d	COAL (S=1.0%)	0.004658464	t/TJ
2018	CO	1A2d	CREOSOTED WOOD	0.009246475	t/TJ
2018	CO	1A2d	DEMOLITION WOOD	0.009246471	t/TJ
2018	CO	1A2d	FOREST RESIDUE CHIPS	0.090425049	t/TJ
2018	CO	1A2d	GASOIL (FOR NON-ROAD USE)	0.086856632	t/TJ
2018	CO	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.030374204	t/TJ
2018	CO	1A2d	HEAVY FUEL OIL (S<1%)	0.054002024	t/TJ
2018	CO	1A2d	HYDROGEN	0.019999974	t/TJ
2018	CO	1A2d	INDUSTRIAL BIOGAS	0.021653925	t/TJ
2018	CO	1A2d	INDUSTRIAL WASTE	0.083448843	t/TJ
2018	CO	1A2d	LANDFILL GAS	0.044002698	t/TJ
2018	CO	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.024906928	t/TJ
2018	CO	1A2d	LIQUID BIOFUELS	0.011074511	t/TJ
2018	CO	1A2d	LIQUID GAS	0.020000393	t/TJ
2018	CO	1A2d	METHANOL	0.050953627	t/TJ
2018	CO	1A2d	MILLED PEAT	0.054534455	t/TJ
2018	CO	1A2d	NATURAL GAS	0.037809385	t/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	CO	1A2d	INDUSTRY	0.122652524	t/TJ
2018	CO	1A2d	OTHER NON-FOSSIL LIQUID	0.133635981	t/TJ
2018	CO	1A2d	OTHER NON-FOSSIL SOLID	0.010840907	t/TJ
2018	CO	1A2d	OTHER WASTE	0.031779329	t/TJ
2018	CO	1A2d	OTHER WOOD RESIDUE	0.496614635	t/TJ
2018	CO	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.011800588	t/TJ
2018	CO	1A2d	PAPER	0.286442927	t/TJ
2018	CO	1A2d	PLASTIC WASTE	0.035538651	t/TJ
2018	CO	1A2d	RECOVERED FUEL (REF 1)	0.250000000	t/TJ
2018	CO	1A2d	RECOVERED FUEL (REF 2)	0.025890296	t/TJ
2018	CO	1A2d	RECOVERED WOOD	0.023734913	t/TJ
2018	CO	1A2d	RECYCLED AND WASTE OILS	0.009246461	t/TJ
2018	CO	1A2d	SALT TREATED WOOD	0.009246477	t/TJ
2018	CO	1A2d	SAWDUST AND CUTTER CHIPS	0.088018679	t/TJ
2018	CO	1A2d	SOD PEAT	0.009999971	t/TJ
2018	CO	1A2d	SULPHITE LIQUOR	0.150000000	t/TJ
2018	CO	1A2d	TALL PITCH AND OIL	0.030743275	t/TJ
2018	CO	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.287665537	t/TJ
2018	CO	1A2d	WOOD RESIDUE CHIPS	0.262115131	t/TJ
2018	CO	1A2e	ANIMAL-BASED FUELS	0.125116511	t/TJ
2018	CO	1A2e	BIOGAS FROM WASTEWATER TREATMENT	0.020000000	t/TJ
2018	CO	1A2e	CHIPS FROM ROUNDWOOD	0.499998239	t/TJ
2018	CO	1A2e	COAL (S=1.0%)	0.030000031	t/TJ
2018	CO	1A2e	COKE (S=1.0%)	0.050000030	t/TJ
2018	CO	1A2e	DIESEL OIL (S=0.01%)	0.020000000	t/TJ
2018	CO	1A2e	GASOIL (FOR NON-ROAD USE)	0.090846682	t/TJ
2018	CO	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.020000000	t/TJ
2018	CO	1A2e	HEAVY FUEL OIL (S<1%)	0.020000003	t/TJ
2018	CO	1A2e	INDUSTRIAL BIOGAS	0.020000005	t/TJ
2018	CO	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.020819197	t/TJ
2018	CO	1A2e	LIQUID GAS	0.011923065	t/TJ
2018	CO	1A2e	MILLED PEAT	0.090752623	t/TJ
2018	CO	1A2e	NATURAL GAS	0.019999999	t/TJ
2018	CO	1A2e	OTHER NON-FOSSIL SOLID	0.150000000	t/TJ
2018	CO	1A2e	PEAT PELLETS AND BRIQUETTES	0.100000000	t/TJ

2018	CO	1A2e	RECOVERED WOOD	0.150000000	t/TJ
2018	CO	1A2e	SAWDUST AND CUTTER CHIPS	0.232819146	t/TJ
2018	CO	1A2e	TALL PITCH AND OIL	0.020000000	t/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	CO	1A2e	WOOD FUELS)	0.400000000	t/TJ
2018	CO	1A2e	WOOD RESIDUE CHIPS	0.500000000	t/TJ
2018	CO	1A2f	CHIPS FROM ROUNDWOOD	0.288177229	t/TJ
2018	CO	1A2f	COAL (S=1.0%)	0.798558654	t/TJ
2018	CO	1A2f	COKE (S=1.0%)	0.029748770	t/TJ
2018	CO	1A2f	COKE OVEN GAS	0.020000000	t/TJ
2018	CO	1A2f	DIESEL OIL (S=001%)	0.019999996	t/TJ
2018	CO	1A2f	FOREST RESIDUE CHIPS	0.400000000	t/TJ
2018	CO	1A2f	GASOIL (FOR NON-ROAD USE)	0.548464930	t/TJ
2018	CO	1A2f	HEAVY FUEL OIL (S<1%)	1.174991549	t/TJ
2018	CO	1A2f	INDUSTRIAL BIOGAS	0.020000010	t/TJ
2018	CO	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.031395901	t/TJ
2018	CO	1A2f	LIQUID GAS	0.018202924	t/TJ
2018	CO	1A2f	NATURAL GAS	0.025279080	t/TJ
2018	CO	1A2f	OTHER FOSSIL LIQUID	0.020000000	t/TJ
2018	CO	1A2f	OTHER FOSSIL SOLID	0.020000000	t/TJ
2018	CO	1A2f	OTHER HEAVY DISTILLATES	0.020000000	t/TJ
2018	CO	1A2f	OTHER NON-FOSSIL GAS	0.020000000	t/TJ
2018	CO	1A2f	OXYGEN STEEL FURNACE GAS	0.019999988	t/TJ
2018	CO	1A2f	PETROLEUM COKE	0.915457739	t/TJ
2018	CO	1A2f	RECOVERED FUEL (REF 1)	0.250000000	t/TJ
2018	CO	1A2f	RECOVERED FUEL (REF 2)	0.468765639	t/TJ
2018	CO	1A2f	RECYCLED AND WASTE OILS	0.478901261	t/TJ
2018	CO	1A2f	RUBBER WASTE	1.500002443	t/TJ
2018	CO	1A2f	SAWDUST AND CUTTER CHIPS	0.470585626	t/TJ
2018	CO	1A2f	TALL PITCH AND OIL	0.020000045	t/TJ
2018	CO	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.355436938	t/TJ
2018	CO	1A2gvii	LIQUID GAS	0.950949050	t/TJ
2018	CO	1A2gvii	MOTOR GASOLINE (S=0.001%)	22.058568093	t/TJ
2018	CO	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.268410379	t/TJ
2018	CO	1A2gviii	BARK	0.358006894	t/TJ
2018	CO	1A2gviii	BIOGAS FROM WASTEWATER TREATMENT	0.239846033	t/TJ
2018	CO	1A2gviii	CHIPS FROM ROUNDWOOD	0.446749513	t/TJ
2018	CO	1A2gviii	COAL (S=1.0%)	0.100000000	t/TJ
2018	CO	1A2gviii	DIESEL OIL (S=001%)	0.536268083	t/TJ
2018	CO	1A2gviii	FOREST RESIDUE CHIPS	0.431305424	t/TJ
2018	CO	1A2gviii	GASIFIED WASTE	0.043447695	t/TJ
2018	CO	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.039227829	t/TJ
2018	CO	1A2gviii	HEAVY FUEL OIL (S<1%)	0.035895151	t/TJ
2018	CO	1A2gviii	INDUSTRIAL BIOGAS	0.020000000	t/TJ
2018	CO	1A2gviii	INDUSTRIAL WASTE	0.150000271	t/TJ
2018	CO	1A2gviii	LANDFILL GAS	0.022305810	t/TJ
2018	CO	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.054850632	t/TJ
2018	CO	1A2gviii	LIQUID GAS	0.022286797	t/TJ
2018	CO	1A2gviii	MILLED PEAT	0.074207834	t/TJ
2018	CO	1A2gviii	MUNICIPAL WASTE - unsorted	0.004916859	t/TJ
2018	CO	1A2gviii	NATURAL GAS	0.065646307	t/TJ
2018	CO	1A2gviii	OTHER HEAVY DISTILLATES	0.020000000	t/TJ
2018	CO	1A2gviii	OTHER NON-FOSSIL GAS	0.020000000	t/TJ
2018	CO	1A2gviii	OTHER NON-FOSSIL LIQUID	0.221321278	t/TJ
2018	CO	1A2gviii	OTHER NON-FOSSIL SOLID	0.047751814	t/TJ
2018	CO	1A2gviii	OTHER WOOD RESIDUE	0.473716269	t/TJ
2018	CO	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.020382166	t/TJ

2018	CO	1A2gviii	RECOVERED FUEL (REF 2)	0.016179727	t/TJ
2018	CO	1A2gviii	RECOVERED WOOD	0.031866958	t/TJ
2018	CO	1A2gviii	SAWDUST AND CUTTER CHIPS	0.416423646	t/TJ
2018	CO	1A2gviii	SOD PEAT	0.500000041	t/TJ
2018	CO	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	0.380202116	t/TJ
2018	CO	1A2gviii	WOOD RESIDUE CHIPS	0.493373379	t/TJ
2018	CO	1A2gviii	WOOD RESIDUE CHIPS	0.478528787	t/TJ
2018	CO	1A3ai(i)	KEROSENE (JET FUEL)	0.327766841	t/TJ
2018	CO	1A3aii(i)	AVIATION GASOLINE	21.832571978	t/TJ
2018	CO	1A3aii(i)	KEROSENE (JET FUEL)	0.415829285	t/TJ
2018	CO	1A3bi	DIESEL OIL (S=0.001%)	0.025973289	t/TJ
2018	CO	1A3bi	MOTOR GASOLINE (S=0.001%)	0.461056741	t/TJ
2018	CO	1A3bi	NATURAL GAS	0.126832549	t/TJ
2018	CO	1A3bii	DIESEL OIL (S=0.001%)	0.119881502	t/TJ
2018	CO	1A3bii	MOTOR GASOLINE (S=0.001%)	3.697499727	t/TJ
2018	CO	1A3bii	NATURAL GAS	0.139488685	t/TJ
2018	CO	1A3biii	DIESEL OIL (S=0.001%)	0.052584205	t/TJ
2018	CO	1A3biii	NATURAL GAS	0.038214923	t/TJ
2018	CO	1A3biv	DIESEL OIL (S=0.001%)	1.396917010	t/TJ
2018	CO	1A3biv	MOTOR GASOLINE (S=0.001%)	3.558056326	t/TJ
2018	CO	1A3c	GASOIL (FOR NON-ROAD USE)	0.210998269	t/TJ
2018	CO	1A3dii	DIESEL OIL (S=0.001%)	0.391136569	t/TJ
2018	CO	1A3dii	GASOIL (FOR NON-ROAD USE)	0.192635279	t/TJ
2018	CO	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.130487271	t/TJ
2018	CO	1A3dii	MOTOR GASOLINE (S=0.001%)	12.933398389	t/TJ
2018	CO	1A3ei	NATURAL GAS	0.020000026	t/TJ
2018	CO	1A4ai	FOREST WOODFUEL	0.223778000	t/TJ
2018	CO	1A4ai	HEAVY FUEL OIL (S<1%)	0.020000000	t/TJ
2018	CO	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.020104623	t/TJ
2018	CO	1A4ai	NATURAL GAS	0.048877440	t/TJ
2018	CO	1A4ai	SOD PEAT	0.180487805	t/TJ
2018	CO	1A4aii	GASOIL (FOR NON-ROAD USE)	0.324434422	t/TJ
2018	CO	1A4aii	MOTOR GASOLINE (S=0.001%)	19.998152140	t/TJ
2018	CO	1A4bi	COAL (S=1.0%)	0.100000000	t/TJ
2018	CO	1A4bi	FOREST WOODFUEL	3.020800490	t/TJ
2018	CO	1A4bi	HEAVY FUEL OIL (S<1%)	0.020000000	t/TJ
2018	CO	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.020000000	t/TJ
2018	CO	1A4bi	LIQUID GAS	0.050000000	t/TJ
2018	CO	1A4bi	NATURAL GAS	0.050000000	t/TJ
2018	CO	1A4bi	PARAFFIN	0.020000000	t/TJ
2018	CO	1A4bi	SOD PEAT	0.200000000	t/TJ
2018	CO	1A4bii	GASOIL (FOR NON-ROAD USE)	0.434332735	t/TJ
2018	CO	1A4bii	MOTOR GASOLINE (S=0.001%)	20.466334555	t/TJ
2018	CO	1A4ci	ANIMAL-BASED FUELS	0.150000000	t/TJ
2018	CO	1A4ci	CHIPS FROM ROUNDWOOD	0.500000000	t/TJ
2018	CO	1A4ci	COAL (S=1.0%)	0.050000000	t/TJ
2018	CO	1A4ci	FOREST WOODFUEL	0.233000000	t/TJ
2018	CO	1A4ci	HEAVY FUEL OIL (S<1%)	0.020000000	t/TJ
2018	CO	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.020000000	t/TJ
2018	CO	1A4ci	LIQUID GAS	0.050000000	t/TJ
2018	CO	1A4ci	NATURAL GAS	0.050000000	t/TJ
2018	CO	1A4ci	OTHER NON-FOSSIL SOLID	0.150000000	t/TJ
2018	CO	1A4ci	RECOVERED WOOD	0.150000000	t/TJ
2018	CO	1A4ci	SOD PEAT	0.200346538	t/TJ
2018	CO	1A4ci	WOOD RESIDUE CHIPS	0.500000000	t/TJ
2018	CO	1A4cii	GASOIL (FOR NON-ROAD USE)	0.281917979	t/TJ

2018	CO	1A4cii	MOTOR GASOLINE (S=0.001%)	17.287169199	t/TJ
2018	CO	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.197916667	t/TJ
2018	CO	1A5a	FOREST WOODFUEL	0.500000000	t/TJ
2018	CO	1A5a	HEAVY FUEL OIL (S<1%)	0.020000000	t/TJ
2018	CO	1A5a	LANDFILL GAS	0.050000000	t/TJ
2018	CO	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.036801317	t/TJ
2018	CO	1A5a	LIQUID GAS	0.050000000	t/TJ
2018	CO	1A5a	NATURAL GAS	0.050000000	t/TJ
2018	CO	1A5a	OTHER PETROLEUM PRODUCTS	0.020000000	t/TJ

Pb implied emission factors in Finnish air pollutant inventory for 2018

2018	Pb	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.002676803	kg/TJ
2018	Pb	1A1a	ANIMAL-BASED FUELS	0.001988160	kg/TJ
2018	Pb	1A1a	BARK	0.008612292	kg/TJ
2018	Pb	1A1a	CHIPS FROM ROUNDWOOD	0.007703155	kg/TJ
2018	Pb	1A1a	COAL (S=1.0%)	0.001514262	kg/TJ
2018	Pb	1A1a	CREOSOTED WOOD	0.003278993	kg/TJ
2018	Pb	1A1a	DEINKING WASTE	0.016975596	kg/TJ
2018	Pb	1A1a	DEMOLITION WOOD	0.003677470	kg/TJ
2018	Pb	1A1a	FOREST RESIDUE CHIPS	0.008621362	kg/TJ
2018	Pb	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000650603	kg/TJ
2018	Pb	1A1a	HEAVY FUEL OIL (S<1%)	0.009896603	kg/TJ
2018	Pb	1A1a	INDUSTRIAL WASTE	0.001780748	kg/TJ
2018	Pb	1A1a	MILLED PEAT	0.007840167	kg/TJ
2018	Pb	1A1a	MUNICIPAL WASTE - unsorted	0.014530851	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Pb	1A1a	INDUSTRY	0.003323802	kg/TJ
2018	Pb	1A1a	OTHER FOSSIL SOLID	0.019496675	kg/TJ
2018	Pb	1A1a	OTHER NON-FOSSIL SOLID	0.005200293	kg/TJ
2018	Pb	1A1a	OTHER WASTE	0.000298256	kg/TJ
2018	Pb	1A1a	OTHER WOOD RESIDUE	0.018178091	kg/TJ
2018	Pb	1A1a	PAPER	0.001832879	kg/TJ
2018	Pb	1A1a	PEAT PELLETS AND BRIQUETTES	0.002737728	kg/TJ
2018	Pb	1A1a	PLYWOOD RESIDUE	0.000513657	kg/TJ
2018	Pb	1A1a	RECOVERED FUEL (REF 1)	0.044999986	kg/TJ
2018	Pb	1A1a	RECOVERED FUEL (REF 2)	0.002433709	kg/TJ
2018	Pb	1A1a	RECOVERED FUEL (REF 3)	0.001050551	kg/TJ
2018	Pb	1A1a	RECOVERED WOOD	0.002610019	kg/TJ
2018	Pb	1A1a	RECYCLED AND WASTE OILS	0.001486176	kg/TJ
2018	Pb	1A1a	REFUSE-DERIVED FUEL (RDF)	0.001046153	kg/TJ
2018	Pb	1A1a	SALT TREATED WOOD	0.003106457	kg/TJ
2018	Pb	1A1a	SAWDUST AND CUTTER CHIPS	0.007522721	kg/TJ
2018	Pb	1A1a	SOD PEAT	0.165116229	kg/TJ
2018	Pb	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.008787797	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Pb	1A1a	WOOD FUELS)	0.018357063	kg/TJ
2018	Pb	1A1a	WOOD RESIDUE CHIPS	0.017825231	kg/TJ
2018	Pb	1A1b	COKE (S=1.0%)	0.790001422	kg/TJ
2018	Pb	1A1b	HEAVY FUEL OIL (S<1%)	0.010302776	kg/TJ
2018	Pb	1A1b	OTHER FOSSIL LIQUID	0.025000000	kg/TJ
2018	Pb	1A1b	OTHER HEAVY DISTILLATES	0.024999907	kg/TJ
2018	Pb	1A1b	PETROLEUM COKE	0.790000000	kg/TJ
2018	Pb	1A2a	HEAVY FUEL OIL (S<1%)	0.024212597	kg/TJ
2018	Pb	1A2a	WOOD RESIDUE CHIPS	0.044999951	kg/TJ
2018	Pb	1A2b	HEAVY FUEL OIL (S<1%)	0.002182404	kg/TJ
2018	Pb	1A2c	COAL (S=1.0%)	0.000317777	kg/TJ
2018	Pb	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.025000000	kg/TJ
2018	Pb	1A2c	HEAVY FUEL OIL (S<1%)	0.024910440	kg/TJ
2018	Pb	1A2c	OTHER FOSSIL LIQUID	0.025000000	kg/TJ
2018	Pb	1A2c	PETROLEUM COKE	0.790000000	kg/TJ
2018	Pb	1A2c	SAWDUST AND CUTTER CHIPS	0.000900369	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Pb	1A2c	WOOD FUELS)	0.045000000	kg/TJ
2018	Pb	1A2c	WOOD RESIDUE CHIPS	0.011916628	kg/TJ
2018	Pb	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.010489412	kg/TJ
2018	Pb	1A2d	ANIMAL-BASED FUELS	0.001826543	kg/TJ

2018	Pb	1A2d	BARK	0.003327907	kg/TJ
2018	Pb	1A2d	BLACK LIQUOR	0.030928527	kg/TJ
2018	Pb	1A2d	CHIPS FROM ROUNDWOOD	0.003567435	kg/TJ
2018	Pb	1A2d	COAL (S=1.0%)	0.000324441	kg/TJ
2018	Pb	1A2d	CREOSOTED WOOD	0.002146280	kg/TJ
2018	Pb	1A2d	DEMOLITION WOOD	0.000660394	kg/TJ
2018	Pb	1A2d	FOREST RESIDUE CHIPS	0.010453864	kg/TJ
2018	Pb	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.024090444	kg/TJ
2018	Pb	1A2d	HEAVY FUEL OIL (S<1%)	0.007075575	kg/TJ
2018	Pb	1A2d	INDUSTRIAL WASTE	0.024268452	kg/TJ
2018	Pb	1A2d	MILLED PEAT	0.000484248	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Pb	1A2d	INDUSTRY	0.002266097	kg/TJ
2018	Pb	1A2d	OTHER NON-FOSSIL SOLID	0.000337910	kg/TJ
2018	Pb	1A2d	OTHER WASTE	0.002436513	kg/TJ
2018	Pb	1A2d	OTHER WOOD RESIDUE	0.044864187	kg/TJ
2018	Pb	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.016504009	kg/TJ
2018	Pb	1A2d	PAPER	0.001281632	kg/TJ
2018	Pb	1A2d	PLASTIC WASTE	0.000382787	kg/TJ
2018	Pb	1A2d	RECOVERED FUEL (REF 1)	0.007402071	kg/TJ
2018	Pb	1A2d	RECOVERED FUEL (REF 2)	0.009082174	kg/TJ
2018	Pb	1A2d	RECOVERED WOOD	0.004531577	kg/TJ
2018	Pb	1A2d	RECYCLED AND WASTE OILS	0.000757509	kg/TJ
2018	Pb	1A2d	SALT TREATED WOOD	0.000660393	kg/TJ
2018	Pb	1A2d	SAWDUST AND CUTTER CHIPS	0.014373997	kg/TJ
2018	Pb	1A2d	SOD PEAT	0.000066891	kg/TJ
2018	Pb	1A2d	SULPHITE LIQUOR	0.000190645	kg/TJ
2018	Pb	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.005952466	kg/TJ
2018	Pb	1A2d	WOOD RESIDUE CHIPS	0.025066022	kg/TJ
2018	Pb	1A2e	ANIMAL-BASED FUELS	0.044790803	kg/TJ
2018	Pb	1A2e	CHIPS FROM ROUNDWOOD	0.003399999	kg/TJ
2018	Pb	1A2e	COAL (S=1.0%)	0.003752113	kg/TJ
2018	Pb	1A2e	COKE (S=1.0%)	0.789998689	kg/TJ
2018	Pb	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.025000000	kg/TJ
2018	Pb	1A2e	HEAVY FUEL OIL (S<1%)	0.027962939	kg/TJ
2018	Pb	1A2e	MILLED PEAT	0.116235081	kg/TJ
2018	Pb	1A2e	OTHER NON-FOSSIL SOLID	0.003400001	kg/TJ
2018	Pb	1A2e	PEAT PELLETS AND BRIQUETTES	0.001000000	kg/TJ
2018	Pb	1A2e	RECOVERED WOOD	0.003194453	kg/TJ
2018	Pb	1A2e	SAWDUST AND CUTTER CHIPS	0.044999948	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Pb	1A2e	WOOD FUELS)	0.045000000	kg/TJ
2018	Pb	1A2e	WOOD RESIDUE CHIPS	0.045000015	kg/TJ
2018	Pb	1A2f	CHIPS FROM ROUNDWOOD	0.044999994	kg/TJ
2018	Pb	1A2f	COAL (S=1.0%)	0.445551373	kg/TJ
2018	Pb	1A2f	COKE (S=1.0%)	0.783683652	kg/TJ
2018	Pb	1A2f	FOREST RESIDUE CHIPS	0.045000000	kg/TJ
2018	Pb	1A2f	HEAVY FUEL OIL (S<1%)	0.005202294	kg/TJ
2018	Pb	1A2f	OTHER FOSSIL LIQUID	0.000141214	kg/TJ
2018	Pb	1A2f	OTHER FOSSIL SOLID	0.001318509	kg/TJ
2018	Pb	1A2f	OTHER HEAVY DISTILLATES	0.025000000	kg/TJ
2018	Pb	1A2f	PETROLEUM COKE	0.002572464	kg/TJ
2018	Pb	1A2f	RECOVERED FUEL (REF 1)	0.004767233	kg/TJ
2018	Pb	1A2f	RECOVERED FUEL (REF 2)	0.000531007	kg/TJ
2018	Pb	1A2f	RECYCLED AND WASTE OILS	0.000589986	kg/TJ
2018	Pb	1A2f	RUBBER WASTE	0.001167131	kg/TJ
2018	Pb	1A2f	SAWDUST AND CUTTER CHIPS	0.005290503	kg/TJ

2018	Pb	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.003400000	kg/TJ
2018	Pb	1A2gviii	BARK	0.020023496	kg/TJ
2018	Pb	1A2gviii	CHIPS FROM ROUNDWOOD	0.026647345	kg/TJ
2018	Pb	1A2gviii	COAL (S=1.0%)	0.790000340	kg/TJ
2018	Pb	1A2gviii	FOREST RESIDUE CHIPS	0.020522776	kg/TJ
2018	Pb	1A2gviii	HEAVY FUEL OIL (S<1%)	0.026105044	kg/TJ
2018	Pb	1A2gviii	INDUSTRIAL WASTE	0.001046153	kg/TJ
2018	Pb	1A2gviii	MILLED PEAT	0.001232812	kg/TJ
2018	Pb	1A2gviii	MUNICIPAL WASTE - unsorted	0.033733979	kg/TJ
2018	Pb	1A2gviii	OTHER HEAVY DISTILLATES	0.025000000	kg/TJ
2018	Pb	1A2gviii	OTHER NON-FOSSIL SOLID	0.003781479	kg/TJ
2018	Pb	1A2gviii	OTHER WOOD RESIDUE	0.020813733	kg/TJ
2018	Pb	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.010232192	kg/TJ
2018	Pb	1A2gviii	RECOVERED FUEL (REF 2)	0.001292802	kg/TJ
2018	Pb	1A2gviii	RECOVERED WOOD	0.001806548	kg/TJ
2018	Pb	1A2gviii	SAWDUST AND CUTTER CHIPS	0.025598622	kg/TJ
2018	Pb	1A2gviii	SOD PEAT	0.075238438	kg/TJ
2018	Pb	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.019249351	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Pb	1A2gviii	WOOD FUELS)	0.042214062	kg/TJ
2018	Pb	1A2gviii	WOOD RESIDUE CHIPS	0.031426815	kg/TJ
2018	Pb	1A3aii(i)	AVIATION GASOLINE	13.443935927	kg/TJ
2018	Pb	1A3bi	DIESEL OIL (S=0.001%)	0.000011685	kg/TJ
2018	Pb	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000038248	kg/TJ
2018	Pb	1A3bii	DIESEL OIL (S=0.001%)	0.000011685	kg/TJ
2018	Pb	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000038172	kg/TJ
2018	Pb	1A3biii	DIESEL OIL (S=0.001%)	0.000011685	kg/TJ
2018	Pb	1A3biv	DIESEL OIL (S=0.001%)	0.000011675	kg/TJ
2018	Pb	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000038172	kg/TJ
2018	Pb	1A3dii	GASOIL (FOR NON-ROAD USE)	0.003189861	kg/TJ
2018	Pb	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.003103849	kg/TJ
2018	Pb	1A4ai	FOREST WOODFUEL	0.010000000	kg/TJ
2018	Pb	1A4ai	HEAVY FUEL OIL (S<1%)	0.025000000	kg/TJ
2018	Pb	1A4ai	SOD PEAT	0.170000000	kg/TJ
2018	Pb	1A4bi	COAL (S=1.0%)	0.395000000	kg/TJ
2018	Pb	1A4bi	FOREST WOODFUEL	0.010000000	kg/TJ
2018	Pb	1A4bi	HEAVY FUEL OIL (S<1%)	0.025000000	kg/TJ
2018	Pb	1A4bi	SOD PEAT	0.170000000	kg/TJ
2018	Pb	1A4ci	ANIMAL-BASED FUELS	0.045000000	kg/TJ
2018	Pb	1A4ci	CHIPS FROM ROUNDWOOD	0.003400000	kg/TJ
2018	Pb	1A4ci	COAL (S=1.0%)	0.003900000	kg/TJ
2018	Pb	1A4ci	FOREST WOODFUEL	0.010000000	kg/TJ
2018	Pb	1A4ci	HEAVY FUEL OIL (S<1%)	0.025000000	kg/TJ
2018	Pb	1A4ci	OTHER NON-FOSSIL SOLID	0.003400000	kg/TJ
2018	Pb	1A4ci	RECOVERED WOOD	0.003400000	kg/TJ
2018	Pb	1A4ci	SOD PEAT	0.170000000	kg/TJ
2018	Pb	1A4ci	WOOD RESIDUE CHIPS	0.045000000	kg/TJ
2018	Pb	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.003009259	kg/TJ
2018	Pb	1A5a	FOREST WOODFUEL	0.045000000	kg/TJ
2018	Pb	1A5a	HEAVY FUEL OIL (S<1%)	0.025000000	kg/TJ
2018	Pb	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000243335	kg/TJ
2018	Pb	1A5a	OTHER PETROLEUM PRODUCTS	0.025000000	kg/TJ

Cd implied emission factors in Finnish air pollutant inventory for 2018

2018	Cd	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000268693	kg/TJ
2018	Cd	1A1a	ANIMAL-BASED FUELS	0.000254883	kg/TJ
2018	Cd	1A1a	BARK	0.000832451	kg/TJ
2018	Cd	1A1a	CHIPS FROM ROUNDWOOD	0.000956808	kg/TJ
2018	Cd	1A1a	COAL (S=1.0%)	0.000094974	kg/TJ
2018	Cd	1A1a	CREOSOTED WOOD	0.000481825	kg/TJ
2018	Cd	1A1a	DEINKING WASTE	0.001798007	kg/TJ
2018	Cd	1A1a	DEMOLITION WOOD	0.000908662	kg/TJ
2018	Cd	1A1a	FOREST RESIDUE CHIPS	0.001042017	kg/TJ
2018	Cd	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000087920	kg/TJ
2018	Cd	1A1a	HEAVY FUEL OIL (S<1%)	0.000174141	kg/TJ
2018	Cd	1A1a	INDUSTRIAL WASTE	0.000307987	kg/TJ
2018	Cd	1A1a	MILLED PEAT	0.000137348	kg/TJ
2018	Cd	1A1a	MUNICIPAL WASTE - unsorted	0.001707262	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Cd	1A1a	INDUSTRY	0.000469175	kg/TJ
2018	Cd	1A1a	OTHER FOSSIL SOLID	0.000341603	kg/TJ
2018	Cd	1A1a	OTHER NON-FOSSIL SOLID	0.000701970	kg/TJ
2018	Cd	1A1a	OTHER WASTE	0.000034122	kg/TJ
2018	Cd	1A1a	OTHER WOOD RESIDUE	0.002010897	kg/TJ
2018	Cd	1A1a	PAPER	0.000092729	kg/TJ
2018	Cd	1A1a	PEAT PELLETS AND BRIQUETTES	0.000071436	kg/TJ
2018	Cd	1A1a	PLYWOOD RESIDUE	0.000090488	kg/TJ
2018	Cd	1A1a	RECOVERED FUEL (REF 1)	0.004999993	kg/TJ
2018	Cd	1A1a	RECOVERED FUEL (REF 2)	0.000316646	kg/TJ
2018	Cd	1A1a	RECOVERED FUEL (REF 3)	0.000228833	kg/TJ
2018	Cd	1A1a	RECOVERED WOOD	0.000366050	kg/TJ
2018	Cd	1A1a	RECYCLED AND WASTE OILS	0.000073571	kg/TJ
2018	Cd	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000225000	kg/TJ
2018	Cd	1A1a	SALT TREATED WOOD	0.000455913	kg/TJ
2018	Cd	1A1a	SAWDUST AND CUTTER CHIPS	0.000896228	kg/TJ
2018	Cd	1A1a	SOD PEAT	0.002754987	kg/TJ
2018	Cd	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.001116836	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cd	1A1a	WOOD FUELS)	0.002125001	kg/TJ
2018	Cd	1A1a	WOOD RESIDUE CHIPS	0.001984846	kg/TJ
2018	Cd	1A1b	COKE (S=1.0%)	0.018000000	kg/TJ
2018	Cd	1A1b	HEAVY FUEL OIL (S<1%)	0.000202019	kg/TJ
2018	Cd	1A1b	OTHER FOSSIL LIQUID	0.000300000	kg/TJ
2018	Cd	1A1b	OTHER HEAVY DISTILLATES	0.000300000	kg/TJ
2018	Cd	1A1b	PETROLEUM COKE	0.018000000	kg/TJ
2018	Cd	1A2a	HEAVY FUEL OIL (S<1%)	0.000376497	kg/TJ
2018	Cd	1A2a	WOOD RESIDUE CHIPS	0.005000000	kg/TJ
2018	Cd	1A2b	HEAVY FUEL OIL (S<1%)	0.000026189	kg/TJ
2018	Cd	1A2c	COAL (S=1.0%)	0.000023568	kg/TJ
2018	Cd	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.000300000	kg/TJ
2018	Cd	1A2c	HEAVY FUEL OIL (S<1%)	0.000299413	kg/TJ
2018	Cd	1A2c	OTHER FOSSIL LIQUID	0.000300000	kg/TJ
2018	Cd	1A2c	PETROLEUM COKE	0.018000000	kg/TJ
2018	Cd	1A2c	SAWDUST AND CUTTER CHIPS	0.000130932	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cd	1A2c	WOOD FUELS)	0.005000000	kg/TJ
2018	Cd	1A2c	WOOD RESIDUE CHIPS	0.001309319	kg/TJ
2018	Cd	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000573216	kg/TJ
2018	Cd	1A2d	ANIMAL-BASED FUELS	0.000231471	kg/TJ

2018	Cd	1A2d	BARK	0.000403150	kg/TJ
2018	Cd	1A2d	BLACK LIQUOR	0.001939677	kg/TJ
2018	Cd	1A2d	CHIPS FROM ROUNDWOOD	0.000463885	kg/TJ
2018	Cd	1A2d	COAL (S=1.0%)	0.000042708	kg/TJ
2018	Cd	1A2d	CREOSOTED WOOD	0.000072116	kg/TJ
2018	Cd	1A2d	DEMOLITION WOOD	0.000032452	kg/TJ
2018	Cd	1A2d	FOREST RESIDUE CHIPS	0.000417621	kg/TJ
2018	Cd	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.000257993	kg/TJ
2018	Cd	1A2d	HEAVY FUEL OIL (S<1%)	0.000158467	kg/TJ
2018	Cd	1A2d	INDUSTRIAL WASTE	0.002949396	kg/TJ
2018	Cd	1A2d	MILLED PEAT	0.000009134	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Cd	1A2d	INDUSTRY	0.000327288	kg/TJ
2018	Cd	1A2d	OTHER NON-FOSSIL SOLID	0.000183671	kg/TJ
2018	Cd	1A2d	OTHER WASTE	0.000335569	kg/TJ
2018	Cd	1A2d	OTHER WOOD RESIDUE	0.004984999	kg/TJ
2018	Cd	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000537049	kg/TJ
2018	Cd	1A2d	PAPER	0.000037304	kg/TJ
2018	Cd	1A2d	PLASTIC WASTE	0.000330907	kg/TJ
2018	Cd	1A2d	RECOVERED FUEL (REF 1)	0.000082200	kg/TJ
2018	Cd	1A2d	RECOVERED FUEL (REF 2)	0.000352871	kg/TJ
2018	Cd	1A2d	RECOVERED WOOD	0.000162934	kg/TJ
2018	Cd	1A2d	RECYCLED AND WASTE OILS	0.000012981	kg/TJ
2018	Cd	1A2d	SALT TREATED WOOD	0.000032452	kg/TJ
2018	Cd	1A2d	SAWDUST AND CUTTER CHIPS	0.001659567	kg/TJ
2018	Cd	1A2d	SOD PEAT	0.000001205	kg/TJ
2018	Cd	1A2d	SULPHITE LIQUOR	0.000079853	kg/TJ
2018	Cd	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000747133	kg/TJ
2018	Cd	1A2d	WOOD RESIDUE CHIPS	0.002633776	kg/TJ
2018	Cd	1A2e	ANIMAL-BASED FUELS	0.004958053	kg/TJ
2018	Cd	1A2e	CHIPS FROM ROUNDWOOD	0.000499998	kg/TJ
2018	Cd	1A2e	COAL (S=1.0%)	0.000179780	kg/TJ
2018	Cd	1A2e	COKE (S=1.0%)	0.018000026	kg/TJ
2018	Cd	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.000300000	kg/TJ
2018	Cd	1A2e	HEAVY FUEL OIL (S<1%)	0.000385334	kg/TJ
2018	Cd	1A2e	MILLED PEAT	0.001915582	kg/TJ
2018	Cd	1A2e	OTHER NON-FOSSIL SOLID	0.000500000	kg/TJ
2018	Cd	1A2e	PEAT PELLETS AND BRIQUETTES	0.000020000	kg/TJ
2018	Cd	1A2e	RECOVERED WOOD	0.000445451	kg/TJ
2018	Cd	1A2e	SAWDUST AND CUTTER CHIPS	0.004999995	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cd	1A2e	WOOD FUELS)	0.005000000	kg/TJ
2018	Cd	1A2e	WOOD RESIDUE CHIPS	0.005000000	kg/TJ
2018	Cd	1A2f	CHIPS FROM ROUNDWOOD	0.004999999	kg/TJ
2018	Cd	1A2f	COAL (S=1.0%)	0.010198923	kg/TJ
2018	Cd	1A2f	COKE (S=1.0%)	0.017789263	kg/TJ
2018	Cd	1A2f	FOREST RESIDUE CHIPS	0.005000000	kg/TJ
2018	Cd	1A2f	HEAVY FUEL OIL (S<1%)	0.000064413	kg/TJ
2018	Cd	1A2f	OTHER FOSSIL LIQUID	0.000001309	kg/TJ
2018	Cd	1A2f	OTHER FOSSIL SOLID	0.000007562	kg/TJ
2018	Cd	1A2f	OTHER HEAVY DISTILLATES	0.000300000	kg/TJ
2018	Cd	1A2f	PETROLEUM COKE	0.000035671	kg/TJ
2018	Cd	1A2f	RECOVERED FUEL (REF 1)	0.000072276	kg/TJ
2018	Cd	1A2f	RECOVERED FUEL (REF 2)	0.000021019	kg/TJ
2018	Cd	1A2f	RECYCLED AND WASTE OILS	0.000430706	kg/TJ
2018	Cd	1A2f	RUBBER WASTE	0.000019167	kg/TJ
2018	Cd	1A2f	SAWDUST AND CUTTER CHIPS	0.001598803	kg/TJ

2018	Cd	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.000231481	kg/TJ
2018	Cd	1A2gvii	LIQUID GAS	0.000217391	kg/TJ
2018	Cd	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.000238573	kg/TJ
2018	Cd	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000500000	kg/TJ
2018	Cd	1A2gviii	BARK	0.002303617	kg/TJ
2018	Cd	1A2gviii	CHIPS FROM ROUNDWOOD	0.003371116	kg/TJ
2018	Cd	1A2gviii	COAL (S=1.0%)	0.018000068	kg/TJ
2018	Cd	1A2gviii	FOREST RESIDUE CHIPS	0.002427784	kg/TJ
2018	Cd	1A2gviii	HEAVY FUEL OIL (S<1%)	0.000375234	kg/TJ
2018	Cd	1A2gviii	INDUSTRIAL WASTE	0.000225000	kg/TJ
2018	Cd	1A2gviii	MILLED PEAT	0.000023830	kg/TJ
2018	Cd	1A2gviii	MUNICIPAL WASTE - unsorted	0.000279388	kg/TJ
2018	Cd	1A2gviii	OTHER HEAVY DISTILLATES	0.000300000	kg/TJ
2018	Cd	1A2gviii	OTHER NON-FOSSIL SOLID	0.000555305	kg/TJ
2018	Cd	1A2gviii	OTHER WOOD RESIDUE	0.002383697	kg/TJ
2018	Cd	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.001180638	kg/TJ
2018	Cd	1A2gviii	RECOVERED FUEL (REF 2)	0.000086187	kg/TJ
2018	Cd	1A2gviii	RECOVERED WOOD	0.000187076	kg/TJ
2018	Cd	1A2gviii	SAWDUST AND CUTTER CHIPS	0.002993229	kg/TJ
2018	Cd	1A2gviii	SOD PEAT	0.001220641	kg/TJ
2018	Cd	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.002233765	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cd	1A2gviii	WOOD FUELS)	0.004698637	kg/TJ
2018	Cd	1A2gviii	WOOD RESIDUE CHIPS	0.003532056	kg/TJ
2018	Cd	1A3bi	DIESEL OIL (S=0.001%)	0.000001169	kg/TJ
2018	Cd	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000004781	kg/TJ
2018	Cd	1A3bii	DIESEL OIL (S=0.001%)	0.000001169	kg/TJ
2018	Cd	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000004771	kg/TJ
2018	Cd	1A3biii	DIESEL OIL (S=0.001%)	0.000001169	kg/TJ
2018	Cd	1A3biv	DIESEL OIL (S=0.001%)	0.000001168	kg/TJ
2018	Cd	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000004771	kg/TJ
2018	Cd	1A3c	GASOIL (FOR NON-ROAD USE)	0.000231481	kg/TJ
2018	Cd	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000245374	kg/TJ
2018	Cd	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.000344872	kg/TJ
2018	Cd	1A4ai	FOREST WOODFUEL	0.003000000	kg/TJ
2018	Cd	1A4ai	HEAVY FUEL OIL (S<1%)	0.000300000	kg/TJ
2018	Cd	1A4ai	SOD PEAT	0.002800000	kg/TJ
2018	Cd	1A4aii	GASOIL (FOR NON-ROAD USE)	0.000231481	kg/TJ
2018	Cd	1A4aii	MOTOR GASOLINE (S=0.001%)	0.000238573	kg/TJ
2018	Cd	1A4bi	COAL (S=1.0%)	0.009000000	kg/TJ
2018	Cd	1A4bi	FOREST WOODFUEL	0.003000000	kg/TJ
2018	Cd	1A4bi	HEAVY FUEL OIL (S<1%)	0.000300000	kg/TJ
2018	Cd	1A4bi	SOD PEAT	0.002800000	kg/TJ
2018	Cd	1A4bii	GASOIL (FOR NON-ROAD USE)	0.000231481	kg/TJ
2018	Cd	1A4bii	MOTOR GASOLINE (S=0.001%)	0.000238573	kg/TJ
2018	Cd	1A4ci	ANIMAL-BASED FUELS	0.005000000	kg/TJ
2018	Cd	1A4ci	CHIPS FROM ROUNDWOOD	0.000500000	kg/TJ
2018	Cd	1A4ci	COAL (S=1.0%)	0.000200000	kg/TJ
2018	Cd	1A4ci	FOREST WOODFUEL	0.003000000	kg/TJ
2018	Cd	1A4ci	HEAVY FUEL OIL (S<1%)	0.000300000	kg/TJ
2018	Cd	1A4ci	OTHER NON-FOSSIL SOLID	0.000500000	kg/TJ
2018	Cd	1A4ci	RECOVERED WOOD	0.000500000	kg/TJ
2018	Cd	1A4ci	SOD PEAT	0.002800000	kg/TJ
2018	Cd	1A4ci	WOOD RESIDUE CHIPS	0.005000000	kg/TJ
2018	Cd	1A4cii	GASOIL (FOR NON-ROAD USE)	0.000231481	kg/TJ
2018	Cd	1A4cii	MOTOR GASOLINE (S=0.001%)	0.000238573	kg/TJ
2018	Cd	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000231481	kg/TJ

2018	Cd	1A5a	FOREST WOODFUEL	0.005000000	kg/TJ
2018	Cd	1A5a	HEAVY FUEL OIL (S<1%)	0.000300000	kg/TJ
2018	Cd	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000021197	kg/TJ
2018	Cd	1A5a	OTHER PETROLEUM PRODUCTS	0.000300000	kg/TJ

Hg implied emission factors in Finnish air pollutant inventory for 2018

2018	Hg	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000397395	kg/TJ
2018	Hg	1A1a	ANIMAL-BASED FUELS	0.000159434	kg/TJ
2018	Hg	1A1a	BARK	0.000465377	kg/TJ
2018	Hg	1A1a	CHIPS FROM ROUNDWOOD	0.000349574	kg/TJ
2018	Hg	1A1a	COAL (S=1.0%)	0.000691124	kg/TJ
2018	Hg	1A1a	CREOSOTED WOOD	0.000487936	kg/TJ
2018	Hg	1A1a	DEINKING WASTE	0.000432799	kg/TJ
2018	Hg	1A1a	DEMOLITION WOOD	0.000487347	kg/TJ
2018	Hg	1A1a	FOREST RESIDUE CHIPS	0.000432480	kg/TJ
2018	Hg	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000004875	kg/TJ
2018	Hg	1A1a	HEAVY FUEL OIL (S<1%)	0.000025372	kg/TJ
2018	Hg	1A1a	INDUSTRIAL WASTE	0.000345717	kg/TJ
2018	Hg	1A1a	MILLED PEAT	0.001224815	kg/TJ
2018	Hg	1A1a	MUNICIPAL WASTE - unsorted	0.000186373	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Hg	1A1a	INDUSTRY	0.000485590	kg/TJ
2018	Hg	1A1a	OTHER FOSSIL SOLID	0.003153032	kg/TJ
2018	Hg	1A1a	OTHER NON-FOSSIL SOLID	0.000598071	kg/TJ
2018	Hg	1A1a	OTHER WASTE	0.000190761	kg/TJ
2018	Hg	1A1a	OTHER WOOD RESIDUE	0.000514027	kg/TJ
2018	Hg	1A1a	PAPER	0.000360983	kg/TJ
2018	Hg	1A1a	PEAT PELLETS AND BRIQUETTES	0.001483136	kg/TJ
2018	Hg	1A1a	PLYWOOD RESIDUE	0.000271780	kg/TJ
2018	Hg	1A1a	RECOVERED FUEL (REF 1)	0.000499999	kg/TJ
2018	Hg	1A1a	RECOVERED FUEL (REF 2)	0.000338094	kg/TJ
2018	Hg	1A1a	RECOVERED FUEL (REF 3)	0.000343249	kg/TJ
2018	Hg	1A1a	RECOVERED WOOD	0.000330561	kg/TJ
2018	Hg	1A1a	RECYCLED AND WASTE OILS	0.000017412	kg/TJ
2018	Hg	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000339286	kg/TJ
2018	Hg	1A1a	SALT TREATED WOOD	0.000470736	kg/TJ
2018	Hg	1A1a	SAWDUST AND CUTTER CHIPS	0.000367828	kg/TJ
2018	Hg	1A1a	SOD PEAT	0.002558777	kg/TJ
2018	Hg	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000735976	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Hg	1A1a	WOOD FUELS)	0.000494510	kg/TJ
2018	Hg	1A1a	WOOD RESIDUE CHIPS	0.000420471	kg/TJ
2018	Hg	1A1b	COKE (S=1.0%)	0.003699993	kg/TJ
2018	Hg	1A1b	HEAVY FUEL OIL (S<1%)	0.000030000	kg/TJ
2018	Hg	1A1b	OTHER FOSSIL LIQUID	0.000030000	kg/TJ
2018	Hg	1A1b	OTHER HEAVY DISTILLATES	0.000030000	kg/TJ
2018	Hg	1A1b	PETROLEUM COKE	0.003700000	kg/TJ
2018	Hg	1A2a	COKE (S=1.0%)	0.000101418	kg/TJ
2018	Hg	1A2a	HEAVY FUEL OIL (S<1%)	0.000030934	kg/TJ
2018	Hg	1A2a	OTHER FOSSIL SOLID	0.001400000	kg/TJ
2018	Hg	1A2a	WOOD RESIDUE CHIPS	0.000500000	kg/TJ
2018	Hg	1A2b	HEAVY FUEL OIL (S<1%)	0.000008474	kg/TJ
2018	Hg	1A2c	COAL (S=1.0%)	0.000870751	kg/TJ
2018	Hg	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.000030000	kg/TJ
2018	Hg	1A2c	HEAVY FUEL OIL (S<1%)	0.000030000	kg/TJ
2018	Hg	1A2c	OTHER FOSSIL LIQUID	0.000030000	kg/TJ
2018	Hg	1A2c	PETROLEUM COKE	0.003700000	kg/TJ
2018	Hg	1A2c	SAWDUST AND CUTTER CHIPS	0.000458289	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Hg	1A2c	WOOD FUELS)	0.000500000	kg/TJ
2018	Hg	1A2c	WOOD RESIDUE CHIPS	0.000458290	kg/TJ

2018	Hg	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000655514	kg/TJ
2018	Hg	1A2d	ANIMAL-BASED FUELS	0.000305585	kg/TJ
2018	Hg	1A2d	BARK	0.000494027	kg/TJ
2018	Hg	1A2d	BLACK LIQUOR	0.000656613	kg/TJ
2018	Hg	1A2d	CHIPS FROM ROUNDWOOD	0.000395442	kg/TJ
2018	Hg	1A2d	COAL (S=1.0%)	0.000581674	kg/TJ
2018	Hg	1A2d	CREOSOTED WOOD	0.000237993	kg/TJ
2018	Hg	1A2d	DEMOLITION WOOD	0.000161495	kg/TJ
2018	Hg	1A2d	FOREST RESIDUE CHIPS	0.000314819	kg/TJ
2018	Hg	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.000034180	kg/TJ
2018	Hg	1A2d	HEAVY FUEL OIL (S<1%)	0.000024150	kg/TJ
2018	Hg	1A2d	INDUSTRIAL WASTE	0.000258053	kg/TJ
2018	Hg	1A2d	MILLED PEAT	0.000934959	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Hg	1A2d	INDUSTRY	0.000526508	kg/TJ
2018	Hg	1A2d	OTHER NON-FOSSIL SOLID	0.000253836	kg/TJ
2018	Hg	1A2d	OTHER WASTE	0.000380952	kg/TJ
2018	Hg	1A2d	OTHER WOOD RESIDUE	0.000498498	kg/TJ
2018	Hg	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.001067883	kg/TJ
2018	Hg	1A2d	PAPER	0.000187442	kg/TJ
2018	Hg	1A2d	PLASTIC WASTE	0.000397692	kg/TJ
2018	Hg	1A2d	RECOVERED FUEL (REF 1)	0.000145210	kg/TJ
2018	Hg	1A2d	RECOVERED FUEL (REF 2)	0.000678236	kg/TJ
2018	Hg	1A2d	RECOVERED WOOD	0.000387966	kg/TJ
2018	Hg	1A2d	RECYCLED AND WASTE OILS	0.000009690	kg/TJ
2018	Hg	1A2d	SALT TREATED WOOD	0.000161496	kg/TJ
2018	Hg	1A2d	SAWDUST AND CUTTER CHIPS	0.000402662	kg/TJ
2018	Hg	1A2d	SOD PEAT	0.000922334	kg/TJ
2018	Hg	1A2d	SULPHITE LIQUOR	0.000004277	kg/TJ
2018	Hg	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000480145	kg/TJ
2018	Hg	1A2d	WOOD RESIDUE CHIPS	0.000435588	kg/TJ
2018	Hg	1A2e	ANIMAL-BASED FUELS	0.000500862	kg/TJ
2018	Hg	1A2e	CHIPS FROM ROUNDWOOD	0.000499998	kg/TJ
2018	Hg	1A2e	COAL (S=1.0%)	0.001415718	kg/TJ
2018	Hg	1A2e	COKE (S=1.0%)	0.003700001	kg/TJ
2018	Hg	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.000030000	kg/TJ
2018	Hg	1A2e	HEAVY FUEL OIL (S<1%)	0.000029704	kg/TJ
2018	Hg	1A2e	MILLED PEAT	0.002186423	kg/TJ
2018	Hg	1A2e	OTHER NON-FOSSIL SOLID	0.000500000	kg/TJ
2018	Hg	1A2e	PEAT PELLETS AND BRIQUETTES	0.001300000	kg/TJ
2018	Hg	1A2e	RECOVERED WOOD	0.000511216	kg/TJ
2018	Hg	1A2e	SAWDUST AND CUTTER CHIPS	0.000500000	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Hg	1A2e	WOOD FUELS)	0.000500000	kg/TJ
2018	Hg	1A2e	WOOD RESIDUE CHIPS	0.000500000	kg/TJ
2018	Hg	1A2f	CHIPS FROM ROUNDWOOD	0.000500000	kg/TJ
2018	Hg	1A2f	COAL (S=1.0%)	0.006860514	kg/TJ
2018	Hg	1A2f	COKE (S=1.0%)	0.003823214	kg/TJ
2018	Hg	1A2f	FOREST RESIDUE CHIPS	0.000500000	kg/TJ
2018	Hg	1A2f	HEAVY FUEL OIL (S<1%)	0.000097597	kg/TJ
2018	Hg	1A2f	OTHER FOSSIL LIQUID	0.000313886	kg/TJ
2018	Hg	1A2f	OTHER FOSSIL SOLID	0.005374782	kg/TJ
2018	Hg	1A2f	OTHER HEAVY DISTILLATES	0.000030000	kg/TJ
2018	Hg	1A2f	PETROLEUM COKE	0.018454283	kg/TJ
2018	Hg	1A2f	RECOVERED FUEL (REF 1)	0.004232289	kg/TJ
2018	Hg	1A2f	RECOVERED FUEL (REF 2)	0.004211517	kg/TJ
2018	Hg	1A2f	RECYCLED AND WASTE OILS	0.000049961	kg/TJ

2018	Hg	1A2f	RUBBER WASTE	0.001867813	kg/TJ
2018	Hg	1A2f	SAWDUST AND CUTTER CHIPS	0.000379970	kg/TJ
2018	Hg	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000149197	kg/TJ
2018	Hg	1A2gviii	BARK	0.000495030	kg/TJ
2018	Hg	1A2gviii	CHIPS FROM ROUNDWOOD	0.000510991	kg/TJ
2018	Hg	1A2gviii	COAL (S=1.0%)	0.003699993	kg/TJ
2018	Hg	1A2gviii	FOREST RESIDUE CHIPS	0.000434077	kg/TJ
2018	Hg	1A2gviii	HEAVY FUEL OIL (S<1%)	0.002971863	kg/TJ
2018	Hg	1A2gviii	INDUSTRIAL WASTE	0.000339286	kg/TJ
2018	Hg	1A2gviii	MILLED PEAT	0.000782454	kg/TJ
2018	Hg	1A2gviii	MUNICIPAL WASTE - unsorted	0.000317932	kg/TJ
2018	Hg	1A2gviii	OTHER HEAVY DISTILLATES	0.000030000	kg/TJ
2018	Hg	1A2gviii	OTHER NON-FOSSIL SOLID	0.000498342	kg/TJ
2018	Hg	1A2gviii	OTHER WOOD RESIDUE	0.000490499	kg/TJ
2018	Hg	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.004919323	kg/TJ
2018	Hg	1A2gviii	RECOVERED FUEL (REF 2)	0.000430934	kg/TJ
2018	Hg	1A2gviii	RECOVERED WOOD	0.000362245	kg/TJ
2018	Hg	1A2gviii	SAWDUST AND CUTTER CHIPS	0.000448091	kg/TJ
2018	Hg	1A2gviii	SOD PEAT	0.002600000	kg/TJ
2018	Hg	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000446639	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Hg	1A2gviii	WOOD FUELS)	0.000476507	kg/TJ
2018	Hg	1A2gviii	WOOD RESIDUE CHIPS	0.000500345	kg/TJ
2018	Hg	1A3bi	DIESEL OIL (S=0.001%)	0.000123864	kg/TJ
2018	Hg	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000207973	kg/TJ
2018	Hg	1A3bii	DIESEL OIL (S=0.001%)	0.000123864	kg/TJ
2018	Hg	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000207558	kg/TJ
2018	Hg	1A3biii	DIESEL OIL (S=0.001%)	0.000123864	kg/TJ
2018	Hg	1A3biv	DIESEL OIL (S=0.001%)	0.000123760	kg/TJ
2018	Hg	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000207558	kg/TJ
2018	Hg	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000736122	kg/TJ
2018	Hg	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.000344872	kg/TJ
2018	Hg	1A4ai	FOREST WOODFUEL	0.000500000	kg/TJ
2018	Hg	1A4ai	HEAVY FUEL OIL (S<1%)	0.000030000	kg/TJ
2018	Hg	1A4ai	SOD PEAT	0.002600000	kg/TJ
2018	Hg	1A4bi	COAL (S=1.0%)	0.001850000	kg/TJ
2018	Hg	1A4bi	FOREST WOODFUEL	0.000500000	kg/TJ
2018	Hg	1A4bi	HEAVY FUEL OIL (S<1%)	0.000030000	kg/TJ
2018	Hg	1A4bi	SOD PEAT	0.002600000	kg/TJ
2018	Hg	1A4ci	ANIMAL-BASED FUELS	0.000500000	kg/TJ
2018	Hg	1A4ci	CHIPS FROM ROUNDWOOD	0.000500000	kg/TJ
2018	Hg	1A4ci	COAL (S=1.0%)	0.001400000	kg/TJ
2018	Hg	1A4ci	FOREST WOODFUEL	0.000500000	kg/TJ
2018	Hg	1A4ci	HEAVY FUEL OIL (S<1%)	0.000030000	kg/TJ
2018	Hg	1A4ci	OTHER NON-FOSSIL SOLID	0.000500000	kg/TJ
2018	Hg	1A4ci	RECOVERED WOOD	0.000500000	kg/TJ
2018	Hg	1A4ci	SOD PEAT	0.002600000	kg/TJ
2018	Hg	1A4ci	WOOD RESIDUE CHIPS	0.000500000	kg/TJ
2018	Hg	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000694444	kg/TJ
2018	Hg	1A5a	FOREST WOODFUEL	0.000500000	kg/TJ
2018	Hg	1A5a	HEAVY FUEL OIL (S<1%)	0.000030000	kg/TJ
2018	Hg	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000056154	kg/TJ
2018	Hg	1A5a	OTHER PETROLEUM PRODUCTS	0.000030000	kg/TJ

As implied emission factors in Finnish air pollutant inventory for 2018

2018	As	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000083962	kg/TJ
2018	As	1A1a	ANIMAL-BASED FUELS	0.000218713	kg/TJ
2018	As	1A1a	BARK	0.000176270	kg/TJ
2018	As	1A1a	CHIPS FROM ROUNDWOOD	0.001442516	kg/TJ
2018	As	1A1a	COAL (S=1.0%)	0.002100741	kg/TJ
2018	As	1A1a	CREOSOTED WOOD	0.000103300	kg/TJ
2018	As	1A1a	DEINKING WASTE	0.000372758	kg/TJ
2018	As	1A1a	DEMOLITION WOOD	0.009653245	kg/TJ
2018	As	1A1a	FOREST RESIDUE CHIPS	0.000438086	kg/TJ
2018	As	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000779242	kg/TJ
2018	As	1A1a	HEAVY FUEL OIL (S<1%)	0.000904037	kg/TJ
2018	As	1A1a	INDUSTRIAL WASTE	0.000026930	kg/TJ
2018	As	1A1a	MILLED PEAT	0.005864533	kg/TJ
2018	As	1A1a	MUNICIPAL WASTE - unsorted	0.000314565	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	As	1A1a	INDUSTRY	0.000100730	kg/TJ
2018	As	1A1a	OTHER FOSSIL SOLID	0.053112235	kg/TJ
2018	As	1A1a	OTHER NON-FOSSIL SOLID	0.000182589	kg/TJ
2018	As	1A1a	OTHER WASTE	0.000184586	kg/TJ
2018	As	1A1a	OTHER WOOD RESIDUE	0.000394682	kg/TJ
2018	As	1A1a	PAPER	0.000066361	kg/TJ
2018	As	1A1a	PEAT PELLETS AND BRIQUETTES	0.000664044	kg/TJ
2018	As	1A1a	PLYWOOD RESIDUE	0.000017844	kg/TJ
2018	As	1A1a	RECOVERED FUEL (REF 1)	0.001000001	kg/TJ
2018	As	1A1a	RECOVERED FUEL (REF 2)	0.000361256	kg/TJ
2018	As	1A1a	RECOVERED FUEL (REF 3)	0.000010401	kg/TJ
2018	As	1A1a	RECOVERED WOOD	0.000268961	kg/TJ
2018	As	1A1a	RECYCLED AND WASTE OILS	0.001573871	kg/TJ
2018	As	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000012821	kg/TJ
2018	As	1A1a	SALT TREATED WOOD	0.000108005	kg/TJ
2018	As	1A1a	SAWDUST AND CUTTER CHIPS	0.000676404	kg/TJ
2018	As	1A1a	SOD PEAT	0.078768145	kg/TJ
2018	As	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000193796	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	As	1A1a	WOOD FUELS)	0.000422695	kg/TJ
2018	As	1A1a	WOOD RESIDUE CHIPS	0.000453189	kg/TJ
2018	As	1A1b	COKE (S=1.0%)	0.130000000	kg/TJ
2018	As	1A1b	HEAVY FUEL OIL (S<1%)	0.001020185	kg/TJ
2018	As	1A1b	OTHER FOSSIL LIQUID	0.002000000	kg/TJ
2018	As	1A1b	OTHER HEAVY DISTILLATES	0.002000000	kg/TJ
2018	As	1A1b	PETROLEUM COKE	0.130000000	kg/TJ
2018	As	1A2a	HEAVY FUEL OIL (S<1%)	0.002005954	kg/TJ
2018	As	1A2a	WOOD RESIDUE CHIPS	0.001000000	kg/TJ
2018	As	1A2b	HEAVY FUEL OIL (S<1%)	0.000174592	kg/TJ
2018	As	1A2c	COAL (S=1.0%)	0.000959406	kg/TJ
2018	As	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.002000000	kg/TJ
2018	As	1A2c	HEAVY FUEL OIL (S<1%)	0.001994326	kg/TJ
2018	As	1A2c	OTHER FOSSIL LIQUID	0.002000000	kg/TJ
2018	As	1A2c	PETROLEUM COKE	0.130000000	kg/TJ
2018	As	1A2c	SAWDUST AND CUTTER CHIPS	0.000095941	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	As	1A2c	WOOD FUELS)	0.001000000	kg/TJ
2018	As	1A2c	WOOD RESIDUE CHIPS	0.000959407	kg/TJ
2018	As	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000123440	kg/TJ
2018	As	1A2d	ANIMAL-BASED FUELS	0.000064373	kg/TJ

2018	As	1A2d	BARK	0.000071548	kg/TJ
2018	As	1A2d	BLACK LIQUOR	0.001271788	kg/TJ
2018	As	1A2d	CHIPS FROM ROUNDWOOD	0.000131754	kg/TJ
2018	As	1A2d	COAL (S=1.0%)	0.002307302	kg/TJ
2018	As	1A2d	CREOSOTED WOOD	0.000296153	kg/TJ
2018	As	1A2d	DEMOLITION WOOD	0.000037968	kg/TJ
2018	As	1A2d	FOREST RESIDUE CHIPS	0.000121292	kg/TJ
2018	As	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.001383036	kg/TJ
2018	As	1A2d	HEAVY FUEL OIL (S<1%)	0.000906568	kg/TJ
2018	As	1A2d	INDUSTRIAL WASTE	0.001179038	kg/TJ
2018	As	1A2d	MILLED PEAT	0.000245691	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	As	1A2d	INDUSTRY	0.000340647	kg/TJ
2018	As	1A2d	OTHER NON-FOSSIL SOLID	0.000022149	kg/TJ
2018	As	1A2d	OTHER WASTE	0.000078184	kg/TJ
2018	As	1A2d	OTHER WOOD RESIDUE	0.000997031	kg/TJ
2018	As	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000025672	kg/TJ
2018	As	1A2d	PAPER	0.000213484	kg/TJ
2018	As	1A2d	PLASTIC WASTE	0.000046544	kg/TJ
2018	As	1A2d	RECOVERED FUEL (REF 1)	0.001444196	kg/TJ
2018	As	1A2d	RECOVERED FUEL (REF 2)	0.000039295	kg/TJ
2018	As	1A2d	RECOVERED WOOD	0.000044545	kg/TJ
2018	As	1A2d	RECYCLED AND WASTE OILS	0.000379683	kg/TJ
2018	As	1A2d	SALT TREATED WOOD	0.000037968	kg/TJ
2018	As	1A2d	SAWDUST AND CUTTER CHIPS	0.000339340	kg/TJ
2018	As	1A2d	SOD PEAT	0.000041181	kg/TJ
2018	As	1A2d	SULPHITE LIQUOR	0.000136683	kg/TJ
2018	As	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000140705	kg/TJ
2018	As	1A2d	WOOD RESIDUE CHIPS	0.000777026	kg/TJ
2018	As	1A2e	ANIMAL-BASED FUELS	0.001000179	kg/TJ
2018	As	1A2e	CHIPS FROM ROUNDWOOD	0.000100000	kg/TJ
2018	As	1A2e	COAL (S=1.0%)	0.007817400	kg/TJ
2018	As	1A2e	COKE (S=1.0%)	0.130000225	kg/TJ
2018	As	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.002000000	kg/TJ
2018	As	1A2e	HEAVY FUEL OIL (S<1%)	0.002440727	kg/TJ
2018	As	1A2e	MILLED PEAT	0.055390108	kg/TJ
2018	As	1A2e	OTHER NON-FOSSIL SOLID	0.000100000	kg/TJ
2018	As	1A2e	PEAT PELLETS AND BRIQUETTES	0.000500000	kg/TJ
2018	As	1A2e	RECOVERED WOOD	0.000100233	kg/TJ
2018	As	1A2e	SAWDUST AND CUTTER CHIPS	0.001000000	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	As	1A2e	WOOD FUELS)	0.001000000	kg/TJ
2018	As	1A2e	WOOD RESIDUE CHIPS	0.001000002	kg/TJ
2018	As	1A2f	CHIPS FROM ROUNDWOOD	0.001000000	kg/TJ
2018	As	1A2f	COAL (S=1.0%)	0.073615657	kg/TJ
2018	As	1A2f	COKE (S=1.0%)	0.128531881	kg/TJ
2018	As	1A2f	FOREST RESIDUE CHIPS	0.001000000	kg/TJ
2018	As	1A2f	HEAVY FUEL OIL (S<1%)	0.000404458	kg/TJ
2018	As	1A2f	OTHER FOSSIL LIQUID	0.000007846	kg/TJ
2018	As	1A2f	OTHER FOSSIL SOLID	0.000554598	kg/TJ
2018	As	1A2f	OTHER HEAVY DISTILLATES	0.002000000	kg/TJ
2018	As	1A2f	PETROLEUM COKE	0.000541942	kg/TJ
2018	As	1A2f	RECOVERED FUEL (REF 1)	0.000024190	kg/TJ
2018	As	1A2f	RECOVERED FUEL (REF 2)	0.000004921	kg/TJ
2018	As	1A2f	RECYCLED AND WASTE OILS	0.000247316	kg/TJ
2018	As	1A2f	RUBBER WASTE	0.000007215	kg/TJ
2018	As	1A2f	SAWDUST AND CUTTER CHIPS	0.000130972	kg/TJ

2018	As	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000100000	kg/TJ
2018	As	1A2gviii	BARK	0.000459775	kg/TJ
2018	As	1A2gviii	CHIPS FROM ROUNDWOOD	0.000952997	kg/TJ
2018	As	1A2gviii	COAL (S=1.0%)	0.130000000	kg/TJ
2018	As	1A2gviii	FOREST RESIDUE CHIPS	0.000457627	kg/TJ
2018	As	1A2gviii	HEAVY FUEL OIL (S<1%)	0.002403858	kg/TJ
2018	As	1A2gviii	INDUSTRIAL WASTE	0.000012820	kg/TJ
2018	As	1A2gviii	MILLED PEAT	0.000610897	kg/TJ
2018	As	1A2gviii	MUNICIPAL WASTE - unsorted	0.000231914	kg/TJ
2018	As	1A2gviii	OTHER HEAVY DISTILLATES	0.002000000	kg/TJ
2018	As	1A2gviii	OTHER NON-FOSSIL SOLID	0.000108597	kg/TJ
2018	As	1A2gviii	OTHER WOOD RESIDUE	0.000476739	kg/TJ
2018	As	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.008067690	kg/TJ
2018	As	1A2gviii	RECOVERED FUEL (REF 2)	0.000430934	kg/TJ
2018	As	1A2gviii	RECOVERED WOOD	0.000350251	kg/TJ
2018	As	1A2gviii	SAWDUST AND CUTTER CHIPS	0.000582509	kg/TJ
2018	As	1A2gviii	SOD PEAT	0.036406320	kg/TJ
2018	As	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000431494	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	As	1A2gviii	WOOD FUELS)	0.000939727	kg/TJ
2018	As	1A2gviii	WOOD RESIDUE CHIPS	0.000706267	kg/TJ
2018	As	1A3bi	DIESEL OIL (S=0.001%)	0.000002337	kg/TJ
2018	As	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000007171	kg/TJ
2018	As	1A3bii	DIESEL OIL (S=0.001%)	0.000002337	kg/TJ
2018	As	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000007157	kg/TJ
2018	As	1A3biii	DIESEL OIL (S=0.001%)	0.000002337	kg/TJ
2018	As	1A3biv	DIESEL OIL (S=0.001%)	0.000002335	kg/TJ
2018	As	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000007157	kg/TJ
2018	As	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000981496	kg/TJ
2018	As	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.011725650	kg/TJ
2018	As	1A4ai	FOREST WOODFUEL	0.001000000	kg/TJ
2018	As	1A4ai	HEAVY FUEL OIL (S<1%)	0.002000000	kg/TJ
2018	As	1A4ai	SOD PEAT	0.081000000	kg/TJ
2018	As	1A4bi	COAL (S=1.0%)	0.065000000	kg/TJ
2018	As	1A4bi	FOREST WOODFUEL	0.001000000	kg/TJ
2018	As	1A4bi	HEAVY FUEL OIL (S<1%)	0.002000000	kg/TJ
2018	As	1A4bi	SOD PEAT	0.081000000	kg/TJ
2018	As	1A4ci	ANIMAL-BASED FUELS	0.001000000	kg/TJ
2018	As	1A4ci	CHIPS FROM ROUNDWOOD	0.000100000	kg/TJ
2018	As	1A4ci	COAL (S=1.0%)	0.007800000	kg/TJ
2018	As	1A4ci	FOREST WOODFUEL	0.001000000	kg/TJ
2018	As	1A4ci	HEAVY FUEL OIL (S<1%)	0.002000000	kg/TJ
2018	As	1A4ci	OTHER NON-FOSSIL SOLID	0.000100000	kg/TJ
2018	As	1A4ci	RECOVERED WOOD	0.000100000	kg/TJ
2018	As	1A4ci	SOD PEAT	0.081000000	kg/TJ
2018	As	1A4ci	WOOD RESIDUE CHIPS	0.001000000	kg/TJ
2018	As	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000925926	kg/TJ
2018	As	1A5a	FOREST WOODFUEL	0.001000000	kg/TJ
2018	As	1A5a	HEAVY FUEL OIL (S<1%)	0.002000000	kg/TJ
2018	As	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000074872	kg/TJ
2018	As	1A5a	OTHER PETROLEUM PRODUCTS	0.002000000	kg/TJ

Cr implied emission factors in Finnish air pollutant inventory for 2018

2018	Cr	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.001137412	kg/TJ
2018	Cr	1A1a	ANIMAL-BASED FUELS	0.001860728	kg/TJ
2018	Cr	1A1a	BARK	0.005508748	kg/TJ
2018	Cr	1A1a	CHIPS FROM ROUNDWOOD	0.007958868	kg/TJ
2018	Cr	1A1a	COAL (S=1.0%)	0.002229910	kg/TJ
2018	Cr	1A1a	CREOSOTED WOOD	0.001946167	kg/TJ
2018	Cr	1A1a	DEINKING WASTE	0.012378478	kg/TJ
2018	Cr	1A1a	DEMOLITION WOOD	0.021563900	kg/TJ
2018	Cr	1A1a	FOREST RESIDUE CHIPS	0.006238570	kg/TJ
2018	Cr	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000125205	kg/TJ
2018	Cr	1A1a	HEAVY FUEL OIL (S<1%)	0.000518928	kg/TJ
2018	Cr	1A1a	INDUSTRIAL WASTE	0.001174775	kg/TJ
2018	Cr	1A1a	MILLED PEAT	0.006391440	kg/TJ
2018	Cr	1A1a	MUNICIPAL WASTE - unsorted	0.011151098	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Cr	1A1a	INDUSTRY	0.001893134	kg/TJ
2018	Cr	1A1a	OTHER FOSSIL SOLID	0.025093590	kg/TJ
2018	Cr	1A1a	OTHER NON-FOSSIL SOLID	0.002874668	kg/TJ
2018	Cr	1A1a	OTHER WASTE	0.000620138	kg/TJ
2018	Cr	1A1a	OTHER WOOD RESIDUE	0.013290245	kg/TJ
2018	Cr	1A1a	PAPER	0.000454533	kg/TJ
2018	Cr	1A1a	PEAT PELLETS AND BRIQUETTES	0.001835582	kg/TJ
2018	Cr	1A1a	PLYWOOD RESIDUE	0.000278794	kg/TJ
2018	Cr	1A1a	RECOVERED FUEL (REF 1)	0.035000092	kg/TJ
2018	Cr	1A1a	RECOVERED FUEL (REF 2)	0.001587974	kg/TJ
2018	Cr	1A1a	RECOVERED FUEL (REF 3)	0.000603287	kg/TJ
2018	Cr	1A1a	RECOVERED WOOD	0.001765302	kg/TJ
2018	Cr	1A1a	RECYCLED AND WASTE OILS	0.000265960	kg/TJ
2018	Cr	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000599998	kg/TJ
2018	Cr	1A1a	SALT TREATED WOOD	0.001869418	kg/TJ
2018	Cr	1A1a	SAWDUST AND CUTTER CHIPS	0.006516707	kg/TJ
2018	Cr	1A1a	SOD PEAT	0.135527211	kg/TJ
2018	Cr	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.004968950	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cr	1A1a	WOOD FUELS)	0.014038520	kg/TJ
2018	Cr	1A1a	WOOD RESIDUE CHIPS	0.012969735	kg/TJ
2018	Cr	1A1b	COKE (S=1.0%)	1.000000000	kg/TJ
2018	Cr	1A1b	HEAVY FUEL OIL (S<1%)	0.000510093	kg/TJ
2018	Cr	1A1b	OTHER FOSSIL LIQUID	0.001000000	kg/TJ
2018	Cr	1A1b	OTHER HEAVY DISTILLATES	0.001000000	kg/TJ
2018	Cr	1A1b	PETROLEUM COKE	1.000000000	kg/TJ
2018	Cr	1A2a	HEAVY FUEL OIL (S<1%)	0.003471700	kg/TJ
2018	Cr	1A2a	WOOD RESIDUE CHIPS	0.035000049	kg/TJ
2018	Cr	1A2b	COAL (S=1.0%)	0.999999400	kg/TJ
2018	Cr	1A2b	COKE (S=1.0%)	0.999998057	kg/TJ
2018	Cr	1A2b	HEAVY FUEL OIL (S<1%)	0.001000000	kg/TJ
2018	Cr	1A2b	OTHER FOSSIL SOLID	0.999997657	kg/TJ
2018	Cr	1A2b	RECYCLED AND WASTE OILS	0.001000000	kg/TJ
2018	Cr	1A2c	COAL (S=1.0%)	0.000648691	kg/TJ
2018	Cr	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.001000000	kg/TJ
2018	Cr	1A2c	HEAVY FUEL OIL (S<1%)	0.000997062	kg/TJ
2018	Cr	1A2c	OTHER FOSSIL LIQUID	0.001000000	kg/TJ
2018	Cr	1A2c	PETROLEUM COKE	1.000000000	kg/TJ
2018	Cr	1A2c	SAWDUST AND CUTTER CHIPS	0.000864922	kg/TJ
2018	Cr	1A2c	WOOD PELLETS AND BRIQUETTES (REFINED	0.035000000	kg/TJ

			WOOD FUELS)	
2018	Cr	1A2c	WOOD RESIDUE CHIPS	0.015136134 kg/TJ
2018	Cr	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.001728097 kg/TJ
2018	Cr	1A2d	ANIMAL-BASED FUELS	0.000985384 kg/TJ
2018	Cr	1A2d	BARK	0.001646484 kg/TJ
2018	Cr	1A2d	BLACK LIQUOR	0.000340901 kg/TJ
2018	Cr	1A2d	CHIPS FROM ROUNDWOOD	0.002245288 kg/TJ
2018	Cr	1A2d	COAL (S=1.0%)	0.001437619 kg/TJ
2018	Cr	1A2d	CREOSOTED WOOD	0.000778032 kg/TJ
2018	Cr	1A2d	DEMOLITION WOOD	0.000233410 kg/TJ
2018	Cr	1A2d	FOREST RESIDUE CHIPS	0.001368626 kg/TJ
2018	Cr	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.001873570 kg/TJ
2018	Cr	1A2d	HEAVY FUEL OIL (S<1%)	0.000633510 kg/TJ
2018	Cr	1A2d	INDUSTRIAL WASTE	0.054830050 kg/TJ
2018	Cr	1A2d	MILLED PEAT	0.000541955 kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING	
2018	Cr	1A2d	INDUSTRY	0.001834760 kg/TJ
2018	Cr	1A2d	OTHER NON-FOSSIL SOLID	0.000546253 kg/TJ
2018	Cr	1A2d	OTHER WASTE	0.001378710 kg/TJ
2018	Cr	1A2d	OTHER WOOD RESIDUE	0.034898148 kg/TJ
2018	Cr	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000109918 kg/TJ
2018	Cr	1A2d	PAPER	0.000421390 kg/TJ
2018	Cr	1A2d	PLASTIC WASTE	0.000460089 kg/TJ
2018	Cr	1A2d	RECOVERED FUEL (REF 1)	0.002160112 kg/TJ
2018	Cr	1A2d	RECOVERED FUEL (REF 2)	0.000296876 kg/TJ
2018	Cr	1A2d	RECOVERED WOOD	0.000200343 kg/TJ
2018	Cr	1A2d	RECYCLED AND WASTE OILS	0.000058352 kg/TJ
2018	Cr	1A2d	SALT TREATED WOOD	0.000233410 kg/TJ
2018	Cr	1A2d	SAWDUST AND CUTTER CHIPS	0.011097949 kg/TJ
2018	Cr	1A2d	SOD PEAT	0.000413648 kg/TJ
2018	Cr	1A2d	SULPHITE LIQUOR	0.004321703 kg/TJ
2018	Cr	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.004224630 kg/TJ
2018	Cr	1A2d	WOOD RESIDUE CHIPS	0.018828714 kg/TJ
2018	Cr	1A2e	ANIMAL-BASED FUELS	0.034975036 kg/TJ
2018	Cr	1A2e	CHIPS FROM ROUNDWOOD	0.002000002 kg/TJ
2018	Cr	1A2e	COAL (S=1.0%)	0.004971686 kg/TJ
2018	Cr	1A2e	COKE (S=1.0%)	1.000000593 kg/TJ
2018	Cr	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.001000000 kg/TJ
2018	Cr	1A2e	HEAVY FUEL OIL (S<1%)	0.001042477 kg/TJ
2018	Cr	1A2e	MILLED PEAT	0.095715474 kg/TJ
2018	Cr	1A2e	OTHER NON-FOSSIL SOLID	0.002000000 kg/TJ
2018	Cr	1A2e	PEAT PELLETS AND BRIQUETTES	0.000800000 kg/TJ
2018	Cr	1A2e	RECOVERED WOOD	0.001981449 kg/TJ
2018	Cr	1A2e	SAWDUST AND CUTTER CHIPS	0.035000026 kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED	
2018	Cr	1A2e	WOOD FUELS)	0.035000000 kg/TJ
2018	Cr	1A2e	WOOD RESIDUE CHIPS	0.034999995 kg/TJ
2018	Cr	1A2f	CHIPS FROM ROUNDWOOD	0.034999993 kg/TJ
2018	Cr	1A2f	COAL (S=1.0%)	0.564831591 kg/TJ
2018	Cr	1A2f	COKE (S=1.0%)	0.988841282 kg/TJ
2018	Cr	1A2f	FOREST RESIDUE CHIPS	0.035000000 kg/TJ
2018	Cr	1A2f	HEAVY FUEL OIL (S<1%)	0.000218555 kg/TJ
2018	Cr	1A2f	OTHER FOSSIL LIQUID	0.000003001 kg/TJ
2018	Cr	1A2f	OTHER FOSSIL SOLID	0.000411210 kg/TJ
2018	Cr	1A2f	OTHER HEAVY DISTILLATES	0.001000000 kg/TJ
2018	Cr	1A2f	PETROLEUM COKE	0.001437656 kg/TJ
2018	Cr	1A2f	RECOVERED FUEL (REF 1)	0.000941734 kg/TJ

2018	Cr	1A2f	RECOVERED FUEL (REF 2)	0.000123802	kg/TJ
2018	Cr	1A2f	RECYCLED AND WASTE OILS	0.001125563	kg/TJ
2018	Cr	1A2f	RUBBER WASTE	0.000166961	kg/TJ
2018	Cr	1A2f	SAWDUST AND CUTTER CHIPS	0.008186984	kg/TJ
2018	Cr	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.001157407	kg/TJ
2018	Cr	1A2gvii	LIQUID GAS	0.001086957	kg/TJ
2018	Cr	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.001192863	kg/TJ
2018	Cr	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.002000000	kg/TJ
2018	Cr	1A2gviii	BARK	0.015188594	kg/TJ
2018	Cr	1A2gviii	CHIPS FROM ROUNDWOOD	0.024166552	kg/TJ
2018	Cr	1A2gviii	COAL (S=1.0%)	1.000000000	kg/TJ
2018	Cr	1A2gviii	FOREST RESIDUE CHIPS	0.015800827	kg/TJ
2018	Cr	1A2gviii	HEAVY FUEL OIL (S<1%)	0.011800860	kg/TJ
2018	Cr	1A2gviii	INDUSTRIAL WASTE	0.000599998	kg/TJ
2018	Cr	1A2gviii	MILLED PEAT	0.000991758	kg/TJ
2018	Cr	1A2gviii	MUNICIPAL WASTE - unsorted	0.002660993	kg/TJ
2018	Cr	1A2gviii	OTHER HEAVY DISTILLATES	0.001000000	kg/TJ
2018	Cr	1A2gviii	OTHER NON-FOSSIL SOLID	0.002307000	kg/TJ
2018	Cr	1A2gviii	OTHER WOOD RESIDUE	0.015813779	kg/TJ
2018	Cr	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.107044471	kg/TJ
2018	Cr	1A2gviii	RECOVERED FUEL (REF 2)	0.001292803	kg/TJ
2018	Cr	1A2gviii	RECOVERED WOOD	0.001465220	kg/TJ
2018	Cr	1A2gviii	SAWDUST AND CUTTER CHIPS	0.019638190	kg/TJ
2018	Cr	1A2gviii	SOD PEAT	0.061961063	kg/TJ
2018	Cr	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.014736039	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cr	1A2gviii	WOOD FUELS)	0.032790001	kg/TJ
2018	Cr	1A2gviii	WOOD RESIDUE CHIPS	0.024232488	kg/TJ
2018	Cr	1A3bi	DIESEL OIL (S=0.001%)	0.000198650	kg/TJ
2018	Cr	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000150601	kg/TJ
2018	Cr	1A3bii	DIESEL OIL (S=0.001%)	0.000198650	kg/TJ
2018	Cr	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000150301	kg/TJ
2018	Cr	1A3biii	DIESEL OIL (S=0.001%)	0.000198650	kg/TJ
2018	Cr	1A3biv	DIESEL OIL (S=0.001%)	0.000198483	kg/TJ
2018	Cr	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000150301	kg/TJ
2018	Cr	1A3c	GASOIL (FOR NON-ROAD USE)	0.001157407	kg/TJ
2018	Cr	1A3dii	GASOIL (FOR NON-ROAD USE)	0.001226870	kg/TJ
2018	Cr	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.012415394	kg/TJ
2018	Cr	1A4ai	FOREST WOODFUEL	0.035000000	kg/TJ
2018	Cr	1A4ai	HEAVY FUEL OIL (S<1%)	0.001000000	kg/TJ
2018	Cr	1A4ai	SOD PEAT	0.140000000	kg/TJ
2018	Cr	1A4aii	GASOIL (FOR NON-ROAD USE)	0.001157407	kg/TJ
2018	Cr	1A4aii	MOTOR GASOLINE (S=0.001%)	0.001192863	kg/TJ
2018	Cr	1A4bi	COAL (S=1.0%)	0.500000000	kg/TJ
2018	Cr	1A4bi	FOREST WOODFUEL	0.035000000	kg/TJ
2018	Cr	1A4bi	HEAVY FUEL OIL (S<1%)	0.001000000	kg/TJ
2018	Cr	1A4bi	SOD PEAT	0.140000000	kg/TJ
2018	Cr	1A4bii	GASOIL (FOR NON-ROAD USE)	0.001157407	kg/TJ
2018	Cr	1A4bii	MOTOR GASOLINE (S=0.001%)	0.001192863	kg/TJ
2018	Cr	1A4ci	ANIMAL-BASED FUELS	0.035000000	kg/TJ
2018	Cr	1A4ci	CHIPS FROM ROUNDWOOD	0.002000000	kg/TJ
2018	Cr	1A4ci	COAL (S=1.0%)	0.005000000	kg/TJ
2018	Cr	1A4ci	FOREST WOODFUEL	0.035000000	kg/TJ
2018	Cr	1A4ci	HEAVY FUEL OIL (S<1%)	0.001000000	kg/TJ
2018	Cr	1A4ci	OTHER NON-FOSSIL SOLID	0.002000000	kg/TJ
2018	Cr	1A4ci	RECOVERED WOOD	0.002000000	kg/TJ
2018	Cr	1A4ci	SOD PEAT	0.140000000	kg/TJ

2018	Cr	1A4ci	WOOD RESIDUE CHIPS	0.035000000	kg/TJ
2018	Cr	1A4cii	GASOIL (FOR NON-ROAD USE)	0.001157407	kg/TJ
2018	Cr	1A4cii	MOTOR GASOLINE (S=0.001%)	0.001192863	kg/TJ
2018	Cr	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.001157407	kg/TJ
2018	Cr	1A5a	FOREST WOODFUEL	0.035000000	kg/TJ
2018	Cr	1A5a	HEAVY FUEL OIL (S<1%)	0.001000000	kg/TJ
2018	Cr	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000105987	kg/TJ
2018	Cr	1A5a	OTHER PETROLEUM PRODUCTS	0.001000000	kg/TJ

Cu implied emission factors in Finnish air pollutant inventory for 2018

2018	Cu	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.002469019	kg/TJ
2018	Cu	1A1a	ANIMAL-BASED FUELS	0.002190794	kg/TJ
2018	Cu	1A1a	BARK	0.009654081	kg/TJ
2018	Cu	1A1a	CHIPS FROM ROUNDWOOD	0.009196451	kg/TJ
2018	Cu	1A1a	COAL (S=1.0%)	0.002488577	kg/TJ
2018	Cu	1A1a	CREOSOTED WOOD	0.004824985	kg/TJ
2018	Cu	1A1a	DEINKING WASTE	0.017840056	kg/TJ
2018	Cu	1A1a	DEMOLITION WOOD	0.004816442	kg/TJ
2018	Cu	1A1a	FOREST RESIDUE CHIPS	0.011036200	kg/TJ
2018	Cu	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000160517	kg/TJ
2018	Cu	1A1a	HEAVY FUEL OIL (S<1%)	0.001389313	kg/TJ
2018	Cu	1A1a	INDUSTRIAL WASTE	0.003057015	kg/TJ
2018	Cu	1A1a	MILLED PEAT	0.010613740	kg/TJ
2018	Cu	1A1a	MUNICIPAL WASTE - unsorted	0.017188060	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Cu	1A1a	INDUSTRY	0.004669829	kg/TJ
2018	Cu	1A1a	OTHER FOSSIL SOLID	0.043196761	kg/TJ
2018	Cu	1A1a	OTHER NON-FOSSIL SOLID	0.013122236	kg/TJ
2018	Cu	1A1a	OTHER WASTE	0.000513954	kg/TJ
2018	Cu	1A1a	OTHER WOOD RESIDUE	0.022990039	kg/TJ
2018	Cu	1A1a	PAPER	0.000345442	kg/TJ
2018	Cu	1A1a	PEAT PELLETS AND BRIQUETTES	0.004168090	kg/TJ
2018	Cu	1A1a	PLYWOOD RESIDUE	0.000832880	kg/TJ
2018	Cu	1A1a	RECOVERED FUEL (REF 1)	0.050999923	kg/TJ
2018	Cu	1A1a	RECOVERED FUEL (REF 2)	0.006042704	kg/TJ
2018	Cu	1A1a	RECOVERED FUEL (REF 3)	0.002246724	kg/TJ
2018	Cu	1A1a	RECOVERED WOOD	0.005442598	kg/TJ
2018	Cu	1A1a	RECYCLED AND WASTE OILS	0.000391294	kg/TJ
2018	Cu	1A1a	REFUSE-DERIVED FUEL (RDF)	0.002250003	kg/TJ
2018	Cu	1A1a	SALT TREATED WOOD	0.004575473	kg/TJ
2018	Cu	1A1a	SAWDUST AND CUTTER CHIPS	0.008455455	kg/TJ
2018	Cu	1A1a	SOD PEAT	0.213762835	kg/TJ
2018	Cu	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.013261997	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cu	1A1a	WOOD FUELS)	0.027940800	kg/TJ
2018	Cu	1A1a	WOOD RESIDUE CHIPS	0.023534526	kg/TJ
2018	Cu	1A1b	COKE (S=1.0%)	0.349999289	kg/TJ
2018	Cu	1A1b	HEAVY FUEL OIL (S<1%)	0.001030278	kg/TJ
2018	Cu	1A1b	OTHER FOSSIL LIQUID	0.002500000	kg/TJ
2018	Cu	1A1b	OTHER HEAVY DISTILLATES	0.002499991	kg/TJ
2018	Cu	1A1b	PETROLEUM COKE	0.350000000	kg/TJ
2018	Cu	1A2a	HEAVY FUEL OIL (S<1%)	0.002438457	kg/TJ
2018	Cu	1A2a	WOOD RESIDUE CHIPS	0.051000049	kg/TJ
2018	Cu	1A2b	HEAVY FUEL OIL (S<1%)	0.000706207	kg/TJ
2018	Cu	1A2c	COAL (S=1.0%)	0.000643032	kg/TJ
2018	Cu	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.002500000	kg/TJ
2018	Cu	1A2c	HEAVY FUEL OIL (S<1%)	0.002491187	kg/TJ
2018	Cu	1A2c	OTHER FOSSIL LIQUID	0.002500000	kg/TJ
2018	Cu	1A2c	PETROLEUM COKE	0.350000000	kg/TJ
2018	Cu	1A2c	SAWDUST AND CUTTER CHIPS	0.001786201	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cu	1A2c	WOOD FUELS)	0.051000000	kg/TJ
2018	Cu	1A2c	WOOD RESIDUE CHIPS	0.018219266	kg/TJ
2018	Cu	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.012397385	kg/TJ
2018	Cu	1A2d	ANIMAL-BASED FUELS	0.002767020	kg/TJ

2018	Cu	1A2d	BARK	0.008726914	kg/TJ
2018	Cu	1A2d	CHIPS FROM ROUNDWOOD	0.004706918	kg/TJ
2018	Cu	1A2d	COAL (S=1.0%)	0.001176758	kg/TJ
2018	Cu	1A2d	CREOSOTED WOOD	0.002471260	kg/TJ
2018	Cu	1A2d	DEMOLITION WOOD	0.001112063	kg/TJ
2018	Cu	1A2d	FOREST RESIDUE CHIPS	0.010370685	kg/TJ
2018	Cu	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.006639053	kg/TJ
2018	Cu	1A2d	HEAVY FUEL OIL (S<1%)	0.005822788	kg/TJ
2018	Cu	1A2d	INDUSTRIAL WASTE	0.066041094	kg/TJ
2018	Cu	1A2d	MILLED PEAT	0.000782505	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Cu	1A2d	INDUSTRY	0.006545933	kg/TJ
2018	Cu	1A2d	OTHER NON-FOSSIL SOLID	0.001007179	kg/TJ
2018	Cu	1A2d	OTHER WASTE	0.003632658	kg/TJ
2018	Cu	1A2d	OTHER WOOD RESIDUE	0.050856786	kg/TJ
2018	Cu	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.027778728	kg/TJ
2018	Cu	1A2d	PAPER	0.001211743	kg/TJ
2018	Cu	1A2d	PLASTIC WASTE	0.001096105	kg/TJ
2018	Cu	1A2d	RECOVERED FUEL (REF 1)	0.001626787	kg/TJ
2018	Cu	1A2d	RECOVERED FUEL (REF 2)	0.015261405	kg/TJ
2018	Cu	1A2d	RECOVERED WOOD	0.007540139	kg/TJ
2018	Cu	1A2d	RECYCLED AND WASTE OILS	0.000222413	kg/TJ
2018	Cu	1A2d	SALT TREATED WOOD	0.001112071	kg/TJ
2018	Cu	1A2d	SAWDUST AND CUTTER CHIPS	0.023807819	kg/TJ
2018	Cu	1A2d	SOD PEAT	0.000097993	kg/TJ
2018	Cu	1A2d	SULPHITE LIQUOR	0.008021330	kg/TJ
2018	Cu	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.007627082	kg/TJ
2018	Cu	1A2d	WOOD RESIDUE CHIPS	0.036825918	kg/TJ
2018	Cu	1A2e	ANIMAL-BASED FUELS	0.050820216	kg/TJ
2018	Cu	1A2e	CHIPS FROM ROUNDWOOD	0.004999982	kg/TJ
2018	Cu	1A2e	COAL (S=1.0%)	0.003889080	kg/TJ
2018	Cu	1A2e	COKE (S=1.0%)	0.350000208	kg/TJ
2018	Cu	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.002500000	kg/TJ
2018	Cu	1A2e	HEAVY FUEL OIL (S<1%)	0.002792090	kg/TJ
2018	Cu	1A2e	MILLED PEAT	0.150423664	kg/TJ
2018	Cu	1A2e	OTHER NON-FOSSIL SOLID	0.005000000	kg/TJ
2018	Cu	1A2e	PEAT PELLETS AND BRIQUETTES	0.001300000	kg/TJ
2018	Cu	1A2e	RECOVERED WOOD	0.004770788	kg/TJ
2018	Cu	1A2e	SAWDUST AND CUTTER CHIPS	0.050999987	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cu	1A2e	WOOD FUELS)	0.051000000	kg/TJ
2018	Cu	1A2e	WOOD RESIDUE CHIPS	0.051000170	kg/TJ
2018	Cu	1A2f	CHIPS FROM ROUNDWOOD	0.051000003	kg/TJ
2018	Cu	1A2f	COAL (S=1.0%)	0.197486698	kg/TJ
2018	Cu	1A2f	COKE (S=1.0%)	0.346204936	kg/TJ
2018	Cu	1A2f	FOREST RESIDUE CHIPS	0.051000000	kg/TJ
2018	Cu	1A2f	HEAVY FUEL OIL (S<1%)	0.000530357	kg/TJ
2018	Cu	1A2f	OTHER FOSSIL LIQUID	0.000006911	kg/TJ
2018	Cu	1A2f	OTHER FOSSIL SOLID	0.000430213	kg/TJ
2018	Cu	1A2f	OTHER HEAVY DISTILLATES	0.002500000	kg/TJ
2018	Cu	1A2f	PETROLEUM COKE	0.000646377	kg/TJ
2018	Cu	1A2f	RECOVERED FUEL (REF 1)	0.001753262	kg/TJ
2018	Cu	1A2f	RECOVERED FUEL (REF 2)	0.000263773	kg/TJ
2018	Cu	1A2f	RECYCLED AND WASTE OILS	0.000479950	kg/TJ
2018	Cu	1A2f	RUBBER WASTE	0.000545953	kg/TJ
2018	Cu	1A2f	SAWDUST AND CUTTER CHIPS	0.007806973	kg/TJ
2018	Cu	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.039351852	kg/TJ

2018	Cu	1A2gvii	LIQUID GAS	0.036956522	kg/TJ
2018	Cu	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.040557344	kg/TJ
2018	Cu	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.005000000	kg/TJ
2018	Cu	1A2gviii	BARK	0.023365064	kg/TJ
2018	Cu	1A2gviii	CHIPS FROM ROUNDWOOD	0.032888493	kg/TJ
2018	Cu	1A2gviii	COAL (S=1.0%)	0.350000000	kg/TJ
2018	Cu	1A2gviii	FOREST RESIDUE CHIPS	0.023614271	kg/TJ
2018	Cu	1A2gviii	HEAVY FUEL OIL (S<1%)	0.006382759	kg/TJ
2018	Cu	1A2gviii	INDUSTRIAL WASTE	0.002249998	kg/TJ
2018	Cu	1A2gviii	MILLED PEAT	0.001601277	kg/TJ
2018	Cu	1A2gviii	MUNICIPAL WASTE - unsorted	0.003915012	kg/TJ
2018	Cu	1A2gviii	OTHER HEAVY DISTILLATES	0.002500000	kg/TJ
2018	Cu	1A2gviii	OTHER NON-FOSSIL SOLID	0.005378478	kg/TJ
2018	Cu	1A2gviii	OTHER WOOD RESIDUE	0.024255572	kg/TJ
2018	Cu	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.020661157	kg/TJ
2018	Cu	1A2gviii	RECOVERED FUEL (REF 2)	0.005171209	kg/TJ
2018	Cu	1A2gviii	RECOVERED WOOD	0.005129466	kg/TJ
2018	Cu	1A2gviii	SAWDUST AND CUTTER CHIPS	0.029262594	kg/TJ
2018	Cu	1A2gviii	SOD PEAT	0.098296378	kg/TJ
2018	Cu	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.022396325	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Cu	1A2gviii	WOOD FUELS)	0.047919396	kg/TJ
2018	Cu	1A2gviii	WOOD RESIDUE CHIPS	0.035990677	kg/TJ
2018	Cu	1A3bi	DIESEL OIL (S=0.001%)	0.000133212	kg/TJ
2018	Cu	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000107572	kg/TJ
2018	Cu	1A3bii	DIESEL OIL (S=0.001%)	0.000133212	kg/TJ
2018	Cu	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000107358	kg/TJ
2018	Cu	1A3biii	DIESEL OIL (S=0.001%)	0.000133212	kg/TJ
2018	Cu	1A3biv	DIESEL OIL (S=0.001%)	0.000133101	kg/TJ
2018	Cu	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000107358	kg/TJ
2018	Cu	1A3c	GASOIL (FOR NON-ROAD USE)	0.039351852	kg/TJ
2018	Cu	1A3dii	GASOIL (FOR NON-ROAD USE)	0.021592907	kg/TJ
2018	Cu	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.021554504	kg/TJ
2018	Cu	1A4ai	FOREST WOODFUEL	0.006000000	kg/TJ
2018	Cu	1A4ai	HEAVY FUEL OIL (S<1%)	0.002500000	kg/TJ
2018	Cu	1A4ai	SOD PEAT	0.220000000	kg/TJ
2018	Cu	1A4aii	GASOIL (FOR NON-ROAD USE)	0.039351852	kg/TJ
2018	Cu	1A4aii	MOTOR GASOLINE (S=0.001%)	0.040557344	kg/TJ
2018	Cu	1A4bi	COAL (S=1.0%)	0.175000000	kg/TJ
2018	Cu	1A4bi	FOREST WOODFUEL	0.006000000	kg/TJ
2018	Cu	1A4bi	HEAVY FUEL OIL (S<1%)	0.002500000	kg/TJ
2018	Cu	1A4bi	SOD PEAT	0.220000000	kg/TJ
2018	Cu	1A4bii	GASOIL (FOR NON-ROAD USE)	0.039351852	kg/TJ
2018	Cu	1A4bii	MOTOR GASOLINE (S=0.001%)	0.040557344	kg/TJ
2018	Cu	1A4ci	ANIMAL-BASED FUELS	0.051000000	kg/TJ
2018	Cu	1A4ci	CHIPS FROM ROUNDWOOD	0.005000000	kg/TJ
2018	Cu	1A4ci	COAL (S=1.0%)	0.004000000	kg/TJ
2018	Cu	1A4ci	FOREST WOODFUEL	0.006000000	kg/TJ
2018	Cu	1A4ci	HEAVY FUEL OIL (S<1%)	0.002500000	kg/TJ
2018	Cu	1A4ci	OTHER NON-FOSSIL SOLID	0.005000000	kg/TJ
2018	Cu	1A4ci	RECOVERED WOOD	0.005000000	kg/TJ
2018	Cu	1A4ci	SOD PEAT	0.220000000	kg/TJ
2018	Cu	1A4ci	WOOD RESIDUE CHIPS	0.051000000	kg/TJ
2018	Cu	1A4cii	GASOIL (FOR NON-ROAD USE)	0.039351852	kg/TJ
2018	Cu	1A4cii	MOTOR GASOLINE (S=0.001%)	0.040557344	kg/TJ
2018	Cu	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.020370370	kg/TJ
2018	Cu	1A5a	FOREST WOODFUEL	0.051000000	kg/TJ

2018	Cu	1A5a	HEAVY FUEL OIL (S<1%)	0.002500000	kg/TJ
2018	Cu	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.002068690	kg/TJ
2018	Cu	1A5a	OTHER PETROLEUM PRODUCTS	0.002500000	kg/TJ

Ni implied emission factors in Finnish air pollutant inventory for 2018

2018	Ni	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.001317816	kg/TJ
2018	Ni	1A1a	ANIMAL-BASED FUELS	0.001889334	kg/TJ
2018	Ni	1A1a	BARK	0.005034043	kg/TJ
2018	Ni	1A1a	CHIPS FROM ROUNDWOOD	0.005284184	kg/TJ
2018	Ni	1A1a	COAL (S=1.0%)	0.002900751	kg/TJ
2018	Ni	1A1a	CREOSOTED WOOD	0.002000000	kg/TJ
2018	Ni	1A1a	DEINKING WASTE	0.010664944	kg/TJ
2018	Ni	1A1a	DEMOLITION WOOD	0.001999995	kg/TJ
2018	Ni	1A1a	FOREST RESIDUE CHIPS	0.005213249	kg/TJ
2018	Ni	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.009987672	kg/TJ
2018	Ni	1A1a	HEAVY FUEL OIL (S<1%)	0.112545266	kg/TJ
2018	Ni	1A1a	INDUSTRIAL WASTE	0.000989538	kg/TJ
2018	Ni	1A1a	MILLED PEAT	0.006317867	kg/TJ
2018	Ni	1A1a	MUNICIPAL WASTE - unsorted	0.009548149	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Ni	1A1a	INDUSTRY	0.001945109	kg/TJ
2018	Ni	1A1a	OTHER FOSSIL SOLID	0.021145837	kg/TJ
2018	Ni	1A1a	OTHER NON-FOSSIL SOLID	0.003716075	kg/TJ
2018	Ni	1A1a	OTHER WASTE	0.001999999	kg/TJ
2018	Ni	1A1a	OTHER WOOD RESIDUE	0.011607383	kg/TJ
2018	Ni	1A1a	PAPER	0.000716712	kg/TJ
2018	Ni	1A1a	PEAT PELLETS AND BRIQUETTES	0.001972923	kg/TJ
2018	Ni	1A1a	PLYWOOD RESIDUE	0.000464033	kg/TJ
2018	Ni	1A1a	RECOVERED FUEL (REF 1)	0.030000006	kg/TJ
2018	Ni	1A1a	RECOVERED FUEL (REF 2)	0.001387851	kg/TJ
2018	Ni	1A1a	RECOVERED FUEL (REF 3)	0.000499272	kg/TJ
2018	Ni	1A1a	RECOVERED WOOD	0.001632308	kg/TJ
2018	Ni	1A1a	RECYCLED AND WASTE OILS	0.003999999	kg/TJ
2018	Ni	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000500000	kg/TJ
2018	Ni	1A1a	SALT TREATED WOOD	0.002000000	kg/TJ
2018	Ni	1A1a	SAWDUST AND CUTTER CHIPS	0.004980875	kg/TJ
2018	Ni	1A1a	SOD PEAT	0.136712833	kg/TJ
2018	Ni	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.005071013	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Ni	1A1a	WOOD FUELS)	0.016224571	kg/TJ
2018	Ni	1A1a	WOOD RESIDUE CHIPS	0.012842446	kg/TJ
2018	Ni	1A1b	COKE (S=1.0%)	0.800000000	kg/TJ
2018	Ni	1A1b	HEAVY FUEL OIL (S<1%)	0.223073817	kg/TJ
2018	Ni	1A1b	OTHER FOSSIL LIQUID	0.451669894	kg/TJ
2018	Ni	1A1b	OTHER HEAVY DISTILLATES	0.442978119	kg/TJ
2018	Ni	1A1b	PETROLEUM COKE	0.001445504	kg/TJ
2018	Ni	1A2a	HEAVY FUEL OIL (S<1%)	0.295679993	kg/TJ
2018	Ni	1A2a	WOOD RESIDUE CHIPS	0.030000000	kg/TJ
2018	Ni	1A2b	COAL (S=1.0%)	0.785664983	kg/TJ
2018	Ni	1A2b	HEAVY FUEL OIL (S<1%)	0.084744879	kg/TJ
2018	Ni	1A2c	COAL (S=1.0%)	0.000369893	kg/TJ
2018	Ni	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.300000000	kg/TJ
2018	Ni	1A2c	HEAVY FUEL OIL (S<1%)	0.293861964	kg/TJ
2018	Ni	1A2c	OTHER FOSSIL LIQUID	0.300000000	kg/TJ
2018	Ni	1A2c	PETROLEUM COKE	0.800000000	kg/TJ
2018	Ni	1A2c	SAWDUST AND CUTTER CHIPS	0.000739787	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Ni	1A2c	WOOD FUELS)	0.030000000	kg/TJ
2018	Ni	1A2c	WOOD RESIDUE CHIPS	0.011096800	kg/TJ
2018	Ni	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.001391564	kg/TJ

2018	Ni	1A2d	ANIMAL-BASED FUELS	0.001138496	kg/TJ
2018	Ni	1A2d	BARK	0.001327754	kg/TJ
2018	Ni	1A2d	BLACK LIQUOR	0.000324637	kg/TJ
2018	Ni	1A2d	CHIPS FROM ROUNDWOOD	0.002152698	kg/TJ
2018	Ni	1A2d	COAL (S=1.0%)	0.000698587	kg/TJ
2018	Ni	1A2d	CREOSOTED WOOD	0.002000000	kg/TJ
2018	Ni	1A2d	DEMOLITION WOOD	0.000499999	kg/TJ
2018	Ni	1A2d	FOREST RESIDUE CHIPS	0.001303833	kg/TJ
2018	Ni	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.089325028	kg/TJ
2018	Ni	1A2d	HEAVY FUEL OIL (S<1%)	0.068511713	kg/TJ
2018	Ni	1A2d	INDUSTRIAL WASTE	0.043957136	kg/TJ
2018	Ni	1A2d	MILLED PEAT	0.000370453	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Ni	1A2d	INDUSTRY	0.001386329	kg/TJ
2018	Ni	1A2d	OTHER NON-FOSSIL SOLID	0.000313168	kg/TJ
2018	Ni	1A2d	OTHER WASTE	0.001472467	kg/TJ
2018	Ni	1A2d	OTHER WOOD RESIDUE	0.029912291	kg/TJ
2018	Ni	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000126102	kg/TJ
2018	Ni	1A2d	PAPER	0.001019247	kg/TJ
2018	Ni	1A2d	PLASTIC WASTE	0.000910653	kg/TJ
2018	Ni	1A2d	RECOVERED FUEL (REF 1)	0.002998270	kg/TJ
2018	Ni	1A2d	RECOVERED FUEL (REF 2)	0.000428091	kg/TJ
2018	Ni	1A2d	RECOVERED WOOD	0.000367421	kg/TJ
2018	Ni	1A2d	RECYCLED AND WASTE OILS	0.000999998	kg/TJ
2018	Ni	1A2d	SALT TREATED WOOD	0.000500000	kg/TJ
2018	Ni	1A2d	SAWDUST AND CUTTER CHIPS	0.009203289	kg/TJ
2018	Ni	1A2d	SOD PEAT	0.000362884	kg/TJ
2018	Ni	1A2d	SULPHITE LIQUOR	0.003906453	kg/TJ
2018	Ni	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.003610990	kg/TJ
2018	Ni	1A2d	WOOD RESIDUE CHIPS	0.017603304	kg/TJ
2018	Ni	1A2e	ANIMAL-BASED FUELS	0.029970175	kg/TJ
2018	Ni	1A2e	CHIPS FROM ROUNDWOOD	0.002000002	kg/TJ
2018	Ni	1A2e	COAL (S=1.0%)	0.003973271	kg/TJ
2018	Ni	1A2e	COKE (S=1.0%)	0.800001958	kg/TJ
2018	Ni	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.300000000	kg/TJ
2018	Ni	1A2e	HEAVY FUEL OIL (S<1%)	0.335639236	kg/TJ
2018	Ni	1A2e	MILLED PEAT	0.095715474	kg/TJ
2018	Ni	1A2e	OTHER NON-FOSSIL SOLID	0.002000000	kg/TJ
2018	Ni	1A2e	PEAT PELLETS AND BRIQUETTES	0.000800000	kg/TJ
2018	Ni	1A2e	RECOVERED WOOD	0.001974143	kg/TJ
2018	Ni	1A2e	SAWDUST AND CUTTER CHIPS	0.030000022	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Ni	1A2e	WOOD FUELS)	0.030000000	kg/TJ
2018	Ni	1A2e	WOOD RESIDUE CHIPS	0.030000010	kg/TJ
2018	Ni	1A2f	CHIPS FROM ROUNDWOOD	0.030000004	kg/TJ
2018	Ni	1A2f	COAL (S=1.0%)	0.451923444	kg/TJ
2018	Ni	1A2f	COKE (S=1.0%)	0.790846689	kg/TJ
2018	Ni	1A2f	FOREST RESIDUE CHIPS	0.030000000	kg/TJ
2018	Ni	1A2f	HEAVY FUEL OIL (S<1%)	0.048143333	kg/TJ
2018	Ni	1A2f	OTHER FOSSIL LIQUID	0.001189773	kg/TJ
2018	Ni	1A2f	OTHER FOSSIL SOLID	0.000236981	kg/TJ
2018	Ni	1A2f	OTHER HEAVY DISTILLATES	0.300000000	kg/TJ
2018	Ni	1A2f	PETROLEUM COKE	0.001398576	kg/TJ
2018	Ni	1A2f	RECOVERED FUEL (REF 1)	0.000619290	kg/TJ
2018	Ni	1A2f	RECOVERED FUEL (REF 2)	0.000119354	kg/TJ
2018	Ni	1A2f	RECYCLED AND WASTE OILS	0.009201492	kg/TJ
2018	Ni	1A2f	RUBBER WASTE	0.000120218	kg/TJ

2018	Ni	1A2f	SAWDUST AND CUTTER CHIPS	0.007696839	kg/TJ
2018	Ni	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.001620370	kg/TJ
2018	Ni	1A2gvii	LIQUID GAS	0.001521739	kg/TJ
2018	Ni	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.001670008	kg/TJ
2018	Ni	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.002000000	kg/TJ
2018	Ni	1A2gviii	BARK	0.013195639	kg/TJ
2018	Ni	1A2gviii	CHIPS FROM ROUNDWOOD	0.019963063	kg/TJ
2018	Ni	1A2gviii	COAL (S=1.0%)	0.800000000	kg/TJ
2018	Ni	1A2gviii	FOREST RESIDUE CHIPS	0.013664342	kg/TJ
2018	Ni	1A2gviii	HEAVY FUEL OIL (S<1%)	0.283589534	kg/TJ
2018	Ni	1A2gviii	INDUSTRIAL WASTE	0.000500000	kg/TJ
2018	Ni	1A2gviii	MILLED PEAT	0.000991758	kg/TJ
2018	Ni	1A2gviii	MUNICIPAL WASTE - unsorted	0.029270978	kg/TJ
2018	Ni	1A2gviii	OTHER HEAVY DISTILLATES	0.300000000	kg/TJ
2018	Ni	1A2gviii	OTHER NON-FOSSIL SOLID	0.002274299	kg/TJ
2018	Ni	1A2gviii	OTHER WOOD RESIDUE	0.013720782	kg/TJ
2018	Ni	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.214285714	kg/TJ
2018	Ni	1A2gviii	RECOVERED FUEL (REF 2)	0.007756813	kg/TJ
2018	Ni	1A2gviii	RECOVERED WOOD	0.006353278	kg/TJ
2018	Ni	1A2gviii	SAWDUST AND CUTTER CHIPS	0.017056204	kg/TJ
2018	Ni	1A2gviii	SOD PEAT	0.063819133	kg/TJ
2018	Ni	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.012728360	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Ni	1A2gviii	WOOD FUELS)	0.028124849	kg/TJ
2018	Ni	1A2gviii	WOOD RESIDUE CHIPS	0.020863920	kg/TJ
2018	Ni	1A3bi	DIESEL OIL (S=0.001%)	0.000004674	kg/TJ
2018	Ni	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000054981	kg/TJ
2018	Ni	1A3bii	DIESEL OIL (S=0.001%)	0.000004674	kg/TJ
2018	Ni	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000054872	kg/TJ
2018	Ni	1A3biii	DIESEL OIL (S=0.001%)	0.000004674	kg/TJ
2018	Ni	1A3biv	DIESEL OIL (S=0.001%)	0.000004670	kg/TJ
2018	Ni	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000054872	kg/TJ
2018	Ni	1A3c	GASOIL (FOR NON-ROAD USE)	0.001620370	kg/TJ
2018	Ni	1A3dii	GASOIL (FOR NON-ROAD USE)	0.024537395	kg/TJ
2018	Ni	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.551795299	kg/TJ
2018	Ni	1A4ai	FOREST WOODFUEL	0.030000000	kg/TJ
2018	Ni	1A4ai	HEAVY FUEL OIL (S<1%)	0.300000000	kg/TJ
2018	Ni	1A4ai	SOD PEAT	0.140000000	kg/TJ
2018	Ni	1A4aii	GASOIL (FOR NON-ROAD USE)	0.001620370	kg/TJ
2018	Ni	1A4aii	MOTOR GASOLINE (S=0.001%)	0.001670008	kg/TJ
2018	Ni	1A4bi	COAL (S=1.0%)	0.400000000	kg/TJ
2018	Ni	1A4bi	FOREST WOODFUEL	0.030000000	kg/TJ
2018	Ni	1A4bi	HEAVY FUEL OIL (S<1%)	0.300000000	kg/TJ
2018	Ni	1A4bi	SOD PEAT	0.140000000	kg/TJ
2018	Ni	1A4bii	GASOIL (FOR NON-ROAD USE)	0.001620370	kg/TJ
2018	Ni	1A4bii	MOTOR GASOLINE (S=0.001%)	0.001670008	kg/TJ
2018	Ni	1A4ci	ANIMAL-BASED FUELS	0.030000000	kg/TJ
2018	Ni	1A4ci	CHIPS FROM ROUNDWOOD	0.002000000	kg/TJ
2018	Ni	1A4ci	COAL (S=1.0%)	0.004000000	kg/TJ
2018	Ni	1A4ci	FOREST WOODFUEL	0.030000000	kg/TJ
2018	Ni	1A4ci	HEAVY FUEL OIL (S<1%)	0.300000000	kg/TJ
2018	Ni	1A4ci	OTHER NON-FOSSIL SOLID	0.002000000	kg/TJ
2018	Ni	1A4ci	RECOVERED WOOD	0.002000000	kg/TJ
2018	Ni	1A4ci	SOD PEAT	0.140000000	kg/TJ
2018	Ni	1A4ci	WOOD RESIDUE CHIPS	0.030000000	kg/TJ
2018	Ni	1A4cii	GASOIL (FOR NON-ROAD USE)	0.001620370	kg/TJ
2018	Ni	1A4cii	MOTOR GASOLINE (S=0.001%)	0.001670008	kg/TJ

2018	Ni	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.023148148	kg/TJ
2018	Ni	1A5a	FOREST WOODFUEL	0.030000000	kg/TJ
2018	Ni	1A5a	HEAVY FUEL OIL (S<1%)	0.300000000	kg/TJ
2018	Ni	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.001889165	kg/TJ
2018	Ni	1A5a	OTHER PETROLEUM PRODUCTS	0.300000000	kg/TJ

Zn implied emission factors in Finnish air pollutant inventory for 2018

2018	Zn	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.029956514	kg/TJ
2018	Zn	1A1a	ANIMAL-BASED FUELS	0.069840844	kg/TJ
2018	Zn	1A1a	BARK	0.101606836	kg/TJ
2018	Zn	1A1a	CHIPS FROM ROUNDWOOD	0.151314071	kg/TJ
2018	Zn	1A1a	COAL (S=1.0%)	0.018750882	kg/TJ
2018	Zn	1A1a	CREOSOTED WOOD	0.054000021	kg/TJ
2018	Zn	1A1a	DEINKING WASTE	0.242548237	kg/TJ
2018	Zn	1A1a	DEMOLITION WOOD	0.231618335	kg/TJ
2018	Zn	1A1a	FOREST RESIDUE CHIPS	0.163653794	kg/TJ
2018	Zn	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000894805	kg/TJ
2018	Zn	1A1a	HEAVY FUEL OIL (S<1%)	0.005159375	kg/TJ
2018	Zn	1A1a	INDUSTRIAL WASTE	0.019222081	kg/TJ
2018	Zn	1A1a	MILLED PEAT	0.025955719	kg/TJ
2018	Zn	1A1a	MUNICIPAL WASTE - unsorted	0.220014256	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Zn	1A1a	INDUSTRY	0.051731596	kg/TJ
2018	Zn	1A1a	OTHER FOSSIL SOLID	0.084088130	kg/TJ
2018	Zn	1A1a	OTHER NON-FOSSIL SOLID	0.045166326	kg/TJ
2018	Zn	1A1a	OTHER WASTE	0.053999865	kg/TJ
2018	Zn	1A1a	OTHER WOOD RESIDUE	0.281173743	kg/TJ
2018	Zn	1A1a	PAPER	0.010073385	kg/TJ
2018	Zn	1A1a	PEAT PELLETS AND BRIQUETTES	0.011110745	kg/TJ
2018	Zn	1A1a	PLYWOOD RESIDUE	0.011437264	kg/TJ
2018	Zn	1A1a	RECOVERED FUEL (REF 1)	0.699999529	kg/TJ
2018	Zn	1A1a	RECOVERED FUEL (REF 2)	0.362263990	kg/TJ
2018	Zn	1A1a	RECOVERED FUEL (REF 3)	0.007717911	kg/TJ
2018	Zn	1A1a	RECOVERED WOOD	0.292842343	kg/TJ
2018	Zn	1A1a	RECYCLED AND WASTE OILS	0.005999998	kg/TJ
2018	Zn	1A1a	REFUSE-DERIVED FUEL (RDF)	0.007714301	kg/TJ
2018	Zn	1A1a	SALT TREATED WOOD	0.053999895	kg/TJ
2018	Zn	1A1a	SAWDUST AND CUTTER CHIPS	0.145788942	kg/TJ
2018	Zn	1A1a	SOD PEAT	0.321593756	kg/TJ
2018	Zn	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.179026337	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Zn	1A1a	WOOD FUELS)	0.288354380	kg/TJ
2018	Zn	1A1a	WOOD RESIDUE CHIPS	0.372948046	kg/TJ
2018	Zn	1A1b	COKE (S=1.0%)	1.500000000	kg/TJ
2018	Zn	1A1b	HEAVY FUEL OIL (S<1%)	0.006121114	kg/TJ
2018	Zn	1A1b	OTHER FOSSIL LIQUID	0.012000000	kg/TJ
2018	Zn	1A1b	OTHER HEAVY DISTILLATES	0.011999997	kg/TJ
2018	Zn	1A1b	PETROLEUM COKE	1.500000000	kg/TJ
2018	Zn	1A2a	HEAVY FUEL OIL (S<1%)	0.055760735	kg/TJ
2018	Zn	1A2a	WOOD RESIDUE CHIPS	0.700000000	kg/TJ
2018	Zn	1A2b	HEAVY FUEL OIL (S<1%)	0.001047554	kg/TJ
2018	Zn	1A2c	COAL (S=1.0%)	0.002527354	kg/TJ
2018	Zn	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.012000000	kg/TJ
2018	Zn	1A2c	HEAVY FUEL OIL (S<1%)	0.011966369	kg/TJ
2018	Zn	1A2c	OTHER FOSSIL LIQUID	0.012000000	kg/TJ
2018	Zn	1A2c	PETROLEUM COKE	1.500000000	kg/TJ
2018	Zn	1A2c	SAWDUST AND CUTTER CHIPS	0.011373101	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Zn	1A2c	WOOD FUELS)	0.700000000	kg/TJ
2018	Zn	1A2c	WOOD RESIDUE CHIPS	0.147428888	kg/TJ
2018	Zn	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.057257278	kg/TJ
2018	Zn	1A2d	ANIMAL-BASED FUELS	0.027416431	kg/TJ

2018	Zn	1A2d	BARK	0.033523421	kg/TJ
2018	Zn	1A2d	CHIPS FROM ROUNDWOOD	0.068244106	kg/TJ
2018	Zn	1A2d	COAL (S=1.0%)	0.011267721	kg/TJ
2018	Zn	1A2d	CREOSOTED WOOD	0.054000000	kg/TJ
2018	Zn	1A2d	DEMOLITION WOOD	0.007714290	kg/TJ
2018	Zn	1A2d	FOREST RESIDUE CHIPS	0.058996765	kg/TJ
2018	Zn	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.072577411	kg/TJ
2018	Zn	1A2d	HEAVY FUEL OIL (S<1%)	0.008627530	kg/TJ
2018	Zn	1A2d	INDUSTRIAL WASTE	1.107874760	kg/TJ
2018	Zn	1A2d	MILLED PEAT	0.004230818	kg/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	Zn	1A2d	INDUSTRY	0.059796312	kg/TJ
2018	Zn	1A2d	OTHER NON-FOSSIL SOLID	0.008650077	kg/TJ
2018	Zn	1A2d	OTHER WASTE	0.037721848	kg/TJ
2018	Zn	1A2d	OTHER WOOD RESIDUE	0.697935741	kg/TJ
2018	Zn	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.012372703	kg/TJ
2018	Zn	1A2d	PAPER	0.054000000	kg/TJ
2018	Zn	1A2d	PLASTIC WASTE	0.025634458	kg/TJ
2018	Zn	1A2d	RECOVERED FUEL (REF 1)	0.699999382	kg/TJ
2018	Zn	1A2d	RECOVERED FUEL (REF 2)	0.016063720	kg/TJ
2018	Zn	1A2d	RECOVERED WOOD	0.013529748	kg/TJ
2018	Zn	1A2d	RECYCLED AND WASTE OILS	0.000857144	kg/TJ
2018	Zn	1A2d	SALT TREATED WOOD	0.007714286	kg/TJ
2018	Zn	1A2d	SAWDUST AND CUTTER CHIPS	0.226158637	kg/TJ
2018	Zn	1A2d	SOD PEAT	0.003376265	kg/TJ
2018	Zn	1A2d	SULPHITE LIQUOR	0.118467575	kg/TJ
2018	Zn	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.090439427	kg/TJ
2018	Zn	1A2d	WOOD RESIDUE CHIPS	0.414290583	kg/TJ
2018	Zn	1A2e	ANIMAL-BASED FUELS	0.698116759	kg/TJ
2018	Zn	1A2e	CHIPS FROM ROUNDWOOD	0.054000204	kg/TJ
2018	Zn	1A2e	COAL (S=1.0%)	0.082253793	kg/TJ
2018	Zn	1A2e	COKE (S=1.0%)	1.500000890	kg/TJ
2018	Zn	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.012000000	kg/TJ
2018	Zn	1A2e	HEAVY FUEL OIL (S<1%)	0.013395324	kg/TJ
2018	Zn	1A2e	MILLED PEAT	0.227560279	kg/TJ
2018	Zn	1A2e	OTHER NON-FOSSIL SOLID	0.054000011	kg/TJ
2018	Zn	1A2e	PEAT PELLETS AND BRIQUETTES	0.008000000	kg/TJ
2018	Zn	1A2e	RECOVERED WOOD	0.052110749	kg/TJ
2018	Zn	1A2e	SAWDUST AND CUTTER CHIPS	0.699999668	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Zn	1A2e	WOOD FUELS)	0.700000000	kg/TJ
2018	Zn	1A2e	WOOD RESIDUE CHIPS	0.700001936	kg/TJ
2018	Zn	1A2f	CHIPS FROM ROUNDWOOD	0.699999707	kg/TJ
2018	Zn	1A2f	COAL (S=1.0%)	1.007519728	kg/TJ
2018	Zn	1A2f	COKE (S=1.0%)	1.500000294	kg/TJ
2018	Zn	1A2f	FOREST RESIDUE CHIPS	0.700000000	kg/TJ
2018	Zn	1A2f	HEAVY FUEL OIL (S<1%)	0.007032785	kg/TJ
2018	Zn	1A2f	OTHER FOSSIL LIQUID	0.012000000	kg/TJ
2018	Zn	1A2f	OTHER FOSSIL SOLID	0.084000000	kg/TJ
2018	Zn	1A2f	OTHER HEAVY DISTILLATES	0.012000000	kg/TJ
2018	Zn	1A2f	PETROLEUM COKE	0.643264413	kg/TJ
2018	Zn	1A2f	RECOVERED FUEL (REF 1)	0.700000000	kg/TJ
2018	Zn	1A2f	RECOVERED FUEL (REF 2)	0.504119878	kg/TJ
2018	Zn	1A2f	RECYCLED AND WASTE OILS	0.006571025	kg/TJ
2018	Zn	1A2f	RUBBER WASTE	0.054000045	kg/TJ
2018	Zn	1A2f	SAWDUST AND CUTTER CHIPS	0.122846201	kg/TJ
2018	Zn	1A2gvii	GASOIL (FOR NON-ROAD USE)	0.023148148	kg/TJ

2018	Zn	1A2gvii	LIQUID GAS	0.021739130	kg/TJ
2018	Zn	1A2gvii	MOTOR GASOLINE (S=0.001%)	0.023857261	kg/TJ
2018	Zn	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.054000000	kg/TJ
2018	Zn	1A2gviii	BARK	0.312024705	kg/TJ
2018	Zn	1A2gviii	CHIPS FROM ROUNDWOOD	0.411651123	kg/TJ
2018	Zn	1A2gviii	COAL (S=1.0%)	1.500000000	kg/TJ
2018	Zn	1A2gviii	FOREST RESIDUE CHIPS	0.314056176	kg/TJ
2018	Zn	1A2gviii	HEAVY FUEL OIL (S<1%)	0.011696590	kg/TJ
2018	Zn	1A2gviii	INDUSTRIAL WASTE	0.007714280	kg/TJ
2018	Zn	1A2gviii	MILLED PEAT	0.008443564	kg/TJ
2018	Zn	1A2gviii	MUNICIPAL WASTE - unsorted	0.017179360	kg/TJ
2018	Zn	1A2gviii	OTHER HEAVY DISTILLATES	0.012000000	kg/TJ
2018	Zn	1A2gviii	OTHER NON-FOSSIL SOLID	0.059614794	kg/TJ
2018	Zn	1A2gviii	OTHER WOOD RESIDUE	0.324415188	kg/TJ
2018	Zn	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.012000000	kg/TJ
2018	Zn	1A2gviii	RECOVERED FUEL (REF 2)	0.700002605	kg/TJ
2018	Zn	1A2gviii	RECOVERED WOOD	0.542501460	kg/TJ
2018	Zn	1A2gviii	SAWDUST AND CUTTER CHIPS	0.396694063	kg/TJ
2018	Zn	1A2gviii	SOD PEAT	0.144192986	kg/TJ
2018	Zn	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.296316381	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	Zn	1A2gviii	WOOD FUELS)	0.656737606	kg/TJ
2018	Zn	1A2gviii	WOOD RESIDUE CHIPS	0.489218924	kg/TJ
2018	Zn	1A3bi	DIESEL OIL (S=0.001%)	0.000420671	kg/TJ
2018	Zn	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000788864	kg/TJ
2018	Zn	1A3bii	DIESEL OIL (S=0.001%)	0.000420671	kg/TJ
2018	Zn	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000787290	kg/TJ
2018	Zn	1A3biii	DIESEL OIL (S=0.001%)	0.000420671	kg/TJ
2018	Zn	1A3biv	DIESEL OIL (S=0.001%)	0.000420317	kg/TJ
2018	Zn	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000787290	kg/TJ
2018	Zn	1A3c	GASOIL (FOR NON-ROAD USE)	0.023148148	kg/TJ
2018	Zn	1A3dii	GASOIL (FOR NON-ROAD USE)	0.029444874	kg/TJ
2018	Zn	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.020692324	kg/TJ
2018	Zn	1A4ai	FOREST WOODFUEL	0.700000000	kg/TJ
2018	Zn	1A4ai	HEAVY FUEL OIL (S<1%)	0.012000000	kg/TJ
2018	Zn	1A4ai	SOD PEAT	0.330000000	kg/TJ
2018	Zn	1A4aii	GASOIL (FOR NON-ROAD USE)	0.023148148	kg/TJ
2018	Zn	1A4aii	MOTOR GASOLINE (S=0.001%)	0.023857261	kg/TJ
2018	Zn	1A4bi	COAL (S=1.0%)	0.750000000	kg/TJ
2018	Zn	1A4bi	FOREST WOODFUEL	0.700000000	kg/TJ
2018	Zn	1A4bi	HEAVY FUEL OIL (S<1%)	0.012000000	kg/TJ
2018	Zn	1A4bi	SOD PEAT	0.330000000	kg/TJ
2018	Zn	1A4bii	GASOIL (FOR NON-ROAD USE)	0.023148148	kg/TJ
2018	Zn	1A4bii	MOTOR GASOLINE (S=0.001%)	0.023857261	kg/TJ
2018	Zn	1A4ci	ANIMAL-BASED FUELS	0.700000000	kg/TJ
2018	Zn	1A4ci	CHIPS FROM ROUNDWOOD	0.054000000	kg/TJ
2018	Zn	1A4ci	COAL (S=1.0%)	0.084000000	kg/TJ
2018	Zn	1A4ci	FOREST WOODFUEL	0.700000000	kg/TJ
2018	Zn	1A4ci	HEAVY FUEL OIL (S<1%)	0.012000000	kg/TJ
2018	Zn	1A4ci	OTHER NON-FOSSIL SOLID	0.054000000	kg/TJ
2018	Zn	1A4ci	RECOVERED WOOD	0.054000000	kg/TJ
2018	Zn	1A4ci	SOD PEAT	0.330000000	kg/TJ
2018	Zn	1A4ci	WOOD RESIDUE CHIPS	0.700000000	kg/TJ
2018	Zn	1A4cii	GASOIL (FOR NON-ROAD USE)	0.023148148	kg/TJ
2018	Zn	1A4cii	MOTOR GASOLINE (S=0.001%)	0.023857261	kg/TJ
2018	Zn	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.027777778	kg/TJ
2018	Zn	1A5a	FOREST WOODFUEL	0.700000000	kg/TJ

2018	Zn	1A5a	HEAVY FUEL OIL (S<1%)	0.012000000	kg/TJ
2018	Zn	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.002494111	kg/TJ
2018	Zn	1A5a	OTHER PETROLEUM PRODUCTS	0.012000000	kg/TJ

PCDD/F implied emission factors in Finnish air pollutant inventory for 2018

2018	PCDD/F	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000021000	g/TJ
2018	PCDD/F	1A1a	ANIMAL-BASED FUELS	0.000004511	g/TJ
2018	PCDD/F	1A1a	BARK	0.000018713	g/TJ
2018	PCDD/F	1A1a	BIOGAS FROM WASTEWATER TREATMENT	0.000000500	g/TJ
2018	PCDD/F	1A1a	BLAST FURNACE GAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	CHIPS FROM ROUNDWOOD	0.000017373	g/TJ
2018	PCDD/F	1A1a	COAL (S=1.0%)	0.000003714	g/TJ
2018	PCDD/F	1A1a	COKE OVEN GAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	CREOSOTED WOOD	0.000041250	g/TJ
2018	PCDD/F	1A1a	DEINKING WASTE	0.000041250	g/TJ
2018	PCDD/F	1A1a	DEMOLITION WOOD	0.000041250	g/TJ
2018	PCDD/F	1A1a	DIESEL OIL (S=001%)	0.000000501	g/TJ
2018	PCDD/F	1A1a	FOREST RESIDUE CHIPS	0.000017115	g/TJ
2018	PCDD/F	1A1a	GASOIL (FOR NON-ROAD USE)	0.000001294	g/TJ
2018	PCDD/F	1A1a	HEAVY FUEL OIL (normal, S>1%)	0.000000429	g/TJ
2018	PCDD/F	1A1a	HEAVY FUEL OIL (S<1%)	0.000000374	g/TJ
2018	PCDD/F	1A1a	HYDROGEN	0.000000500	g/TJ
2018	PCDD/F	1A1a	INDUSTRIAL BIOGAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	INDUSTRIAL WASTE	0.000041588	g/TJ
2018	PCDD/F	1A1a	LANDFILL GAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A1a	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	MILLED PEAT	0.000015352	g/TJ
2018	PCDD/F	1A1a	MUNICIPAL WASTE - unsorted	0.000058127	g/TJ
2018	PCDD/F	1A1a	NATURAL GAS	0.000000499	g/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PCDD/F	1A1a	INDUSTRY	0.000021000	g/TJ
2018	PCDD/F	1A1a	OTHER FOSSIL GAS	0.000047864	g/TJ
2018	PCDD/F	1A1a	OTHER FOSSIL SOLID	0.000000610	g/TJ
2018	PCDD/F	1A1a	OTHER NON-FOSSIL GAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	OTHER NON-FOSSIL LIQUID	0.000000400	g/TJ
2018	PCDD/F	1A1a	OTHER NON-FOSSIL SOLID	0.000018084	g/TJ
2018	PCDD/F	1A1a	OTHER WASTE	0.000041250	g/TJ
2018	PCDD/F	1A1a	OTHER WOOD RESIDUE	0.000019209	g/TJ
2018	PCDD/F	1A1a	OXYGEN STEEL FURNACE GAS	0.000000500	g/TJ
2018	PCDD/F	1A1a	PAPER	0.000021000	g/TJ
2018	PCDD/F	1A1a	PEAT PELLETS AND BRIQUETTES	0.000003613	g/TJ
2018	PCDD/F	1A1a	PLYWOOD RESIDUE	0.000021000	g/TJ
2018	PCDD/F	1A1a	RECOVERED FUEL (REF 1)	0.000041250	g/TJ
2018	PCDD/F	1A1a	RECOVERED FUEL (REF 2)	0.000031155	g/TJ
2018	PCDD/F	1A1a	RECOVERED FUEL (REF 3)	0.000041606	g/TJ
2018	PCDD/F	1A1a	RECOVERED WOOD	0.000018570	g/TJ
2018	PCDD/F	1A1a	RECYCLED AND WASTE OILS	0.000000400	g/TJ
2018	PCDD/F	1A1a	REFINERY GAS	0.000000241	g/TJ
2018	PCDD/F	1A1a	REFUSE-DERIVED FUEL (RDF)	0.000185000	g/TJ
2018	PCDD/F	1A1a	SALT TREATED WOOD	0.000041250	g/TJ
2018	PCDD/F	1A1a	SAWDUST AND CUTTER CHIPS	0.000019132	g/TJ
2018	PCDD/F	1A1a	SOD PEAT	0.000017496	g/TJ
2018	PCDD/F	1A1a	TALL PITCH AND OIL	0.000000400	g/TJ
2018	PCDD/F	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000020714	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCDD/F	1A1a	WOOD FUELS)	0.000021076	g/TJ
2018	PCDD/F	1A1a	WOOD RESIDUE CHIPS	0.000020922	g/TJ
2018	PCDD/F	1A1b	COKE (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A1b	GASOIL (FOR NON-ROAD USE)	0.000000500	g/TJ

2018	PCDD/F	1A1b	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A1b	INDUSTRIAL BIOGAS	0.000000500	g/TJ
2018	PCDD/F	1A1b	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A1b	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A1b	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A1b	OTHER FOSSIL GAS	0.000000500	g/TJ
2018	PCDD/F	1A1b	OTHER FOSSIL LIQUID	0.000000400	g/TJ
2018	PCDD/F	1A1b	OTHER HEAVY DISTILLATES	0.000000400	g/TJ
2018	PCDD/F	1A1b	OTHER MEDIUM DISTILLATES	0.000000500	g/TJ
2018	PCDD/F	1A1b	PETROLEUM COKE	0.000004000	g/TJ
2018	PCDD/F	1A1b	REFINERY GAS	0.000000500	g/TJ
2018	PCDD/F	1A2a	BLAST FURNACE GAS	0.000000204	g/TJ
2018	PCDD/F	1A2a	COKE OVEN GAS	0.000000276	g/TJ
2018	PCDD/F	1A2a	DIESEL OIL (S=001%)	0.000000500	g/TJ
2018	PCDD/F	1A2a	GASOIL (FOR NON-ROAD USE)	0.000000500	g/TJ
2018	PCDD/F	1A2a	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A2a	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A2a	LIQUID GAS	0.000000419	g/TJ
2018	PCDD/F	1A2a	NATURAL GAS	0.000000482	g/TJ
2018	PCDD/F	1A2a	OTHER FOSSIL GAS	0.000000668	g/TJ
2018	PCDD/F	1A2a	OXYGEN STEEL FURNACE GAS	0.000000500	g/TJ
2018	PCDD/F	1A2a	WOOD RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2b	COAL (S=1.0%)	0.000000072	g/TJ
2018	PCDD/F	1A2b	COKE (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A2b	GASOIL (FOR NON-ROAD USE)	0.000000500	g/TJ
2018	PCDD/F	1A2b	HEAVY FUEL OIL (S<1%)	0.000000322	g/TJ
2018	PCDD/F	1A2b	LIGHT FUEL OIL (S=0.0915%)	0.000000458	g/TJ
2018	PCDD/F	1A2b	LIQUID GAS	0.000000496	g/TJ
2018	PCDD/F	1A2b	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2b	OTHER FOSSIL SOLID	0.000004000	g/TJ
2018	PCDD/F	1A2b	RECYCLED AND WASTE OILS	0.000000400	g/TJ
2018	PCDD/F	1A2c	COAL (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A2c	DIESEL OIL (S=001%)	0.000000500	g/TJ
2018	PCDD/F	1A2c	GASIFIED WASTE	0.000000500	g/TJ
2018	PCDD/F	1A2c	HEAVY FUEL OIL (normal, S>1%)	0.000000400	g/TJ
2018	PCDD/F	1A2c	HEAVY FUEL OIL (S<1%)	0.000000234	g/TJ
2018	PCDD/F	1A2c	HYDROGEN	0.000000500	g/TJ
2018	PCDD/F	1A2c	INDUSTRIAL BIOGAS	0.000000500	g/TJ
2018	PCDD/F	1A2c	LIGHT FUEL OIL (S=0.0915%)	0.000000495	g/TJ
2018	PCDD/F	1A2c	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A2c	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2c	OTHER FOSSIL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2c	OTHER FOSSIL LIQUID	0.000000400	g/TJ
2018	PCDD/F	1A2c	OTHER MEDIUM DISTILLATES	0.000000500	g/TJ
2018	PCDD/F	1A2c	OTHER NON-FOSSIL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2c	PETROLEUM COKE	0.000004000	g/TJ
2018	PCDD/F	1A2c	REFINERY GAS	0.000000500	g/TJ
2018	PCDD/F	1A2c	SAWDUST AND CUTTER CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2c	TALL PITCH AND OIL	0.000000400	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCDD/F	1A2c	WOOD FUELS)	0.000021000	g/TJ
2018	PCDD/F	1A2c	WOOD RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000019101	g/TJ
2018	PCDD/F	1A2d	ANIMAL-BASED FUELS	0.000021000	g/TJ
2018	PCDD/F	1A2d	AROMATIC GAS	0.000002456	g/TJ
2018	PCDD/F	1A2d	BARK	0.000018688	g/TJ
2018	PCDD/F	1A2d	BIOGAS FROM WASTEWATER TREATMENT	0.000000500	g/TJ

2018	PCDD/F	1A2d	CHIPS FROM ROUNDWOOD	0.000015406	g/TJ
2018	PCDD/F	1A2d	COAL (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A2d	CREOSOTED WOOD	0.000041250	g/TJ
2018	PCDD/F	1A2d	DEMOLITION WOOD	0.000041250	g/TJ
2018	PCDD/F	1A2d	FOREST RESIDUE CHIPS	0.000014605	g/TJ
2018	PCDD/F	1A2d	GASOIL (FOR NON-ROAD USE)	0.000000783	g/TJ
2018	PCDD/F	1A2d	HEAVY FUEL OIL (normal, S>1%)	0.000001686	g/TJ
2018	PCDD/F	1A2d	HEAVY FUEL OIL (S<1%)	0.000003064	g/TJ
2018	PCDD/F	1A2d	HYDROGEN	0.000000500	g/TJ
2018	PCDD/F	1A2d	INDUSTRIAL BIOGAS	0.000002598	g/TJ
2018	PCDD/F	1A2d	INDUSTRIAL WASTE	0.000041250	g/TJ
2018	PCDD/F	1A2d	LANDFILL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2d	LIGHT FUEL OIL (S=0.0915%)	0.000000642	g/TJ
2018	PCDD/F	1A2d	LIQUID BIOFUELS	0.000000500	g/TJ
2018	PCDD/F	1A2d	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A2d	METHANOL	0.000002057	g/TJ
2018	PCDD/F	1A2d	MILLED PEAT	0.000016210	g/TJ
2018	PCDD/F	1A2d	NATURAL GAS	0.000000685	g/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PCDD/F	1A2d	INDUSTRY	0.000022949	g/TJ
2018	PCDD/F	1A2d	OTHER NON-FOSSIL LIQUID	0.000002689	g/TJ
2018	PCDD/F	1A2d	OTHER NON-FOSSIL SOLID	0.000021000	g/TJ
2018	PCDD/F	1A2d	OTHER WASTE	0.000041250	g/TJ
2018	PCDD/F	1A2d	OTHER WOOD RESIDUE	0.000021000	g/TJ
2018	PCDD/F	1A2d	PACKAGING-DERIVED FUEL (PDF)	0.000089940	g/TJ
2018	PCDD/F	1A2d	PAPER	0.000009563	g/TJ
2018	PCDD/F	1A2d	PLASTIC WASTE	0.000041250	g/TJ
2018	PCDD/F	1A2d	RECOVERED FUEL (REF 1)	0.000000015	g/TJ
2018	PCDD/F	1A2d	RECOVERED FUEL (REF 2)	0.000028981	g/TJ
2018	PCDD/F	1A2d	RECOVERED WOOD	0.000016250	g/TJ
2018	PCDD/F	1A2d	RECYCLED AND WASTE OILS	0.000000400	g/TJ
2018	PCDD/F	1A2d	SALT TREATED WOOD	0.000041250	g/TJ
2018	PCDD/F	1A2d	SAWDUST AND CUTTER CHIPS	0.000018435	g/TJ
2018	PCDD/F	1A2d	SOD PEAT	0.000017500	g/TJ
2018	PCDD/F	1A2d	SULPHITE LIQUOR	0.000021000	g/TJ
2018	PCDD/F	1A2d	TALL PITCH AND OIL	0.000000641	g/TJ
2018	PCDD/F	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000021000	g/TJ
2018	PCDD/F	1A2d	WOOD RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2e	ANIMAL-BASED FUELS	0.000021000	g/TJ
2018	PCDD/F	1A2e	BIOGAS FROM WASTEWATER TREATMENT	0.000000500	g/TJ
2018	PCDD/F	1A2e	CHIPS FROM ROUNDWOOD	0.000021000	g/TJ
2018	PCDD/F	1A2e	COAL (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A2e	COKE (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A2e	DIESEL OIL (S=0.01%)	0.000000500	g/TJ
2018	PCDD/F	1A2e	GASOIL (FOR NON-ROAD USE)	0.000000500	g/TJ
2018	PCDD/F	1A2e	HEAVY FUEL OIL (normal, S>1%)	0.000000400	g/TJ
2018	PCDD/F	1A2e	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A2e	INDUSTRIAL BIOGAS	0.000000500	g/TJ
2018	PCDD/F	1A2e	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A2e	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A2e	MILLED PEAT	0.000017500	g/TJ
2018	PCDD/F	1A2e	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2e	OTHER NON-FOSSIL SOLID	0.000021000	g/TJ
2018	PCDD/F	1A2e	PEAT PELLETS AND BRIQUETTES	0.000017500	g/TJ
2018	PCDD/F	1A2e	RECOVERED WOOD	0.000021000	g/TJ
2018	PCDD/F	1A2e	SAWDUST AND CUTTER CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2e	TALL PITCH AND OIL	0.000000400	g/TJ

			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCDD/F	1A2e	WOOD FUELS)	0.000021000	g/TJ
2018	PCDD/F	1A2e	WOOD RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2f	CHIPS FROM ROUNDWOOD	0.000021000	g/TJ
2018	PCDD/F	1A2f	COAL (S=1.0%)	0.000002863	g/TJ
2018	PCDD/F	1A2f	COKE (S=1.0%)	0.000003959	g/TJ
2018	PCDD/F	1A2f	COKE OVEN GAS	0.000000500	g/TJ
2018	PCDD/F	1A2f	DIESEL OIL (S=001%)	0.000000500	g/TJ
2018	PCDD/F	1A2f	FOREST RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2f	GASOIL (FOR NON-ROAD USE)	0.000000216	g/TJ
2018	PCDD/F	1A2f	HEAVY FUEL OIL (S<1%)	0.000000131	g/TJ
2018	PCDD/F	1A2f	INDUSTRIAL BIOGAS	0.000000500	g/TJ
2018	PCDD/F	1A2f	LIGHT FUEL OIL (S=0.0915%)	0.000000306	g/TJ
2018	PCDD/F	1A2f	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A2f	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2f	OTHER FOSSIL SOLID	0.000000602	g/TJ
2018	PCDD/F	1A2f	OTHER HEAVY DISTILLATES	0.000000400	g/TJ
2018	PCDD/F	1A2f	OTHER NON-FOSSIL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2f	OXYGEN STEEL FURNACE GAS	0.000000500	g/TJ
2018	PCDD/F	1A2f	PETROLEUM COKE	0.000000370	g/TJ
2018	PCDD/F	1A2f	RECOVERED FUEL (REF 1)	0.000001874	g/TJ
2018	PCDD/F	1A2f	RECOVERED FUEL (REF 2)	0.000001913	g/TJ
2018	PCDD/F	1A2f	RECYCLED AND WASTE OILS	0.000000361	g/TJ
2018	PCDD/F	1A2f	RUBBER WASTE	0.000006308	g/TJ
2018	PCDD/F	1A2f	SAWDUST AND CUTTER CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2f	TALL PITCH AND OIL	0.000000061	g/TJ
2018	PCDD/F	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000004977	g/TJ
2018	PCDD/F	1A2gviii	BARK	0.000020773	g/TJ
2018	PCDD/F	1A2gviii	BIOGAS FROM WASTEWATER TREATMENT	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	CHIPS FROM ROUNDWOOD	0.000021000	g/TJ
2018	PCDD/F	1A2gviii	COAL (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A2gviii	DIESEL OIL (S=001%)	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	FOREST RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A2gviii	GASIFIED WASTE	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	GASOIL (FOR NON-ROAD USE)	0.000107106	g/TJ
2018	PCDD/F	1A2gviii	HEAVY FUEL OIL (S<1%)	0.000001468	g/TJ
2018	PCDD/F	1A2gviii	INDUSTRIAL BIOGAS	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	INDUSTRIAL WASTE	0.000041250	g/TJ
2018	PCDD/F	1A2gviii	LANDFILL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	0.000000770	g/TJ
2018	PCDD/F	1A2gviii	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	MILLED PEAT	0.000009897	g/TJ
2018	PCDD/F	1A2gviii	MUNICIPAL WASTE - unsorted	0.000147922	g/TJ
2018	PCDD/F	1A2gviii	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	OTHER HEAVY DISTILLATES	0.000000400	g/TJ
2018	PCDD/F	1A2gviii	OTHER NON-FOSSIL GAS	0.000000500	g/TJ
2018	PCDD/F	1A2gviii	OTHER NON-FOSSIL LIQUID	0.000000400	g/TJ
2018	PCDD/F	1A2gviii	OTHER NON-FOSSIL SOLID	0.000020924	g/TJ
2018	PCDD/F	1A2gviii	OTHER WOOD RESIDUE	0.000020566	g/TJ
2018	PCDD/F	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	0.003702332	g/TJ
2018	PCDD/F	1A2gviii	RECOVERED FUEL (REF 2)	0.000041250	g/TJ
2018	PCDD/F	1A2gviii	RECOVERED WOOD	0.000017094	g/TJ
2018	PCDD/F	1A2gviii	SAWDUST AND CUTTER CHIPS	0.000018629	g/TJ
2018	PCDD/F	1A2gviii	SOD PEAT	0.000017500	g/TJ
2018	PCDD/F	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000021000	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCDD/F	1A2gviii	WOOD FUELS)	0.000019927	g/TJ

2018	PCDD/F	1A2gviii	WOOD RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000003190	g/TJ
2018	PCDD/F	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.000008104	g/TJ
2018	PCDD/F	1A3ei	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A4ai	FOREST WOODFUEL	0.000021000	g/TJ
2018	PCDD/F	1A4ai	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A4ai	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A4ai	SOD PEAT	0.000017500	g/TJ
2018	PCDD/F	1A4bi	COAL (S=1.0%)	0.000002000	g/TJ
2018	PCDD/F	1A4bi	FOREST WOODFUEL	0.000021000	g/TJ
2018	PCDD/F	1A4bi	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A4bi	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A4bi	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A4bi	PARAFFIN	0.000000500	g/TJ
2018	PCDD/F	1A4bi	SOD PEAT	0.000017500	g/TJ
2018	PCDD/F	1A4ci	ANIMAL-BASED FUELS	0.000021000	g/TJ
2018	PCDD/F	1A4ci	CHIPS FROM ROUNDWOOD	0.000021000	g/TJ
2018	PCDD/F	1A4ci	COAL (S=1.0%)	0.000004000	g/TJ
2018	PCDD/F	1A4ci	FOREST WOODFUEL	0.000021000	g/TJ
2018	PCDD/F	1A4ci	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.000000500	g/TJ
2018	PCDD/F	1A4ci	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A4ci	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A4ci	OTHER NON-FOSSIL SOLID	0.000021000	g/TJ
2018	PCDD/F	1A4ci	RECOVERED WOOD	0.000021000	g/TJ
2018	PCDD/F	1A4ci	SOD PEAT	0.000017500	g/TJ
2018	PCDD/F	1A4ci	WOOD RESIDUE CHIPS	0.000021000	g/TJ
2018	PCDD/F	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000003009	g/TJ
2018	PCDD/F	1A5a	FOREST WOODFUEL	0.000021000	g/TJ
2018	PCDD/F	1A5a	HEAVY FUEL OIL (S<1%)	0.000000400	g/TJ
2018	PCDD/F	1A5a	LANDFILL GAS	0.000000500	g/TJ
2018	PCDD/F	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000000743	g/TJ
2018	PCDD/F	1A5a	LIQUID GAS	0.000000500	g/TJ
2018	PCDD/F	1A5a	NATURAL GAS	0.000000500	g/TJ
2018	PCDD/F	1A5a	OTHER PETROLEUM PRODUCTS	0.000000400	g/TJ

PAH-4 implied emission factors in Finnish air pollutant inventory for 2018

2018	PAH-4	1A1a	0-FIBRE/BIOLOGICAL SLURRY	2.699999042	g/TJ
2018	PAH-4	1A1a	ANIMAL-BASED FUELS	2.946108552	g/TJ
2018	PAH-4	1A1a	BARK	2.618875279	g/TJ
2018	PAH-4	1A1a	CHIPS FROM ROUNDWOOD	2.497857191	g/TJ
2018	PAH-4	1A1a	COAL (S=1.0%)	0.009991547	g/TJ
2018	PAH-4	1A1a	CREOSOTED WOOD	2.500005301	g/TJ
2018	PAH-4	1A1a	DEINKING WASTE	2.500001716	g/TJ
2018	PAH-4	1A1a	DEMOLITION WOOD	2.500005940	g/TJ
2018	PAH-4	1A1a	DIESEL OIL (S=0.01%)	2.803693557	g/TJ
2018	PAH-4	1A1a	FOREST RESIDUE CHIPS	2.547828021	g/TJ
2018	PAH-4	1A1a	GASOIL (FOR NON-ROAD USE)	4.027477966	g/TJ
2018	PAH-4	1A1a	HEAVY FUEL OIL (normal, S>1%)	2.800001700	g/TJ
2018	PAH-4	1A1a	HEAVY FUEL OIL (S<1%)	2.734457352	g/TJ
2018	PAH-4	1A1a	INDUSTRIAL WASTE	2.496545866	g/TJ
2018	PAH-4	1A1a	LIGHT FUEL OIL (S=0.0915%)	2.797201868	g/TJ
2018	PAH-4	1A1a	MILLED PEAT	0.995102202	g/TJ
2018	PAH-4	1A1a	MUNICIPAL WASTE - unsorted	27.760566074	g/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PAH-4	1A1a	INDUSTRY	2.700001785	g/TJ
2018	PAH-4	1A1a	OTHER FOSSIL SOLID	0.012001920	g/TJ
2018	PAH-4	1A1a	OTHER NON-FOSSIL LIQUID	2.800000000	g/TJ
2018	PAH-4	1A1a	OTHER NON-FOSSIL SOLID	2.699999545	g/TJ
2018	PAH-4	1A1a	OTHER WASTE	2.499999626	g/TJ
2018	PAH-4	1A1a	OTHER WOOD RESIDUE	2.711140130	g/TJ
2018	PAH-4	1A1a	PAPER	2.700000000	g/TJ
2018	PAH-4	1A1a	PEAT PELLETS AND BRIQUETTES	0.972368324	g/TJ
2018	PAH-4	1A1a	PLYWOOD RESIDUE	2.700000000	g/TJ
2018	PAH-4	1A1a	RECOVERED FUEL (REF 1)	2.499998980	g/TJ
2018	PAH-4	1A1a	RECOVERED FUEL (REF 2)	2.499997842	g/TJ
2018	PAH-4	1A1a	RECOVERED FUEL (REF 3)	2.496359476	g/TJ
2018	PAH-4	1A1a	RECOVERED WOOD	2.698538482	g/TJ
2018	PAH-4	1A1a	RECYCLED AND WASTE OILS	2.800001360	g/TJ
2018	PAH-4	1A1a	REFUSE-DERIVED FUEL (RDF)	34.000020500	g/TJ
2018	PAH-4	1A1a	SALT TREATED WOOD	2.500000463	g/TJ
2018	PAH-4	1A1a	SAWDUST AND CUTTER CHIPS	2.598306922	g/TJ
2018	PAH-4	1A1a	SOD PEAT	0.999999796	g/TJ
2018	PAH-4	1A1a	TALL PITCH AND OIL	2.800000000	g/TJ
2018	PAH-4	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	2.703822981	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PAH-4	1A1a	WOOD FUELS)	2.617171581	g/TJ
2018	PAH-4	1A1a	WOOD RESIDUE CHIPS	2.699524976	g/TJ
2018	PAH-4	1A1b	COKE (S=1.0%)	0.012000000	g/TJ
2018	PAH-4	1A1b	GASOIL (FOR NON-ROAD USE)	2.800000534	g/TJ
2018	PAH-4	1A1b	HEAVY FUEL OIL (S<1%)	2.799994285	g/TJ
2018	PAH-4	1A1b	LIGHT FUEL OIL (S=0.0915%)	2.800000000	g/TJ
2018	PAH-4	1A1b	OTHER FOSSIL LIQUID	2.800000000	g/TJ
2018	PAH-4	1A1b	OTHER HEAVY DISTILLATES	2.800001967	g/TJ
2018	PAH-4	1A1b	OTHER MEDIUM DISTILLATES	2.800000000	g/TJ
2018	PAH-4	1A1b	PETROLEUM COKE	0.012000000	g/TJ
2018	PAH-4	1A2a	COKE (S=1.0%)	0.000869296	g/TJ
2018	PAH-4	1A2a	DIESEL OIL (S=0.01%)	2.800000000	g/TJ
2018	PAH-4	1A2a	GASOIL (FOR NON-ROAD USE)	2.800000000	g/TJ
2018	PAH-4	1A2a	HEAVY FUEL OIL (S<1%)	2.799997252	g/TJ
2018	PAH-4	1A2a	LIGHT FUEL OIL (S=0.0915%)	2.800000154	g/TJ
2018	PAH-4	1A2a	OTHER FOSSIL SOLID	0.012000000	g/TJ

2018	PAH-4	1A2a	WOOD RESIDUE CHIPS	2.700004905	g/TJ
2018	PAH-4	1A2b	COAL (S=1.0%)	0.012000002	g/TJ
2018	PAH-4	1A2b	COKE (S=1.0%)	0.011999985	g/TJ
2018	PAH-4	1A2b	GASOIL (FOR NON-ROAD USE)	2.800000000	g/TJ
2018	PAH-4	1A2b	HEAVY FUEL OIL (S<1%)	2.800000933	g/TJ
2018	PAH-4	1A2b	LIGHT FUEL OIL (S=0.0915%)	2.799999487	g/TJ
2018	PAH-4	1A2b	OTHER FOSSIL SOLID	0.012000019	g/TJ
2018	PAH-4	1A2b	RECYCLED AND WASTE OILS	2.799994651	g/TJ
2018	PAH-4	1A2c	COAL (S=1.0%)	0.012000006	g/TJ
2018	PAH-4	1A2c	DIESEL OIL (S=001%)	2.800000000	g/TJ
2018	PAH-4	1A2c	HEAVY FUEL OIL (normal, S>1%)	3.981713612	g/TJ
2018	PAH-4	1A2c	HEAVY FUEL OIL (S<1%)	2.819436927	g/TJ
2018	PAH-4	1A2c	LIGHT FUEL OIL (S=0.0915%)	2.901976069	g/TJ
2018	PAH-4	1A2c	OTHER FOSSIL LIQUID	2.800000000	g/TJ
2018	PAH-4	1A2c	OTHER MEDIUM DISTILLATES	2.800001515	g/TJ
2018	PAH-4	1A2c	PETROLEUM COKE	0.012000000	g/TJ
2018	PAH-4	1A2c	SAWDUST AND CUTTER CHIPS	2.699991307	g/TJ
2018	PAH-4	1A2c	TALL PITCH AND OIL	2.800000000	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PAH-4	1A2c	WOOD FUELS)	2.700000000	g/TJ
2018	PAH-4	1A2c	WOOD RESIDUE CHIPS	2.700003660	g/TJ
2018	PAH-4	1A2d	0-FIBRE/BIOLOGICAL SLURRY	2.544193450	g/TJ
2018	PAH-4	1A2d	ANIMAL-BASED FUELS	2.699994169	g/TJ
2018	PAH-4	1A2d	BARK	3.788205250	g/TJ
2018	PAH-4	1A2d	CHIPS FROM ROUNDWOOD	2.700001293	g/TJ
2018	PAH-4	1A2d	COAL (S=1.0%)	0.007517494	g/TJ
2018	PAH-4	1A2d	CREOSOTED WOOD	2.500000000	g/TJ
2018	PAH-4	1A2d	DEMOLITION WOOD	2.499995969	g/TJ
2018	PAH-4	1A2d	FOREST RESIDUE CHIPS	2.541225044	g/TJ
2018	PAH-4	1A2d	GASOIL (FOR NON-ROAD USE)	2.800001969	g/TJ
2018	PAH-4	1A2d	HEAVY FUEL OIL (normal, S>1%)	7.859560789	g/TJ
2018	PAH-4	1A2d	HEAVY FUEL OIL (S<1%)	2.785686420	g/TJ
2018	PAH-4	1A2d	INDUSTRIAL WASTE	2.500000000	g/TJ
2018	PAH-4	1A2d	LIGHT FUEL OIL (S=0.0915%)	2.937750933	g/TJ
2018	PAH-4	1A2d	LIQUID BIOFUELS	2.799997448	g/TJ
2018	PAH-4	1A2d	METHANOL	6.517377207	g/TJ
2018	PAH-4	1A2d	MILLED PEAT	0.887294549	g/TJ
			OTHER BY-PRODUCTS FROM WOOD PROCESSING		
2018	PAH-4	1A2d	INDUSTRY	2.700002625	g/TJ
2018	PAH-4	1A2d	OTHER NON-FOSSIL LIQUID	2.800000000	g/TJ
2018	PAH-4	1A2d	OTHER NON-FOSSIL SOLID	2.134367360	g/TJ
2018	PAH-4	1A2d	OTHER WASTE	2.500001087	g/TJ
2018	PAH-4	1A2d	OTHER WOOD RESIDUE	2.700000009	g/TJ
2018	PAH-4	1A2d	PACKAGING-DERIVED FUEL (PDF)	34.000000000	g/TJ
2018	PAH-4	1A2d	PAPER	2.700000000	g/TJ
2018	PAH-4	1A2d	PLASTIC WASTE	2.500003774	g/TJ
2018	PAH-4	1A2d	RECOVERED FUEL (REF 1)	2.500000000	g/TJ
2018	PAH-4	1A2d	RECOVERED FUEL (REF 2)	2.500001944	g/TJ
2018	PAH-4	1A2d	RECOVERED WOOD	2.699999449	g/TJ
2018	PAH-4	1A2d	RECYCLED AND WASTE OILS	2.799997149	g/TJ
2018	PAH-4	1A2d	SALT TREATED WOOD	2.500000485	g/TJ
2018	PAH-4	1A2d	SAWDUST AND CUTTER CHIPS	2.656646830	g/TJ
2018	PAH-4	1A2d	SOD PEAT	0.999997081	g/TJ
2018	PAH-4	1A2d	SULPHITE LIQUOR	2.700005188	g/TJ
2018	PAH-4	1A2d	TALL PITCH AND OIL	2.800001323	g/TJ
2018	PAH-4	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	2.675559253	g/TJ
2018	PAH-4	1A2d	WOOD RESIDUE CHIPS	2.700001460	g/TJ

2018	PAH-4	1A2e	ANIMAL-BASED FUELS	2.700000000	g/TJ
2018	PAH-4	1A2e	CHIPS FROM ROUNDWOOD	2.700000822	g/TJ
2018	PAH-4	1A2e	COAL (S=1.0%)	0.011999999	g/TJ
2018	PAH-4	1A2e	COKE (S=1.0%)	0.011999992	g/TJ
2018	PAH-4	1A2e	DIESEL OIL (S=001%)	2.800000000	g/TJ
2018	PAH-4	1A2e	GASOIL (FOR NON-ROAD USE)	2.800001069	g/TJ
2018	PAH-4	1A2e	HEAVY FUEL OIL (normal, S>1%)	2.800000000	g/TJ
2018	PAH-4	1A2e	HEAVY FUEL OIL (S<1%)	2.800000563	g/TJ
2018	PAH-4	1A2e	LIGHT FUEL OIL (S=0.0915%)	2.800000257	g/TJ
2018	PAH-4	1A2e	MILLED PEAT	0.999999556	g/TJ
2018	PAH-4	1A2e	OTHER NON-FOSSIL SOLID	2.699997719	g/TJ
2018	PAH-4	1A2e	PEAT PELLETS AND BRIQUETTES	1.000000000	g/TJ
2018	PAH-4	1A2e	RECOVERED WOOD	2.700000000	g/TJ
2018	PAH-4	1A2e	SAWDUST AND CUTTER CHIPS	2.700000297	g/TJ
2018	PAH-4	1A2e	TALL PITCH AND OIL	2.800000000	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PAH-4	1A2e	WOOD FUELS)	2.700000000	g/TJ
2018	PAH-4	1A2e	WOOD RESIDUE CHIPS	2.7000000917	g/TJ
2018	PAH-4	1A2f	CHIPS FROM ROUNDWOOD	2.700001064	g/TJ
2018	PAH-4	1A2f	COAL (S=1.0%)	0.010929574	g/TJ
2018	PAH-4	1A2f	COKE (S=1.0%)	0.012000028	g/TJ
2018	PAH-4	1A2f	DIESEL OIL (S=001%)	2.800000483	g/TJ
2018	PAH-4	1A2f	FOREST RESIDUE CHIPS	2.700000000	g/TJ
2018	PAH-4	1A2f	GASOIL (FOR NON-ROAD USE)	2.050157913	g/TJ
2018	PAH-4	1A2f	HEAVY FUEL OIL (S<1%)	2.763466053	g/TJ
2018	PAH-4	1A2f	LIGHT FUEL OIL (S=0.0915%)	2.303744958	g/TJ
2018	PAH-4	1A2f	OTHER FOSSIL SOLID	0.011815369	g/TJ
2018	PAH-4	1A2f	OTHER HEAVY DISTILLATES	2.800000000	g/TJ
2018	PAH-4	1A2f	PETROLEUM COKE	0.007260494	g/TJ
2018	PAH-4	1A2f	RECOVERED FUEL (REF 1)	0.742612753	g/TJ
2018	PAH-4	1A2f	RECOVERED FUEL (REF 2)	0.758050302	g/TJ
2018	PAH-4	1A2f	RECYCLED AND WASTE OILS	2.533518131	g/TJ
2018	PAH-4	1A2f	RUBBER WASTE	2.500000531	g/TJ
2018	PAH-4	1A2f	SAWDUST AND CUTTER CHIPS	2.699997230	g/TJ
2018	PAH-4	1A2f	TALL PITCH AND OIL	2.799995066	g/TJ
2018	PAH-4	1A2gvii	GASOIL (FOR NON-ROAD USE)	1.851851852	g/TJ
2018	PAH-4	1A2gvii	LIQUID GAS	1.739130435	g/TJ
2018	PAH-4	1A2gvii	MOTOR GASOLINE (S=0.001%)	1.908580896	g/TJ
2018	PAH-4	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	2.700000000	g/TJ
2018	PAH-4	1A2gviii	BARK	2.700000009	g/TJ
2018	PAH-4	1A2gviii	CHIPS FROM ROUNDWOOD	2.700000010	g/TJ
2018	PAH-4	1A2gviii	COAL (S=1.0%)	0.012000000	g/TJ
2018	PAH-4	1A2gviii	DIESEL OIL (S=001%)	2.800000000	g/TJ
2018	PAH-4	1A2gviii	FOREST RESIDUE CHIPS	2.699999982	g/TJ
2018	PAH-4	1A2gviii	GASOIL (FOR NON-ROAD USE)	2.799999869	g/TJ
2018	PAH-4	1A2gviii	HEAVY FUEL OIL (S<1%)	2.799999904	g/TJ
2018	PAH-4	1A2gviii	INDUSTRIAL WASTE	2.499998873	g/TJ
2018	PAH-4	1A2gviii	LIGHT FUEL OIL (S=0.0915%)	2.800000038	g/TJ
2018	PAH-4	1A2gviii	MILLED PEAT	1.000000006	g/TJ
2018	PAH-4	1A2gviii	MUNICIPAL WASTE - unsorted	34.000000000	g/TJ
2018	PAH-4	1A2gviii	OTHER HEAVY DISTILLATES	2.800000000	g/TJ
2018	PAH-4	1A2gviii	OTHER NON-FOSSIL LIQUID	2.800000000	g/TJ
2018	PAH-4	1A2gviii	OTHER NON-FOSSIL SOLID	2.699999009	g/TJ
2018	PAH-4	1A2gviii	OTHER WOOD RESIDUE	2.700000000	g/TJ
2018	PAH-4	1A2gviii	PURIFIED RECYCLED AND WASTE OILS	2.800000000	g/TJ
2018	PAH-4	1A2gviii	RECOVERED FUEL (REF 2)	2.499997299	g/TJ
2018	PAH-4	1A2gviii	RECOVERED WOOD	2.700005036	g/TJ

2018	PAH-4	1A2gviii	SAWDUST AND CUTTER CHIPS	2.700000392	g/TJ
2018	PAH-4	1A2gviii	SOD PEAT	1.000000000	g/TJ
2018	PAH-4	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE WOOD PELLETS AND BRIQUETTES (REFINED WOOD FUELS)	2.699999497	g/TJ
2018	PAH-4	1A2gviii	WOOD RESIDUE CHIPS	2.700000063	g/TJ
2018	PAH-4	1A2gviii	WOOD RESIDUE CHIPS	2.700000009	g/TJ
2018	PAH-4	1A3bi	DIESEL OIL (S=0.001%)	1.794861733	g/TJ
2018	PAH-4	1A3bi	MOTOR GASOLINE (S=0.001%)	0.626310144	g/TJ
2018	PAH-4	1A3bii	DIESEL OIL (S=0.001%)	1.329786883	g/TJ
2018	PAH-4	1A3bii	MOTOR GASOLINE (S=0.001%)	0.481916676	g/TJ
2018	PAH-4	1A3biii	DIESEL OIL (S=0.001%)	1.827580566	g/TJ
2018	PAH-4	1A3biv	DIESEL OIL (S=0.001%)	1.793354587	g/TJ
2018	PAH-4	1A3biv	MOTOR GASOLINE (S=0.001%)	0.830232690	g/TJ
2018	PAH-4	1A3c	GASOIL (FOR NON-ROAD USE)	1.851851852	g/TJ
2018	PAH-4	1A4ai	FOREST WOODFUEL	9.565000000	g/TJ
2018	PAH-4	1A4ai	HEAVY FUEL OIL (S<1%)	2.800000000	g/TJ
2018	PAH-4	1A4ai	LIGHT FUEL OIL (S=0.0915%)	2.800000002	g/TJ
2018	PAH-4	1A4ai	SOD PEAT	1.000000000	g/TJ
2018	PAH-4	1A4aii	GASOIL (FOR NON-ROAD USE)	1.851851852	g/TJ
2018	PAH-4	1A4aii	MOTOR GASOLINE (S=0.001%)	1.908580896	g/TJ
2018	PAH-4	1A4bi	COAL (S=1.0%)	0.006000000	g/TJ
2018	PAH-4	1A4bi	FOREST WOODFUEL	154.585109757	g/TJ
2018	PAH-4	1A4bi	HEAVY FUEL OIL (S<1%)	2.800000000	g/TJ
2018	PAH-4	1A4bi	LIGHT FUEL OIL (S=0.0915%)	2.800000000	g/TJ
2018	PAH-4	1A4bi	PARAFFIN	2.800000000	g/TJ
2018	PAH-4	1A4bi	SOD PEAT	1.000000000	g/TJ
2018	PAH-4	1A4bii	GASOIL (FOR NON-ROAD USE)	1.851851852	g/TJ
2018	PAH-4	1A4bii	MOTOR GASOLINE (S=0.001%)	1.908580896	g/TJ
2018	PAH-4	1A4ci	ANIMAL-BASED FUELS	2.700000000	g/TJ
2018	PAH-4	1A4ci	CHIPS FROM ROUNDWOOD	2.700000000	g/TJ
2018	PAH-4	1A4ci	COAL (S=1.0%)	0.012000000	g/TJ
2018	PAH-4	1A4ci	FOREST WOODFUEL	10.000000000	g/TJ
2018	PAH-4	1A4ci	HEAVY FUEL OIL (S<1%)	2.800000000	g/TJ
2018	PAH-4	1A4ci	LIGHT FUEL OIL (S=0.0915%)	2.800000000	g/TJ
2018	PAH-4	1A4ci	OTHER NON-FOSSIL SOLID	2.700000000	g/TJ
2018	PAH-4	1A4ci	RECOVERED WOOD	2.700000000	g/TJ
2018	PAH-4	1A4ci	SOD PEAT	1.000000000	g/TJ
2018	PAH-4	1A4ci	WOOD RESIDUE CHIPS	2.700000000	g/TJ
2018	PAH-4	1A4cii	GASOIL (FOR NON-ROAD USE)	1.851851852	g/TJ
2018	PAH-4	1A4cii	MOTOR GASOLINE (S=0.001%)	1.908580896	g/TJ
2018	PAH-4	1A5a	FOREST WOODFUEL	2.700000000	g/TJ
2018	PAH-4	1A5a	HEAVY FUEL OIL (S<1%)	2.800000000	g/TJ
2018	PAH-4	1A5a	LIGHT FUEL OIL (S=0.0915%)	2.819835191	g/TJ
2018	PAH-4	1A5a	OTHER PETROLEUM PRODUCTS	2.800000000	g/TJ

HCB implied emission factors in Finnish air pollutant inventory for 2018

2018	HCB	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.000005000	kg/TJ
2018	HCB	1A1a	BARK	0.000005000	kg/TJ
2018	HCB	1A1a	CHIPS FROM ROUNDWOOD	0.000005000	kg/TJ
2018	HCB	1A1a	COAL (S=1.0%)	0.000000007	kg/TJ
2018	HCB	1A1a	DEMOLITION WOOD	0.000005000	kg/TJ
2018	HCB	1A1a	FOREST RESIDUE CHIPS	0.000004793	kg/TJ
2018	HCB	1A1a	OTHER NON-FOSSIL SOLID	0.000005000	kg/TJ
2018	HCB	1A1a	OTHER WOOD RESIDUE	0.000005000	kg/TJ
2018	HCB	1A1a	PAPER	0.000005000	kg/TJ
2018	HCB	1A1a	PLYWOOD RESIDUE	0.000005000	kg/TJ
2018	HCB	1A1a	RECOVERED WOOD	0.000005000	kg/TJ
2018	HCB	1A1a	SAWDUST AND CUTTER CHIPS	0.000005000	kg/TJ
2018	HCB	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000005000	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	HCB	1A1a	WOOD FUELS)	0.000004923	kg/TJ
2018	HCB	1A1a	WOOD RESIDUE CHIPS	0.000004856	kg/TJ
2018	HCB	1A2a	COKE (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2a	OTHER FOSSIL SOLID	0.000000620	kg/TJ
2018	HCB	1A2a	WOOD RESIDUE CHIPS	0.000005000	kg/TJ
2018	HCB	1A2b	COAL (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2b	COKE (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2b	OTHER FOSSIL SOLID	0.000000620	kg/TJ
2018	HCB	1A2c	COAL (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2c	SAWDUST AND CUTTER CHIPS	0.000005000	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	HCB	1A2c	WOOD FUELS)	0.000005000	kg/TJ
2018	HCB	1A2c	WOOD RESIDUE CHIPS	0.000005000	kg/TJ
2018	HCB	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000005000	kg/TJ
2018	HCB	1A2d	BARK	0.000005000	kg/TJ
2018	HCB	1A2d	CHIPS FROM ROUNDWOOD	0.000005000	kg/TJ
2018	HCB	1A2d	COAL (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2d	DEMOLITION WOOD	0.000005000	kg/TJ
2018	HCB	1A2d	FOREST RESIDUE CHIPS	0.000004954	kg/TJ
2018	HCB	1A2d	OTHER NON-FOSSIL SOLID	0.000005000	kg/TJ
2018	HCB	1A2d	OTHER WOOD RESIDUE	0.000005000	kg/TJ
2018	HCB	1A2d	PAPER	0.000005000	kg/TJ
2018	HCB	1A2d	RECOVERED WOOD	0.000005000	kg/TJ
2018	HCB	1A2d	SAWDUST AND CUTTER CHIPS	0.000005000	kg/TJ
2018	HCB	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000005000	kg/TJ
2018	HCB	1A2d	WOOD RESIDUE CHIPS	0.000005000	kg/TJ
2018	HCB	1A2e	CHIPS FROM ROUNDWOOD	0.000005000	kg/TJ
2018	HCB	1A2e	COAL (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2e	COKE (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2e	OTHER NON-FOSSIL SOLID	0.000005000	kg/TJ
2018	HCB	1A2e	RECOVERED WOOD	0.000005000	kg/TJ
2018	HCB	1A2e	SAWDUST AND CUTTER CHIPS	0.000005000	kg/TJ
2018	HCB	1A2e	WOOD RESIDUE CHIPS	0.000005000	kg/TJ
2018	HCB	1A2f	CHIPS FROM ROUNDWOOD	0.000005000	kg/TJ
2018	HCB	1A2f	COAL (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2f	COKE (S=1.0%)	0.000000620	kg/TJ
2018	HCB	1A2f	FOREST RESIDUE CHIPS	0.000005000	kg/TJ
2018	HCB	1A2f	OTHER FOSSIL SOLID	0.000000620	kg/TJ
2018	HCB	1A2f	SAWDUST AND CUTTER CHIPS	0.000005000	kg/TJ
2018	HCB	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000005000	kg/TJ
2018	HCB	1A2gviii	BARK	0.000004207	kg/TJ

2018	HC	1A2gviii	CHIPS FROM ROUNDWOOD	0.000005000	kg/TJ
2018	HC	1A2gviii	COAL (S=1.0%)	0.000000620	kg/TJ
2018	HC	1A2gviii	FOREST RESIDUE CHIPS	0.000004576	kg/TJ
2018	HC	1A2gviii	OTHER NON-FOSSIL SOLID	0.000005000	kg/TJ
2018	HC	1A2gviii	OTHER WOOD RESIDUE	0.000005000	kg/TJ
2018	HC	1A2gviii	RECOVERED WOOD	0.000005000	kg/TJ
2018	HC	1A2gviii	SAWDUST AND CUTTER CHIPS	0.000004233	kg/TJ
2018	HC	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000005000	kg/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	HC	1A2gviii	WOOD FUELS)	0.000003089	kg/TJ
2018	HC	1A2gviii	WOOD RESIDUE CHIPS	0.000002858	kg/TJ
2018	HC	1A3bi	DIESEL OIL (S=0.001%)	0.000001402	kg/TJ
2018	HC	1A3bi	MOTOR GASOLINE (S=0.001%)	0.000001434	kg/TJ
2018	HC	1A3bi	NATURAL GAS	0.000001220	kg/TJ
2018	HC	1A3bii	DIESEL OIL (S=0.001%)	0.000001402	kg/TJ
2018	HC	1A3bii	MOTOR GASOLINE (S=0.001%)	0.000001431	kg/TJ
2018	HC	1A3bii	NATURAL GAS	0.000001220	kg/TJ
2018	HC	1A3biii	DIESEL OIL (S=0.001%)	0.000001402	kg/TJ
2018	HC	1A3biii	NATURAL GAS	0.000001220	kg/TJ
2018	HC	1A3biv	DIESEL OIL (S=0.001%)	0.000001401	kg/TJ
2018	HC	1A3biv	MOTOR GASOLINE (S=0.001%)	0.000001431	kg/TJ
2018	HC	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000001963	kg/TJ
2018	HC	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.000002414	kg/TJ
2018	HC	1A4ai	FOREST WOODFUEL	0.000005000	kg/TJ
2018	HC	1A4bi	COAL (S=1.0%)	0.000009804	kg/TJ
2018	HC	1A4bi	FOREST WOODFUEL	0.000005000	kg/TJ
2018	HC	1A4ci	COAL (S=1.0%)	0.000019608	kg/TJ
2018	HC	1A4ci	FOREST WOODFUEL	0.000005000	kg/TJ
2018	HC	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000001852	kg/TJ
2018	HC	1A5a	FOREST WOODFUEL	0.000001049	kg/TJ
2018	HC	1A5a	LIGHT FUEL OIL (S=0.0915%)	0.000000150	kg/TJ

PCB implied emission factors in Finnish air pollutant inventory for 2018

2018	PCB	1A1a	0-FIBRE/BIOLOGICAL SLURRY	0.003500000	g/TJ
2018	PCB	1A1a	BARK	0.003500000	g/TJ
2018	PCB	1A1a	CHIPS FROM ROUNDWOOD	0.003500000	g/TJ
2018	PCB	1A1a	COAL (S=1.0%)	0.000003300	g/TJ
2018	PCB	1A1a	DEMOLITION WOOD	0.003500000	g/TJ
2018	PCB	1A1a	FOREST RESIDUE CHIPS	0.003355090	g/TJ
2018	PCB	1A1a	OTHER NON-FOSSIL SOLID	0.003500000	g/TJ
2018	PCB	1A1a	OTHER WOOD RESIDUE	0.003500000	g/TJ
2018	PCB	1A1a	PAPER	0.003500000	g/TJ
2018	PCB	1A1a	PLYWOOD RESIDUE	0.003500000	g/TJ
2018	PCB	1A1a	RECOVERED WOOD	0.003500000	g/TJ
2018	PCB	1A1a	SAWDUST AND CUTTER CHIPS	0.003500000	g/TJ
2018	PCB	1A1a	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.003500000	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCB	1A1a	WOOD FUELS)	0.003446311	g/TJ
2018	PCB	1A1a	WOOD RESIDUE CHIPS	0.003399521	g/TJ
2018	PCB	1A2a	COKE (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2a	OTHER FOSSIL SOLID	0.170000000	g/TJ
2018	PCB	1A2a	WOOD RESIDUE CHIPS	0.000060000	g/TJ
2018	PCB	1A2b	COAL (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2b	COKE (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2b	OTHER FOSSIL SOLID	0.170000000	g/TJ
2018	PCB	1A2c	COAL (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2c	SAWDUST AND CUTTER CHIPS	0.000060000	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCB	1A2c	WOOD FUELS)	0.000060000	g/TJ
2018	PCB	1A2c	WOOD RESIDUE CHIPS	0.000060000	g/TJ
2018	PCB	1A2d	0-FIBRE/BIOLOGICAL SLURRY	0.000060000	g/TJ
2018	PCB	1A2d	BARK	0.000060000	g/TJ
2018	PCB	1A2d	CHIPS FROM ROUNDWOOD	0.000060000	g/TJ
2018	PCB	1A2d	COAL (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2d	DEMOLITION WOOD	0.000060000	g/TJ
2018	PCB	1A2d	FOREST RESIDUE CHIPS	0.000059449	g/TJ
2018	PCB	1A2d	OTHER NON-FOSSIL SOLID	0.000060000	g/TJ
2018	PCB	1A2d	OTHER WOOD RESIDUE	0.000060000	g/TJ
2018	PCB	1A2d	PAPER	0.000060000	g/TJ
2018	PCB	1A2d	RECOVERED WOOD	0.000060000	g/TJ
2018	PCB	1A2d	SAWDUST AND CUTTER CHIPS	0.000060000	g/TJ
2018	PCB	1A2d	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000060000	g/TJ
2018	PCB	1A2d	WOOD RESIDUE CHIPS	0.000060000	g/TJ
2018	PCB	1A2e	CHIPS FROM ROUNDWOOD	0.000060000	g/TJ
2018	PCB	1A2e	COAL (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2e	COKE (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2e	OTHER NON-FOSSIL SOLID	0.000060000	g/TJ
2018	PCB	1A2e	RECOVERED WOOD	0.000060000	g/TJ
2018	PCB	1A2e	SAWDUST AND CUTTER CHIPS	0.000060000	g/TJ
2018	PCB	1A2e	WOOD RESIDUE CHIPS	0.000060000	g/TJ
2018	PCB	1A2f	CHIPS FROM ROUNDWOOD	0.000060000	g/TJ
2018	PCB	1A2f	COAL (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2f	COKE (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2f	FOREST RESIDUE CHIPS	0.000060000	g/TJ
2018	PCB	1A2f	OTHER FOSSIL SOLID	0.170000000	g/TJ
2018	PCB	1A2f	SAWDUST AND CUTTER CHIPS	0.000060000	g/TJ
2018	PCB	1A2gviii	0-FIBRE/BIOLOGICAL SLURRY	0.000060000	g/TJ
2018	PCB	1A2gviii	BARK	0.000050490	g/TJ

2018	PCB	1A2gviii	CHIPS FROM ROUNDWOOD	0.000060000	g/TJ
2018	PCB	1A2gviii	COAL (S=1.0%)	0.170000000	g/TJ
2018	PCB	1A2gviii	FOREST RESIDUE CHIPS	0.000054909	g/TJ
2018	PCB	1A2gviii	OTHER NON-FOSSIL SOLID	0.000060000	g/TJ
2018	PCB	1A2gviii	OTHER WOOD RESIDUE	0.000060000	g/TJ
2018	PCB	1A2gviii	RECOVERED WOOD	0.000060000	g/TJ
2018	PCB	1A2gviii	SAWDUST AND CUTTER CHIPS	0.000050793	g/TJ
2018	PCB	1A2gviii	UNSPECIFIED INDUSTRIAL WOOD RESIDUE	0.000060000	g/TJ
			WOOD PELLETS AND BRIQUETTES (REFINED		
2018	PCB	1A2gviii	WOOD FUELS)	0.000037062	g/TJ
2018	PCB	1A2gviii	WOOD RESIDUE CHIPS	0.000034296	g/TJ
2018	PCB	1A3dii	GASOIL (FOR NON-ROAD USE)	0.000932421	g/TJ
2018	PCB	1A3dii	HEAVY FUEL OIL (normal, S>1%)	0.009828854	g/TJ
2018	PCB	1A4ai	FOREST WOODFUEL	0.060000000	g/TJ
2018	PCB	1A4ai	HEAVY FUEL OIL (S<1%)	0.000087591	g/TJ
2018	PCB	1A4ai	LIGHT FUEL OIL (S=0.0915%)	0.000083531	g/TJ
2018	PCB	1A4ai	SOD PEAT	0.000058894	g/TJ
2018	PCB	1A4bi	COAL (S=1.0%)	0.000088235	g/TJ
2018	PCB	1A4bi	FOREST WOODFUEL	0.060000000	g/TJ
2018	PCB	1A4bi	HEAVY FUEL OIL (S<1%)	0.000087591	g/TJ
2018	PCB	1A4bi	LIGHT FUEL OIL (S=0.0915%)	0.000084309	g/TJ
2018	PCB	1A4bi	SOD PEAT	0.000073171	g/TJ
2018	PCB	1A4ci	COAL (S=1.0%)	0.000176471	g/TJ
2018	PCB	1A4ci	FOREST WOODFUEL	0.060000000	g/TJ
2018	PCB	1A4ci	HEAVY FUEL OIL (S<1%)	0.000087591	g/TJ
2018	PCB	1A4ci	LIGHT FUEL OIL (S=0.0915%)	0.000022235	g/TJ
2018	PCB	1A4ci	SOD PEAT	0.000073086	g/TJ
2018	PCB	1A4ciii	GASOIL (FOR NON-ROAD USE)	0.000879630	g/TJ

Annex 2

Emission factor tables for point sources

Nitrogen oxides, NO_x

Point source emission factors for > 50 MW facilities

Updated September 2006

Source: Päästötietojen tuottamismenetelmät - Energiantuotanto (10.6.2004)
(www.ymparisto.fi > Yritykset ja yhteisöt > Päästöt > Päästörekisterit > Päästötiedon tuottaminen > Aineistoa päästöjen määrittämiseen > Energiantuotanto). in Finnish

NO _x -emission factors	15-50 MW		
	Combustion technology	Emission factor mg/MJ	Source
Fuel			
Coal >50%	All	170	1
Peat >50%	Grate	200	1
	BFB	160	1
	CFB	120	1
	Gasification	220	1
Wood >50%	Grate	140	1
	BFB	120	1
	CFB	100	1
	Gasification	170	1
Mixed burning. no fuel more than 50 %	Grate	200	1
	BFB	160	1
	CFB	120	1
	Gasification	220	1
Natural gas	Burner	70	1
Heavy fuel oil	Burner	180	1
Light fuel oil	Burner	100	1
Gas turbines. natural gas		150	1
Gas motor (SG)/ double fuel (DF)		160	1
Gas diesel motor (GD), Gas		1500	1
Oil diesel motor (CI)		2000	1

Source:

1. Jalovaara, J.; Aho J.; Hietamäki E.; Hyytiä V.; Paras käytettävissä oleva tekniikka (BAT) 5-50 MW:n polttolaitoksissa Suomessa, Suomen Ympäristö 649, Suomen ympäristökeskus, Helsinki 2003 (In Finnish)

- Tables pp. 16-19. Tyypilliset ominaispäästökertoimet pienissä polttolaitoksissa

NM VOC, non-methane volatile organic compounds

Point source emission factors for > 50 MW facilities

Updated September 2006

Source: Päästötietojen tuottamismenetelmät – Energiantuotanto (10.6.2004)
(www.ymparisto.fi > Yritykset ja yhteisöt > Päästöt > Päästörekisterit)
> Päästötiedon tuottaminen > Aineistoa päästöjen määrittämiseen > Energiantuotanto). in Finnish

Fuel	Emission factor mg/MJ	Source
Coal	1	1
Natural gas	1	1
Heavy fuel oil	1	1
Light fuel oil	1	1
Peat	2	1
Wood	2	1
Peat fluidized bed	3	1
Wood. fluidized bed	3	1

Source:

1. Expert estimation based on national measurement data

Carbon monoxide, CO

Point source emission factors for > 50 MW facilities

Updated September 2006

Source: Päästötietojen tuottamismenetelmät - Energiantuotanto (10.6.2004)

(www.ymparisto.fi > Yritykset ja yhteisöt > Päästöt > Päästörekisterit > Päästötiedon tuottaminen

> Aineistoa päästöjen määrittäminen > Energiantuotanto). in Finnish

Fuel	Combustion technology	Capacity			
		15-50 MW	50-150 MW	150-300 MW	>300 MW
		Emission factor			
		mg/MJ	mg/MJ	mg/MJ	mg/MJ
Coal >80%	Burning			5	5
	Grate	30	30	5	5
	Fluidized bed	30	30	5	5
Coal mixed burning 50-80%	All	30	30	10	10
Peat >80%	Grate	100	30	10	10
	Fluidized bed	100	30	10	10
	Other	30	10	10	10
Peat mixed burning 50-80%	Grate	100	30	10	10
	Fluidized bed	100	30	10	10
	Other	70	30	10	10
Wood >80%	Grate	250	250	150	150
	Fluidized bed	150	150	150	150
	Other	250	250	150	150
Wood mixed burning 50-80%	Grate	250	250	70	70
	Fluidized bed	150	150	70	70
	Other	150	150	70	70
Mixed burning no fuel more than 50 %	Grate	100	50	30	30
	Fluidized bed	100	50	30	30
	Other	100	50	30	30
Natural gas	Burning	20	20	20	20
Oil	Burning	20	20	20	20
Gas turbines. natural gas		20	20	20	20

Polychlorinated dioxins and furans, PCDD/PCDF

Point source emission factors for > 50 MW facilities

Updated September 2006

Source: Päästötietojen tuottamismenetelmät - Energiantuotanto (10.6.2004)
(www.ymparisto.fi > Yritykset ja yhteisöt > Päästöt > Päästörekisterit > Päästötiedon tuottaminen > Aineistoa päästöjen määrittämiseen > Energiantuotanto). in Finnish

Fuel	PCDD/F-emission factors	
	mg I-TEQ/TJ	Source
Coal	0.004	1*
Heavy fuel oil	0.0004	1*
Light fuel oil	0.0005	1*
Wood	0.021	2*
Peat	0.0175	3
Natural gas	0.0005	4

Sources:

1. Expert estimate based on UNEP (1999). Dioxin and furan inventories. National and regional emissions of PCDD/PCDF. May 1999 (Germany: Investigation of emissions)
2. Expert estimate based on USEPA (1997) Locating and Estimating Air Emissions from Sources of Dioxins and Furans. USEPA. May 1997. Office of Air Quality Planning And Standards
3. Ruuskanen (2000). Mittaukset; Dioksiineja vähentävät ympäristönsuojelukeinot 1990-luvulla ja uudet mahdollisuudet. Juhani Ruuskanen. Ympäristö- ja terveystietä 3:2000. In Finnish
4. UNEP (2003). UNEP/POPS/INC.7/INF/14: Standardized Toolkit for Identification and quantification of Dioxin and Furan Releases. 1st edition. May 2003.
www.pops.int;
(based on measurements in Belgium. Germany and Switzerland)

**Polyaromatic hydrocarbons , PAH-4
expressed as the sum of benzo(a)pyrene. benzo(b)fluoranthene,
benzo(k).fluoranthene and indeno(1.2.3.-cd)pyrene**

Point source emission factors for > 50 MW facilities

Updated September 2006

Source: Päästötietojen tuottamismenetelmät - Energiantuotanto (10.6.2004)
(www.ymparisto.fi > Yritykset ja yhteisöt > Päästöt > Päästörekisterit > Päästötiedon
tuottaminen > Aineistoa päästöjen määrittämiseen > Energiantuotanto). in Finnish

PAH-4 expressed as the sum of benzo(a)pyrene. benzo(b)fluoranthene. benzo(k)fluoranthene and indeno(1.2.3-cd)pyrene	Emission factor		
	g/t	g/TJ	Source
Fuel			
Coal	0.0003	0.012	1
Heavy fuel oil	0.12	2.8	2
Light fuel oi	0.12	2.8	2
Wood	0.03	2.7	3
Peat		1	4

Sources:

1. Expert estimate based on EEA(2003) Emission Inventory Guidebook
2. Expert estimate based on UBA (1998). Investigation of emissions and abatement measures for persistent organic pollutants in the FRG. Research Report 295 44 365. UBA-*FB 98-115/e. 75/98
3. Expert estimate based on TNO (1995). Technical paper to the OSPARCOM-HELCOM-UNECE emission Inventory of Heavy Metals and POP. TNO-Report TNO-MEP - 95/247:
4. Expert estimate based on KTM (1988). Energiatuotannon kokonaispäästöt Suomessa, KTM. Energiaosasto. D:162.1988. In Finnish

Heavy metals

Arsenic (As), Mercury (Hg), Cadmium (Cd), Chrome (Cr), Copper (Cu), Nickel (Ni), Lead (Pb) and Zinc (Zn)

Point source emission factors for > 50 MW facilities

Updated September 2006

Source: Päästötietojen tuottamismenetelmät - Energiantuotanto (10.6.2004) (www.ymparisto.fi > Yritykset ja yhteisöt > Päästöt > Päästörekisterit > Päästötiedon tuottaminen > Aineistoa päästöjen määrittämiseen > Energiantuotanto). in Finnish

Fuel	Emission factors [µg/MJ]				
	no abatement	cyclone	washer	electric filter	electric filter + desulphuration
Arsenic (As)					
Heavy fuel oil	2	1	-	-	
Peat	81	33	11	0.5	
Coal	130	26	17	7.8	1.0
Wood	1	0.3	0.13	0.1	
Mercury (Hg)					
Heavy fuel oil	0.03	0.03	-	-	
Peat	2.6	2.6	2.3	1.3	
Coal	3.7	3.7	3.3	1.4	0.95
Wood	0.5	0.5	0.45	0.5	
Cadmium (Cd)					
Heavy fuel oil	0.3	0.2	-	-	
Peat	2.8	1.1	0.4	0.02	
Coal	18	3.6	2.3	0.2	0.09
Wood	5	2	0.65	0.5	
Chrome (Cr)					
Heavy fuel oil	1	0.5	-	-	
Peat	140	56	18	0.8	
Coal	1000	200	130	5	1.5
Wood	35	9	4.5	2	
Copper (Cu)					
Heavy fuel oil	2.5	1	-	-	
Peat	220	89	29	1.3	
Coal	350	70	45	4	1.8
Wood	51	12.75	12.75	5	

Fuel	Emission factors [$\mu\text{g}/\text{MJ}$]				
	no abatement	cyclone	washer	electric filter	electric filter + desulphuration

Nickel (Ni)

Fuel	Emission factors [$\mu\text{g}/\text{MJ}$]				
Heavy fuel oil	300	150	-	-	
Peat	140	58	19	0.8	
Coal	800	160	100	4	1
Wood	30	8.5	3.9	2	

Lead (Pb)

Fuel	Emission factors [$\mu\text{g}/\text{MJ}$]				
Heavy fuel oil	25	10	-	-	
Peat	170	68	22	1	
Coal	790	160	100	3.9	1.2
Wood	45	12	6	3.4	

Zinc (Zn)

Fuel	Emission factors [$\mu\text{g}/\text{MJ}$]				
Heavy fuel oil	12	6	-	-	
Peat	330	130	43	8	
Coal ⁽¹⁾	1500	300	195	84	12
Wood	700	175	175	54	

(1large variation between facilities although factors are based on measurements

Vanadium (V)

Fuel	Emission factors [$\mu\text{g}/\text{MJ}$]				
Heavy fuel oil	1000	450	-	-	
Peat	180	74	24	1.1	
Coal	1400	270	180	6.9	3.1
Wood	100	25	13	9	

Sources:

· "NOT ABATED" emission factors are based on expert estimation on the measured heavy metal concentrations in fuels and on a coarse division between the bottom and fly ash .

· Hupa M. et al. (1988). Total emissions from energy production in Finland Hki 1988. Ins.tsto Prosessikemia Ky. Ministry of Trade and Industry. Energy Department. Research Reports D:162. In Finnish.

- Melanen et al. (1999). Raskasmetallien päästöt ilmaan Suomessa 1990-luvulla Suomen ympäristö 329. Suomen ympäristökeskus 1999. p. 86 //Kivihiili: Taulukko 3. Liite 5. (s. 69).Turve: Taulukko 4. Liite 6. (s. 72) . In Finnish
- Kouvo Petri (2003). Formation and control of trace metal emissions in co-firing of biomass, peat and wastes in fluidized bed combustors. Lappeenrannan teknillinen yliopisto. Academic Dissertation. 148. 2003.
- Harju. t. and Munthe. J. (2000). Optimal utilisation of coal in modern power plants with respect to mass flows and emissions of VOC/PAHs and mercury. OMPAC. VTT 31.12.2000. p. 238. Workpackage PIV.1 Field measurement campaign in Helsinki Energy (T. Harju/VTT. J. Munthe/IVL)
- Helsingin Energia/Fortum (2003). Kivihiilen kertoimet sähkösuotimen ja rikinpoiston jälkeen perustuvat suomalaisilta laitoksilta saatuihin mittaus-/ominaispäästötietoihin. In Finnish

Annex 3

Corrections made to the data taken from VAHTI in 2015

Annex 3. Corrections made to emission data taken from the Finnish Regional ELY Centres' VAHTI database in 2015

The following corrections and modifications were made to the data reported by the plants to the VAHTI database from where the data was taken to the air emission inventory data system (IPTJ) and checked before use in the inventory (see Chapter 2.3 for description of the process of inventory preparation):

1 Fuel use data (3297 records in the year 2015 data)

- 675 fuel use records were added from emission trading material
- 3 fuel use records were added from other material
- 1829 fuel use records having Vahti data were taken from emission trading material directly on boiler level or according to plant level data
- 790 fuel use records were directly from Vahti database

For 2778 original Vahti fuel use records the following corrections were made (some corrections were also made for the Vahti data corresponding to the above 1829 records from emission trading data in order that the plant level data from emission trading material could be more accurately modified back to boiler level data):

- 45 plant level IDs were modified to accomplish correspondence between Vahti data and energy trading data on plant level
- 43 energy content values (TJ) of fuel use were corrected based on fuel amount values (mass or volume)
- 3 energy content values (TJ) were corrected based on other information (e.g. order of magnitude)
- 31 missing energy content values (TJ) were calculated by using fuel amount values
- 1 missing fuel use records were calculated and added according to the corresponding emission records
- 30 fuel use codes (classifications) were changed
- 10 fuel use record IDs (that identify the emission source, for example, a boiler) were changed to correspond the emission data
- 42 overlapping fuel use records were deleted (corresponding fuel use and emission information was taken from off-road machinery model TYKO)
- 230 monthly reported fuel use records were modified to correspond the year-based data
- 3 fuel use modifications were done
- 1 sulphur content value was corrected
- 411 fuel use records having zero or null values (mass or volume and energy content) were deleted (these values are problematical to the calculation process of the IPTJ)
- In addition, there were 109 fuel use records that had a severe inconsistency between the fuel amount (mass or volume) and energy content (TJ) values.

2 Emission data

- Emission data was calculated for 647 fuel use records added from emission trading material
- All emission data was calculated (no emissions in Vahti) for 89 original fuel use records. Also, there was partly missing emission data in Vahti which was calculated.
- 4 emission values were corrected

- 5 emission parameters were changed
- 38 emission record IDs (that identify the emission source, for example, a boiler) were changed to correspond the fuel use data
- 4 incorrect emissions records were deleted
- 326 overlapping emission records were deleted (corresponding emission information was taken from off-road machinery model TYKO)
- 730 monthly reported emission records were modified to correspond the year-based data
- Almost all emissions reported for E-PRTR in plant level in Vahti were deleted
- Emission records having 0 or null values were deleted

3 Combustion (1521 records in 2015) and emission abatement technology data

- Default values were added for 401 missing fuel capacities (thermal input)
- Other values were added for 101 missing fuel capacities (thermal input)
- 98 values of fuel capacities (thermal input) were corrected
- Default values were added for 387 undefined or missing combustion technologies
- Other values were added for 82 undefined or missing combustion technologies
- 36 values of combustion technologies were corrected
- 61 records of emission abatement technologies were added
- The number of records for which abatement technology data was missing could not be estimated (missing data may mean actually missing data or that there is no abatement technology in use). If no abatement data in Vahti, ESP was used as default technology for grate, fluidized bed and for gasification if thermal input was higher than 5 MW and cyclone was used as default technology for heavy oil burners if thermal input was higher than 1 MW.

Annex 4

Basis of Estimation of Emissions from Transport

Table F4: Basis for estimating emissions from mobile sources. Please tick off with X.

NFR09 code	Description	Fuel sold	Fuel used	Comment
1 A 3 a i (i)	International aviation (LTO)	x		
1 A 3 a i (ii)	International aviation (Cruise)	x		
1 A 3 a ii (i)	1 A 3 a ii Civil aviation (Domestic, LTO)	x		
1 A 3 a ii (ii)	1 A 3 a ii Civil Aviation (Domestic, Cruise)	x		
1A3b	Road transport			
1A3c	Railways	x		
1A3di (i)	International maritime navigation	x		
1A3di (ii)	International inland waterways	x		
1A3dii	National navigation	x		
1A4ci	Agriculture	x		
1A4cii	Off-road vehicles and other machinery	x		
1A4ciii	National fishing	x		
1 A 5 b	Other mobile (Including military)	x		

Annex 5

Net caloric values and sulphur contents of fuels

Table 5.1. Net caloric values by fuel.

Fuels	NCV	Unit	Source of emission factor
Liquid fuels			
Town gas	16.9	GJ/1000 m3	Neste 1993
Refinery gas (+ other gases)	49 (45-55)	GJ/t	Plant-specific
LPG (liquefied petroleum gas)	46.2	GJ/t	Neste/ET2004
Naphta	44.3	GJ/t	EE
Motor gasoline	43	GJ/t	VTT/Liisa Model/Neste
Aviation gasoline	43.7	GJ/t	EE/Neste
Jet fuel	43.3	GJ/t	EE /Fortum 2002
Other kerosenes (vaporising oil, lamp kerosene)	43.1	GJ/t	EE/IPCC1996
Diesel oil	42.8	GJ/t	VTT/Liisa Model/Neste
Gasoil (light fuel oil, heating fuel oil)	42.7	GJ/t	Neste/EE
Gasoil (for non-road use)	42.8	GJ/t	EE (same as diesel oil)
Residual fuel oil (heavy fuel oil), low sulphur	41.1	GJ/t	Neste/EE
Residual fuel oil (heavy fuel oil), normal	40.5	GJ/t	Neste/EE
Other residual fuel oil (heavy bottom oil)	40.2	GJ/t	Neste/EE
Petroleum coke	33.5 (20-36)	GJ/t	Plant-specific
Recycled waste oil	41	GJ/t	EE (=RFO)
Other petroleum products	35 (30-47)	GJ/t	EE (=RFO)
Solid fuels			
Anthracite	33.5	GJ/t	IPCC1996
Hard coal (bituminous)	25.5 (21-32)	GJ/t	StatFi 2005
Coal briquettes	30	GJ/t	EE
Coal tar	36.5	GJ/t	Plant-specific
Coke	29.3 (25-35)	GJ/t	IPCC1996
Coke oven gas	16.7	GJ/1000 m3	Plant-specific
Blast furnace gas	11.2-11.5 3.6	GJ/1000 m3	Plant-specific
Gaseous fuels			
Natural gas	36	GJ/1000 m3	Gasum 2005
Gasified solid waste*	13.3 (7-30)	GJ/1000 m3	EE
Biomass fuels			
Wood fuels (solid, includes e.g. firewood, bark, chips, sawdust and other industrial wood residues, recycled wood, pellets and briquettes)	7.8–16	GJ/t	IPCC1996
Black and sulphite liquors	7.3–15	GJ/t	IPCC1996
Other by-products from wood processing industry (includes e.g. pine oil and tar, methanol, fibrous sludge, waste paper, stink gas, etc.)	3–37 20	GJ/t GJ/1000 m3	IPCC1996, VTT2045, EE
Plant and animal residues	10-35	GJ/t	EE (=wood)
Biogas (landfill gas, biogas from wastewater treatment, industrial biogas and other biogas)	15–20.5	GJ/1000 m3	EE
Hydrogen	10.8	GJ/1000 m3	
Other fuels, peat			

Peat (milled)	10.1	GJ/t	VTT 2003
Peat (sod peat)	12.3	GJ/t	VTT 2003
Peat (pellets and briquettes)	20.9	GJ/t	VTT 2003
Other fuels, wastes etc.			
Mixed fuels* (REF, RDF, PDF, MSW)	10–21	GJ/t	StatFi 2004
Demolition wood*	8-15	GJ/t	StatFi 2004
Impregnated wood*	12	GJ/t	StatFi 2004
De-inking sludge*	4	GJ/t	EE
Other residues and by-products	30	GJ/t	EE
Plastics waste	33 (25-40)	GJ/t	EE
Rubber waste	33	GJ/t	StatFi 2004
Hazardous waste	15 (10-15)	GJ/t	Ekokem 2004
Other non-specified waste (industrial waste, etc.)	15–30	GJ/t	EE

* Mixed fuels: contains fossil and non-fossil carbon; the CO₂ emission factor refers only to the fossil fraction of total energy content.

Sources:

EE: expert estimation Kari Grönfors, Statistics Finland

Neste 1993: Composition and properties of natural gas and liquefied petroleum gas (in Finnish)

Neste: product data sheets, personal communications

VTT/Liisa Model: Calculation system of road traffic emissions

StatFi 2004: Mixed fuels in Finland's greenhouse gas inventory and on compilation of the energy statistics (Masters Thesis of Minna Jokinen)

StatFi 2005: Research of Teemu Oinonen (not published, see Annex 3)

Ekokem 2004: Environmental report 2004

Gasum 2005: personal communication

VTT2045: Properties of fuels used in Finland, VTT 2000

Fortum 2002: Composition of kerosenes

VTT 2003: Vesterinen 2003

The default NCVs are practically constant over time. There are some exceptions concerning plant specific fuels like refinery gases, BFG and certain waste-derived fuels. The operators should report to VAHTI system both fuel quantities as well as energy contents of the fuels used. Thus in bottom-up data there are some variations in the NCVs. The annual average values of reported data are compared to the default NCVs. Also plant level NCVs are compared to default NCVs.

Peat is one of the main fuels in Finland. It is the fourth largest fuel (after wood, hard coal and natural gas), representing over 6% of Total primary energy supply (TPES) and over 8% of combustible fuels. Its share is higher than for example the share of any liquid fuel. The share of peat is generally around half of the share of hard coal, but varies considerable, like the share of hard coal, too.

Table 5.2. Fuel specific sulphur contents.

Fuel	Fuel	Default S%
11000	Petroleum products	0.21
11108	town gas	0.00001
11109	Other fossile gas	0.004
11110	Refinery gas	0.01
11120	Light distillates	0.00002
11210	Naphtha	0.005
11220	Motor gasoline (S=0.001%)	0.001
11230	Aviation gasoline	0.002
11310	Kerosene (jet fuel)	0.04
11320	Other kerosenes	0.07
11321	motor kerosene	0.07
11322	paraffin oil	0.02
11330	Diesel oil (S=0.001%)	0.001
11340	LFO (S=0.0915%)	0.0915
11350	Gasoil (for non-road use)	0.001
11390	Other medium distillates	0.12
11410	HFO (S<1%)	0.9
11420	HFO (normal, S>1%)	1.4
11430	Other heavy distillates	2.7
11500	Petroleum coke	1
11600	Recycled and waste oils	0.9
11601	Refined recycled and waste oils	0.9
11900	Other petroleum products	1
12110	Anthracite	1.5
12120	Hard coal, bituminous	0.8
12210	Semi-bituminous coal, brown coal, lignite	0.8
12220	Coal briquettes	2
12280	Coal tar	0.25
12290	Other non-specified coal	1
12300	Coke (S=1.0%)	1
12400	Coke oven gas	0.05
12500	Blast furnace gas	0.000001
12600	Converter gas	0.000001
13100	Natural gas	0.0001
21100	Milled peat	0.1
21200	Sod peat	0.11
21300	Peat pellets and briquettes	0.16
31100	Forest fuelwood	0.01
31110	Firewood (stems and split firewood)	0.015
31120	Chips from roundwood	0.01
31130	Forest residue chips	0.01
31210	Bark	0.0165
31220	Sawdust, cutter shavings etc.	0.0075

31230	Wood residue chips	0.008
31231	Plywood residues	0.018
31280	Unspecified industrial wood residue	0.012
31290	Other industrial wood residue	0.012
31301	Black liquor and other concentrated liquors	5
31302	sulphite waste liquor	5
31400	Other by-products from wood processing industry	0.018
31401	tall-oil pitch	0.5
31402	Metanol	1
31403	0-fibre/bio sludge	0.6
31404	Paper	0.038
31406	Odorous gases	15
31409	Other non-fossile liquid	2.5
31500	Recovered wood	0.15
31600	Wood pellets and briquettes	0.009
31700	Vegetable-based fuels	0.075
31800	Animal-based fuels	0.075
32110	Landfill gas	0.01
32120	Biogas from wastewater treatment	0.01
32130	Industrial biogas	0.01
32190	Other biogas (other non-fossile gas)	0.01
32200	Liquid biofuels	0.002
32311	Recovered fuels REF 1-waste sorted according to origin	0.14
32312	Recovered fuels REF 2-waste sorted according to origin	0.12
32313	Recovered fuels REF 3-waste sorted according to origin	0.1
32314	PDF-packaging waste	0.14
32315	RDF-municipal waste, mechanically sorted	0.22
32316	Municipal waste - unsorted	0.25
32320	Demolition wood	0.1
32331	Salt impregnated wood	0.02
32332	Creosote impregnated wood	0.07
32390	Other mixed fuels (other waste)	0.25
32391	Deinking waste	0.08
32400	Gasified waste	0.003
49110	Plastic waste	0.2
49120	Rubber waste	1.5
49130	Hazardous waste	0.1
49190	Other by-products and waste products (industrial waste)	1
49195	Suphur concentrate	10
49200	Exothermic heat from industry (other liquid)	0
49300	Secondary heat from industry	0
49800	Hydrogen	0.000001

Annex 6

QA/QC Tools

QA/QC Tools for the Finnish Air Pollutant Emissions Inventory

This Annex of the IIR describes the components of the QA/QC toolset for the inventory and aims to deliver a comprehensive overview of their features without technical details. The design parameters for the tools were set in a preliminary research of the challenges in the previously existing quality control measures, most of which were often time and resource –based. The need for the project rose from the complete update of time series of air emissions which was finalized in 2018. As opposed to the previous annual inventories, the new time series required extensive maintenance throughout the whole time series. These tools are supposed to aid in especially time series control, but also to provide means to bring flexibility, agility and reliability in annual inventories.

The developed toolset consists of one main tool for analysing and compiling NFR tables, and several more specified investigation tools for investigating data content of air emission database IPTJ. The tools were mostly developed with Microsoft Excel and SQL Server Management Studio. The check-up routines were originally intended to be implemented in the sequenced query trees in the form of SSIS-packages (developed with Microsoft Business Intelligence Development Studio) that has previously been used as the mid-ware between IPTJ and NFR tables. However, during the development, a methodology for creating a reliable and adjustable SQL-based connection between SQL Server and Microsoft Excel was found, thus eliminating the need for additional middleware. The toolset currently consists of 1 main file and 18 separate files for more specialized analysis. The tools total in 361 megabytes in size. They are easily adaptable for more specific purposes when such needs occur.

In unison with the update of time series, the content between IPTJ and reporting sheets were synchronized for the time series of 1990-2016 for all current categories and pollutants. Methods described in this document do not replace or remove any previously existing QA/QC routines, which include procedures described in the EMEP/EEA Guidebooks.

1.1 The main tool

The main tool provides means to compile, analyse and correct NFR table files. It is designed to be used in sync with the latest reporting sheets, but is also suitable for performing the same procedures on previously submitted files or submission files of other nations. It also provides means to manage notation keys for the complete time series.

Due to certain formatting solutions of the reporting sheets, the tool first needs to prepare the document for use. It opens merged headers of pollutants for all sheets and removes hidden spaces and row changes of headers and labels in order for built-in lookup-functions to be able to search through the document. The headers can be remerged for all sheets if needed. These features are included in the user interface (UI).

2.1.1 Time series from reporting sheets

The tool is best suitable for the analysis of time series per pollutant. The expert can either use the UI-solutions to select a category and a pollutant to investigate, or press a quick key on cell selection within the reporting sheet to retrieve full time series for the selected pollutant and category. Furthermore, the user is able to retrieve all the contributing rows from IPTJ which the reporting sheet value is an aggregate of. The relevant data in its greatest possible detail is therefore continuously accessible by the expert. The emission intensity is visualized with conditional formatting and the following automatic check-ups are made:

- Strongly deviating values
- Gaps in series
- Inconsistency in notation keys
- Sudden drops or increases in emissions.
- Linear estimates for missing values (feature not used in inventory)

The following diagram explains the compilation of time series from the NFR reporting sheet. User selects a cell and with a quick key the time series for the corresponding pollutant and category is collected. A graphical plotting is also automatically generated. The following examples are for demonstration purposes only and cover only the years 1980-1996. Some artificial errors are also included in order to present examples of the check-ups.

1A1a

...

NOx

⋮

24,718

Ctrl + t

1A1a	NOx	Notes
1980	129,228	The value deviates over 100 % from the series median.
1981	109,120	
1982	104,120	
1983	93,436	
1984	88,553	
1985		Gap in series. Linear estimation: 96,5075
1986	104,462	
1987	112,601	
1988	113,043	A drop of 49,1 % in emission levels. Check continuity.
1989	116,964	
1990	59,539	
1991	58,921	
1992	47,001	
1993	51,560	Possibly erroneous value in set.
1994	51,819	
1995	39,101	
1996	46,389	
...	...	

The expert can also loop the procedure over all pollutants and create a compilation table of all pollutants for the selected category (NFR category or national totals). Now the remarks of the selected series is stored as comments and marked with a red font. Relative standard deviation is calculated and an index value is calculated to estimate the reliability of the series. The index does not exclude values that are truthfully deviating or missing, thus automatic corrections can not be performed and an expert estimation is always needed for values that demand attention. Any changes in values or notation keys can be immediately exported back to the reporting sheet.

Table 1 – Example of a time series compilation table after looping through all pollutants. Pollutants expand horizontally and years vertically.

NATIONAL TOTAL	NO _x (as NO ₂)	NM ₁₀ VOC	SO _x (as SO ₂)	NH ₃	PM _{2.5}	PM ₁₀	TSP	BC	CO	...
1980	303,825	NE	583,828	34,272	NE	NE	NE	NE	NE	...
1981	283,975	NE	533,830	34,759	NE	NE	NE	NE	NE	...
1982	279,406	NE	483,828	35,334	NE	NE	NE	NE	NE	...
1983	270,513	NE	371,831	35,522	NE	NE	NE	NE	NE	...
1984	266,352	NE	367,830	35,619	NE	NE	IE	NE	NE	...
1985	284,028	NE	381,832	35,636	NE	NE	NE	NE	NE	...
1986	285,889	NE	330,831	35,348	NE	NE	NE	NE	NE	...
1987	297,204	229,852	327,834	34,630	NE	NE	NE	NE	NE	...
1988	302,181	264,123	301,838	33,998	NE	NE	NE	NE	NE	...
1989	310,009	258,209	243,844	12,022	NE	NE	NE	NE	NE	...
1990	305,629	233,472	248,544	33,630	48,366	72,694	98,952	10,212	720,735	...
1991	NA	219,563	205,275	31,641	43,445	65,150	85,630	9,708	688,077	...
1992	275,374	214,625	155,967	30,767	39,899	59,213	77,930	9,441	667,862	...
1993	277,728	207,533	137,396	31,167	37,033	55,526	72,983	9,225	654,655	...
1994	277,596	205,741	122,529	32,106	36,375	54,637	72,888	9,105	636,460	...
1995	258,139	200,357	104,442	32,417	34,726	51,327	68,062	8,859	629,857	...
1996	262,178	193,999	108,994	33,432	33,842	49,945	65,863	8,577	620,323	...
:	:	:	:	:	:	:	:	:	:	...
RSD (%)	22,2 %	31,4 %	86,4 %	4,8 %	24,3 %	21,5 %	19,3 %	23,4 %	24,2 %	...
Reliability index	9,3	12,9	34,5	2,0	10,0	8,8	7,9	9,8	10,2	...

2.1.2 Notation key management

The compilation table is especially suitable for notation key management, as all data can be imported and exported back with one click. The main tool allows notation key management in many different ways:

- Directly in the NFR sheet
 - The notation key of the selected cell can be multiplied for all years or a prompted range of years with dedicated quick keys.
- In the compilation table
 - The compilation table makes it easy to spot and correct inconsistencies in notation keys over the time series. It also enables mass editing of NK's for example when changes in categorization occurs.
- In the time series analyzer
 - data can be modified and exported back to the NFR sheet in this view too.

VBA-assisted lookup functions deliver the modified data always in their corresponding places in the NFR sheet. This reduces the amount of manual labour, as the compiling expert does not need to browse through all sheets to make changes.

2.1.3 Compiling sheets for new inventory year

The main tool also allows instant delivery of emission values from IPTJ to the reporting sheet. The expert selects the current inventory year, and emission values are retrieved directly from the database using an SQL-

assisted PowerPivot-query. The resulting table takes identical from as the reporting sheets. Missing values or notation keys are then retrieved from the corresponding year of the previously prompted and selected NFR submission file. Also activity data is added.

NFR Compilation Tool

Notation keys from:

Emission data from:

Year:

NFR reporting table for the year 2016

				NOx (as NO2)	NMVOC	SOx (as SO2)	NH3	PM2.5	PM10	TSP
				kt	kt	kt	kt	kt	kt	kt
NFR Aggr	NFR Code	Longname	Notes							
A_PublicP	1A1a	Public electricity and heat		24,7179	1,28642514	15,29805415	0,00204	0,4230907	1,34419	2,751775
B_Industry	1A1b	Petroleum refining		2,29086	0,07532931	6,624842053	NA	0,0492414	0,19532	0,599843
B_Industry	1A1c	Manufacture of solid fuels		NO	NO	NO	NO	NO	NO	NO
B_Industry	1A2a	Stationary combustion in m		3,29196	0,02098773	0,507260175	NA	0,0077297	0,01928	0,032169
B_Industry	1A2b	Stationary combustion in m		0,13465	0,00120449	3,047155399	NA	0,0050221	0,00905	0,025419
B_Industry	1A2c	Stationary combustion in m		1,32835	0,00527129	1,048827139	NA	0,0569474	0,08979	0,106027
B_Industry	1A2d	Stationary combustion in m		17,4456	0,33813159	2,987894905	NA	1,3304282	1,83229	2,120437
B_Industry	1A2e	Stationary combustion in m		0,46131	0,02781427	0,550384247	NA	0,0158448	0,03089	0,054813
B_Industry	1A2f	Stationary combustion in m		1,79973	0,01014703	1,150361177	NA	0,1561773	0,35173	0,823165
L_Offroad	1A2gvii	Mobile Combustion in man		5,80202	1,10432859	0,002794853	0,002308	0,3338679	0,33387	0,333868
B_Industry	1A2gviii	Stationary combustion in m		2,03601	0,21440349	0,671799578	0,001	0,0933998	0,25128	0,583707
H_Aviation	1A3sifi	International aviation L TO		0,67972	0,10064708	0,041193749	NA	0,0050216	0,00502	0,005022

Figure 1 - A screenshot of the NFR compilation tool

The compilation tool performs checks and compares data and labels the cell with individual colors when:

- Emission value is x % higher than in previous year*
- Emission value is x % less than in previous year*
- If a BC > PM2.5 > PM10 > TSP
- Sum of PAH's doesn't equal to Total 1-4,
- Emission value is 10 times higher, or a value is missing where previously reported
- Zero values
- Values where IPTJ content is newer than in the reporting sheet

*The tolerance x for comparison is user adjustable.

The retrieval of complete time series and corresponding IPTJ rows is also available by cell selection analogously to when applied to the NFR sheet. The expert can therefore always track the data to more exact levels of detail. The data collected by the compilation tool can be exported to the reporting sheet with a one click solution. It is also possible to roll through all years in order to keep IPTJ content always in unison with reporting sheets. This eliminates the need to compile reporting sheets manually.

1.2 Tools for data analysis, compilation and management

To expand the scope of investigation limited by the main tool, several more specified tools were constructed by using the same technologies and disciplines to reveal issues of more specific types and levels of detail. These tools include:

- Time series analysis at six different levels of detail:
 - Point level (a facility can have multiple points)
 - Facility level (a SNAP category typically consists of multiple facilities)
 - SNAP categorization (SNAP category is usually a subset of an NFR category)
 - NFR categorization
 - By fuel types
 - Total emissions
- Tool to sort all point sources with highest contribution to overall emissions
- Tool to investigate key sources per pollutant
- A query to calculate implied emission factors
- A query to investigate the consistency of categories between different sources
- NULL-finder to reveal rows with missing essential information, such as emission values or categorizations.
- A query to find duplicate rows
- A query to manually back-up the main results table before major changes
- A routine to reveal point level gaps in time series and to estimate the combined effect of them.

All of the tools above connect to IPTJ and are able to utilize the latest inventory data. The following sub-chapters describe the tools in greater detail. The methodology for point level gap search is described in a separate documentation.

2.1.4 Common techniques and control elements

The tools connect to IPTJ via an ODBC connection and they utilize a combination techniques native to Microsoft Excel, PowerPivot and SQL. In some cases the tools are enhanced with VBA. By using PowerPivot for data retrieval, the upper limit of rows rarely becomes an issue in data management. A typical control element is PivotTable slicer where user can select one or more categories, pollutants on years depending on the tool. Multiple selections are allowed by pressing control-button while selecting. This way the expert can compile more defined datasets for various purposes.

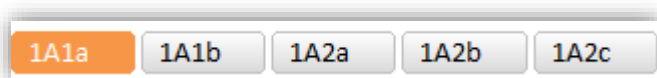


Figure 2 - A control element for NFR selection

The resulting tables usually possess the following structures and features:

- Dimensionality of the table consisting of two of the following: *pollutant*, *year* and *category*. The remaining dimension will remain as a control element.
- Conditional formatting to visualize relative differences in e.g. emission intensity.
- Relative standard deviation is calculated for time series

The tool might also contain multiple control elements, as is with the tool grouping time series by fuels. The selections are allowed in two different levels of detail and selections can be made independently of each other.

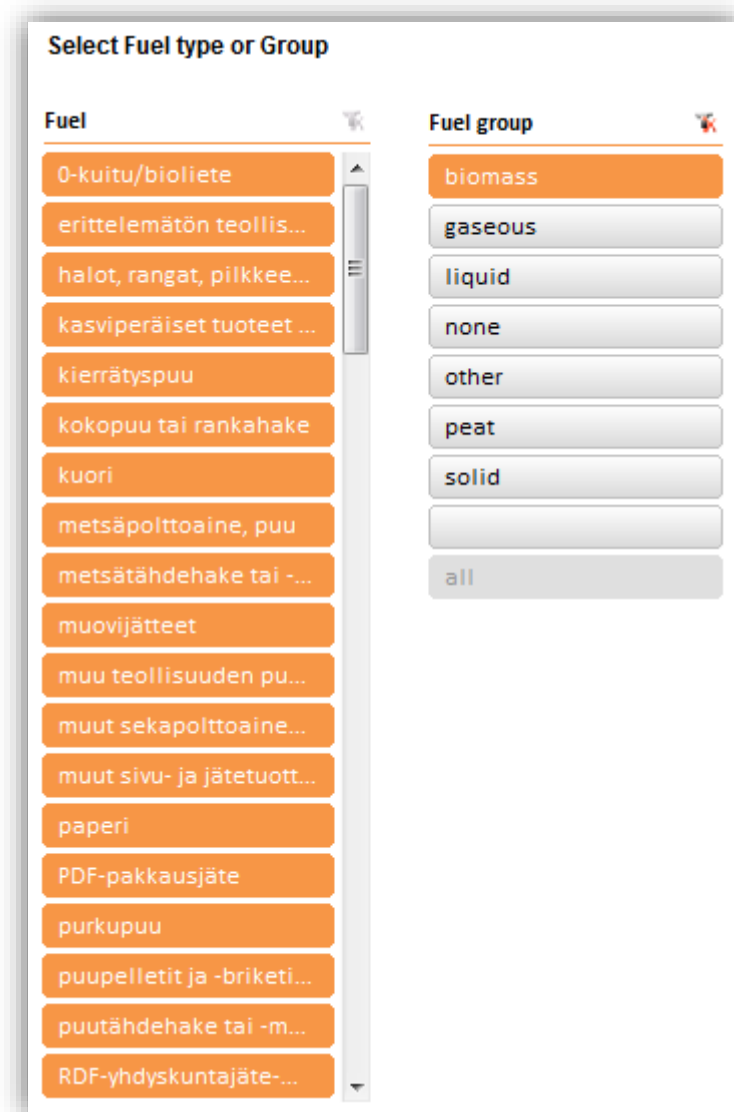


Figure 3 - Example of multiple control elements in time series by fuel. Detailed fuel labels are currently available only in Finnish language.

2.1.5 Time series analysis at point level

The tool compiles a table by dimensions of *year* x *pollutant* after selecting a point ID or a set of points. As opposed to previous systems, the name and description of the point is displayed by default. This aids in understanding the nature of the activity or process of the selected point.

Only years with emissions are displayed. Pollutants are all displayed regardless of whether the selected point has emissions for the given pollutant or not. The tool alerts on years that are completely missing and when the maximum emission value deviates over ten times from the series median for any pollutant. The results are enhanced with conditional formatting to highlight the relative differences in emission values. Gaps in emission values are also displayed per pollutant.

Table 2 – Example of time series by point result sheet. Pollutants expand horizontally and years vertically.

RSD (%)	14,3 %	14,4 %	26,3 %	NA	...
---------	--------	--------	--------	----	-----

Year	NOx as NO2	NMVOC	SOx as SO2	NH3	...
1990	58,828	4,54E-01	76,066		...
1991	58,760	4,29E-01	68,817		...
1992	46,651	4,12E-01	49,151		...
1993	51,175		49,486		...
1994	51,530	5,25E-01	46,905		...
1995	38,855	5,38E-01	36,616		...
1996	46,157	6,13E-01	45,303		...
⋮	⋮	⋮	⋮	⋮	...

2.1.6 Time series analysis at facility level

The expert selects a pollutant to investigate. This forms a table with the dimensions of *facility x year*. The tool groups all point sources (e.g. individual boilers) into their corresponding facilities. The processes are described in the greatest detail possible. The expert can now browse through time series of all facilities and quickly investigate which events (e.g. changes in processes) actually contribute to the varying emission values. It also reveals if a point ID has changed during the time series, thus patching the shortcomings of TS investigation by point ID only. The expert can filter the dataset by NFR category or certain range of years.

2.1.7 Time series by NFR and SNAP

In comparison to NFR categorization SNAP categorization is a more detailed and in IPTJ content in all cases a subset of an NFR category. The tools are identical to each other except by the controls for categorization. The tools flags missing years and if a pollutant maximum value is ten times greater than the series median.

2.1.8 Time series by fuel

The tool compiles time series by either a specific fuel or fuel groups (e.g. liquid fuels) by selecting the desired set from control slicers. These selections can be made independently of each other. Dimensions of the table are *year x pollutant*. Similarly to the previous tool, relative standard deviation for each pollutant is calculated and flagged if the maximum value is ten times greater than the series median.

2.1.9 Key source analysis

Categories that contribute to 80 % of emissions per pollutant are considered as key categories. These can be quickly retrieved for all pollutants and years by using control slicers. The table calculates the sector sum, percentage of total emissions and cumulative percentage of emissions in an inclining order. Dataset can be filtered by NFR categories, for example to exclude NFR sheet memo items from key category analysis.

Year

1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
2008	2009	2010	2011	2012	2013	2014	2015	2016	9999				

Pollutant

	As	BC	Cd	CO	Cr	Cu	HCB
Hg	NH3	Ni	NMVOC	NOx (as N...	PAHs	Pb	PCBs
PCDD/PC...	PCP	PM1	PM10	PM2.5	Se	SOx (as S...	TSP
Zn	benzo(a) ...	benzo(b) fl...	benzo(k) fl...	HCH	Indeno (1,...	PCDD	PCDF

NFR	Sector sum	Percentage of total	Cumulative percentage	Key category?
1A1a	15 298,05	38,04 %	38,04 %	Yes
1A1b	6 624,84	16,47 %	54,51 %	Yes
1A2b	3 047,16	7,58 %	62,08 %	Yes
1A2d	2 987,89	7,43 %	69,51 %	Yes
2B10a	1 737,09	4,32 %	73,83 %	Yes
1A5a	1 256,96	3,13 %	76,96 %	Yes
1A2f	1 150,36	2,86 %	79,82 %	Yes
1A4ai	1 088,00	2,71 %	82,52 %	Yes
1A2c	1 048,83	2,61 %	85,13 %	
1A4bi	1 007,76	2,51 %	87,64 %	
2H1	960,19	2,39 %	90,02 %	
2C1	743,57	1,85 %	91,87 %	
1A4ci	705,79	1,75 %	93,63 %	
1A2gviii	671,80	1,67 %	95,30 %	
1A2e	550,38	1,37 %	96,66 %	
1A2a	507,26	1,26 %	97,93 %	
1A3ai(ii)	480,28	1,19 %	99,12 %	
⋮	⋮	⋮	⋮	

Figure 4 – Example of a view in Key Category Analysis

Checking gaps and discontinuity in emissions of energy sector point sources

This chapter explains the search of gaps and discontinuities in the energy sector emission data that was carried out during the time series update of 2017 and 2018. Many of the observations described here have since been corrected and are not present in the latest inventories.

1.3 Data diminution

By the amount of data, the energy sector is the most intensive of all sectors. It is also complicated by its data structure. The emission data alone consists of 1 810 464 rows in 25 columns, separated into three tables. Microsoft Excel limits the rows at 1 048 576. Therefore the dataset needs slicing or diminution in order to be manageable in Excel-environment.

Table 3 – Amount of rows in energy sector emission data

Range	Rows
1990-2004	960768
2005-2012	610920
2013-2015	238776
Total	1810464

By selecting under investigation only rows with actual emissions it is possible to reduce the size of the dataset into 867 916 rows in 4 columns. As of columns, only point source id-value, year, emission value for the corresponding year, and pollutant are selected. The query sorts the data for to be suitable for further analysis: first by point ID, then by pollutant and last by year, resulting in comprehensible time-series for points, as illustrated in table below.

Table 4 – A extracted part of annual emissions for one point and pollutant.

Point ID	Emission	Year	Pollutant (ID)
12121	0,3402	2005	24
12121	0,335016	2006	24
12121	0,276	2007	24
12121	0,21744	2008	24
12121	0,231667	2009	24
12121	0,105206	2010	24
12121	0,03562	2011	24

1.4 Search of discontinuities

The routine checks for gaps in time-series where the following conditions are met:

- a point has more than one entry in time series per pollutant
- missing value exist in a range between two existing values (i.e. if a missing value exists in the beginning or the end of the series, it will not be revealed)
- Series connects the same point and pollutant

The routine also marks the last known values before and ahead of the found gap. A gap can therefore consist of more than one year, and the duration of the gap is recorded.

The check-up formula translates as follows:

If $y_i \neq y_{i-1} + 1$, then print for the row i : "the values for the years $y_{i-1}+1 - y_i-1$ missing"

where,

i = row index

y = year

y_{i-1} = year of the previous row

y_i-1 = actual previous year

If the previous condition is met, the start point of the gap is filled to the cell y_{i-1} . The print out of found gap simultaneously marks the end point of the gap. These remarks can be used when referencing data in further investigations.

Table 5 – A schematical example of the printouts for a point with missing values

Point ID	Emission	Year	Pollutant (ID)	Printout
12121	0,3402	2003	24	<i>First in series (not checked)</i>
12121	0,335016	2004	24	
12121	0,3402	2005	24	
12121	0,335016	2006	24	Start point of a gap
12121	0,276	2009	24	The values for the years 2007-2008 missing
12121	0,21744	2010	24	
12121	0,1052062	2011	24	
12121	0,03562	2012	24	<i>Last in series (not checked)</i>

2.1.10 Results

The method was able to programmatically reveal 518 gaps in series which would contribute to 0.06 % in relation to the count of rows examined. The method does not disclose the reason for the missing value. Many or most of these might be valid gaps due to e.g. stoppage of the plant. The table below presents for selected pollutants the expectable maximum of possible emissions if the gaps would be filled with the value of the closest year. The overall sums are negligible.

Table 6 – Count of found gaps and their theoretical estimation of “missing” emissions in relation the overall emissions

Pollutant	Pollutant ID	Estimate of sum of missing emissions*	Percent in relation to pollutant total	Count of missing values
As (kg)	8	0,270	0,001 %	17
Cd (kg)	20	0,660	0,004 %	17
CO (t)	24	63,690	0,006 %	28
Cr (kg)	31	4,541	0,001 %	17
Cu (kg)	35	6,689	0,004 %	18
Hg (kg)	47	0,066	0,001 %	17
Ni (kg)	63	25,114	0,009 %	17
Pb (kg)	79	7,496	0,002 %	17
SOx (as SO2) (t)	97	24,012	0,002 %	22
Zn (kg)	112	90,257	0,009 %	18
NOx (as NO2) (t)	314	31,279	0,002 %	28
PCDD/ PCDF (t)	1043	0,003	0,004 %	27
TSP (t)	1047	29,808	0,010 %	30
NM VOC (t)	1064	2,572	0,008 %	28
PAHs (g)	1065	574,868	0,008 %	32

PM10 (t)	1091	10,455	0,006 %	30
PM2.5 (t)	2591	3,817	0,004 %	30

1.5 Visual analysis of systematic coherence

By pivoting the data into a table by year and pollutant, it is possible to evaluate systematic anomalies visually. The example image below compiles the annual average margin to the rightmost column. Likewise the average margin by pollutant is compiled to the bottom row. Excel built-in conditional formatting can be used to enhance the visual interpretation of the values, which can further aid in revealing the hotspots of gaps. Visual interpretation suggests the following:

- Years 1992, 1998 and 2013 are slightly more inconsistent than other years. In contrast, the years 1995, 2005 and 2006 are more consistent. The years 1990 and 2015 appear consistent due to methodological reasons: the start and end points of time series cannot be analyzed. For all known points the maximum temporal range in the dataset is between the years 1990-2015.
- As of pollutants, nickel (Ni), zinc (Zn) carbon monoxide (CO), and particles (TSP, PM10, PM2.5) appear slightly more inconsistent. In contrast, Sulphur oxides (SOx) seem particularly consistent for the whole time series, except for the year 2012.
- The notable hotspots in series are in:
 - 1992: Cd, Co, Zn, TSP, NMVOC, PAH, PM10 and PM2.5
 - 1998: Zn, TSP, PAH and PM10
 - 2012: Ni
 - 2013: Zn, NMVOC

Table 7 - Overview of visual analysis. Green represents low relative share of possibly missing values in contrast to the overall emissions of a given year and pollutant. Red represents higher share. All of the shares are relatively low and the scale of formatting is selected only to emphasize differences within.

Year / Pollutant	As (kg)	Cd (kg)	CO (t)	Cr (kg)	Cu (kg)	Hg (kg)	Ni (kg)	Pb (kg)	SO2 (as SO2) (t)	Zn (kg)	NOx (as NO2) (t)	PCDD/PCDF (t)	TSP (t)	NMVOC (t)	PAHs (g)	PM10 (t)	PM2.5 (t)	Annual average
1990	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
1991	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,001 %	0,010 %	0,000 %	0,000 %	0,001 %
1992	0,004 %	0,062 %	0,089 %	0,016 %	0,049 %	0,012 %	0,035 %	0,022 %	0,002 %	0,122 %	0,016 %	0,065 %	0,130 %	0,073 %	0,090 %	0,063 %	0,036 %	0,052 %
1993	0,001 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,026 %	0,003 %	0,000 %	0,001 %	0,004 %	0,000 %	0,011 %	0,003 %	0,024 %	0,014 %	0,017 %	0,006 %
1994	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,000 %
1995	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
1996	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
1997	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,010 %	0,001 %	0,006 %	0,000 %	0,001 %	0,000 %	0,003 %	0,001 %	0,007 %	0,004 %	0,006 %	0,002 %
1998	0,001 %	0,017 %	0,018 %	0,006 %	0,019 %	0,003 %	0,011 %	0,007 %	0,007 %	0,049 %	0,004 %	0,011 %	0,033 %	0,017 %	0,018 %	0,015 %	0,009 %	0,015 %
1999	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2000	0,001 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,021 %	0,002 %	0,000 %	0,001 %	0,002 %	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,000 %	0,002 %
2001	0,001 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,021 %	0,002 %	0,000 %	0,001 %	0,002 %	0,000 %	0,000 %	0,002 %	0,001 %	0,000 %	0,000 %	0,002 %
2002	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %
2003	0,000 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,002 %	0,001 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %
2004	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %
2005	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2006	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2007	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,007 %	0,001 %	0,000 %	0,009 %	0,001 %	0,000 %	0,000 %	0,001 %
2008	0,000 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,001 %	0,003 %	0,000 %	0,000 %	0,000 %	0,001 %
2009	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2010	0,000 %	0,006 %	0,006 %	0,003 %	0,006 %	0,001 %	0,002 %	0,002 %	0,000 %	0,015 %	0,001 %	0,003 %	0,011 %	0,025 %	0,004 %	0,004 %	0,002 %	0,005 %
2011	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,021 %	0,002 %	0,007 %	0,000 %	0,001 %	0,000 %	0,005 %	0,001 %	0,006 %	0,007 %	0,009 %	0,004 %
2012	0,002 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,053 %	0,004 %	0,018 %	0,001 %	0,003 %	0,000 %	0,012 %	0,001 %	0,011 %	0,016 %	0,019 %	0,008 %
2013	0,001 %	0,012 %	0,013 %	0,006 %	0,014 %	0,002 %	0,004 %	0,005 %	0,005 %	0,028 %	0,002 %	0,007 %	0,024 %	0,060 %	0,008 %	0,010 %	0,004 %	0,012 %
2014	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2015	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
Pollutant average	0,001 %	0,004 %	0,006 %	0,001 %	0,004 %	0,001 %	0,009 %	0,002 %	0,002 %	0,009 %	0,002 %	0,004 %	0,010 %	0,008 %	0,008 %	0,006 %	0,004 %	0,005 %

1.6 Interpretation of results

Out of the combined set of nearly two million rows of emission data, 518 meaningful events of discontinuity were observed. In relation to the whole dataset, the time series for the pollutants and points under investigation is 99,97 % complete, and a notable share of the remaining 0,03 % might be explained by valid reasons. As the series is subject to annual changes in practically all of its parameters and is prone to technical and human error, this analysis suggests extremely high level of consistency and accuracy in data compilation and management. The calculation of energy sector emission data seems very consistent, precise and trustworthy. The emission values that might be lost due to accidental or erroneous gaps in dataset are negligible. However, as the points of discontinuity are known, they could be checked for example in the order of declining magnitude of emissions.

Table 8 – Overall emissions of the points in the scope of this investigation summed up by year and pollutant.

Pollutant (unit)	As (kg)	Cd (kg)	CO (t)	Cr (kg)	Cu (kg)	Hg (kg)	Ni (kg)	Pb (kg)	SO ₂ (as SO ₂) (t)	Zn (kg)	NO _x (as NO ₂) (t)	PCDD/PCDF (t)	TSP (t)	NMVOC (t)	PAHs (g)	PM ₁₀ (t)	PM _{2.5} (t)
1990	5241,9	945,5	54693,5	30986,8	13538,5	426,7	36591,5	30150,8	144204,5	72362,3	85142,4	2,8	17519,7	1435,7	376849,2	11391,9	6178,9
1991	3802,4	722,4	49053,8	20810,5	9645,6	391,6	27537,2	21652,2	123643,9	52566,2	83941,8	2,7	15770,9	1327,2	338021,4	10694,1	5954,1
1992	3162,3	651,6	45649,4	17878,5	8389,5	349,1	24752,6	18933,5	101964,6	46184,5	77923,1	2,6	13484,1	1134,1	338708,3	8691,1	4685,1
1993	2859,1	653,2	49807,9	16274,2	7644,5	393,4	23553,5	18108,9	91694,8	41429,4	82704,2	2,9	13753,7	1227,5	367866,7	9207,3	4957,2
1994	2643,1	653,5	50548,9	14248,2	7242,3	425,8	23018,1	16848,9	86497,2	42179,1	88229,0	3,4	15035,6	1503,8	410429,9	10013,2	5288,6
1995	2427,2	608,3	53284,3	12943,8	6608,9	394,4	21073,6	15630,5	78756,1	37258,1	83361,4	3,4	13716,7	1313,1	410795,8	9435,4	5113,3
1996	2319,9	554,7	50169,6	11359,9	5833,5	439,3	20153,3	14361,8	87909,8	30545,5	93280,7	3,7	13306,6	1248,6	422434,4	9603,7	5201,5
1997	1892,5	552,2	56664,4	8466,6	4748,2	430,4	16089,2	12666,6	80923,9	26133,1	91490,6	3,8	13413,3	1309,5	437048,8	9794,4	5443,6
1998	2146,0	595,5	57789,3	11147,2	5532,5	391,5	18727,3	14771,0	72222,5	28999,3	85332,4	3,7	13300,6	1263,8	451796,8	9476,5	5352,8
1999	2018,0	611,2	60799,3	10572,0	5207,7	389,8	18132,0	14609,7	71646,7	28326,4	82603,0	3,7	13321,7	1286,3	466085,5	9526,3	5417,8
2000	1880,9	601,0	60763,3	10128,5	4869,4	374,6	16895,9	14104,6	67738,5	27256,2	80455,8	3,7	13180,0	1295,5	458801,0	9388,1	5349,5
2001	1949,0	572,4	57676,2	10361,4	5091,8	408,0	17632,3	13845,5	73980,0	27926,4	92518,6	4,2	13284,8	1373,3	481914,9	9379,7	5156,4
2002	2070,5	617,9	59317,1	11015,2	5320,6	441,6	18226,1	14859,7	79321,5	29078,8	98003,1	4,2	13959,7	1435,3	473604,7	9855,9	5428,4
2003	2209,0	643,8	61235,7	10898,7	5793,7	514,9	18473,7	14931,2	95133,0	33912,5	113615,2	4,8	15222,8	1678,2	514094,1	10610,5	5617,2
2004	2200,8	667,3	63515,4	11275,0	5799,5	487,0	17070,3	15459,3	81993,9	33285,8	103959,3	4,7	15036,8	1573,3	497984,3	10467,2	5601,6
2005	1998,8	634,6	60111,6	10916,6	5521,2	360,0	16255,4	14883,2	64598,9	31332,1	82221,3	3,8	13317,8	1396,1	450513,0	8910,7	4927,0
2006	2239,2	778,2	73122,9	11390,3	6660,7	504,1	16922,5	16483,6	85412,1	44487,0	109461,8	5,0	18320,0	1789,7	544426,8	11412,1	5849,5
2007	2248,1	701,6	63039,3	11431,3	6143,3	475,3	16036,7	16047,9	80066,9	34479,6	100686,9	4,6	15017,7	1614,7	484027,4	10187,9	5443,1
2008	2266,0	703,9	61327,7	11974,0	6516,8	402,7	15576,6	16223,7	67067,4	36915,7	89290,0	4,4	14749,4	1546,9	511579,7	9670,1	5225,9
2009	2090,7	589,9	50354,5	10082,4	6092,1	376,0	14254,6	13616,4	64322,4	34059,4	82640,6	4,3	13091,2	1441,4	488606,4	8592,5	4451,1
2010	2257,0	691,7	58689,8	10855,6	6571,4	458,8	15177,5	15346,5	74771,1	38566,8	98855,3	5,1	15416,0	1632,8	561810,0	10230,1	5271,7
2011	2199,3	689,7	59363,9	11009,8	6505,0	406,6	14067,9	15270,5	64211,7	38922,0	87041,7	4,8	14666,1	1511,1	538351,4	9499,4	4950,7
2012	1939,6	695,9	55470,4	9835,5	6146,7	356,0	12687,5	14493,9	54528,6	39470,1	83993,5	4,9	14188,7	1547,6	586794,6	9121,0	4868,2
2013	1986,5	744,7	55154,3	10838,0	6466,5	385,2	12076,8	15353,9	55975,4	43713,2	79923,2	5,4	14790,1	1464,2	645460,3	9337,6	4844,9
2014	1833,5	726,1	54132,8	9726,9	6078,5	362,5	11198,6	14556,4	53554,7	41461,8	74635,1	5,7	14350,2	1412,9	712564,1	9046,6	4753,2
2015	1648,6	718,4	51431,3	8636,3	5770,2	329,4	10171,1	13730,6	48159,4	41573,6	68043,6	5,9	13939,1	1387,8	776684,7	8703,8	4653,4

Table 9 – The relative share of emissions from filling the found gaps with the value of the closest year (with a false assumption of observed gaps being all erroneous)

Year / Pollutant	As (kg)	Cd (kg)	CO (t)	Cr (kg)	Cu (kg)	Hg (kg)	Ni (kg)	Pb (kg)	SO2 (as SO2) (t)	Zn (kg)	NOx (as NO2) (t)	PCDD / PCDF (t)	TSP (t)	NM VOC (t)	PAHs (g)	PM10 (t)	PM2.5 (t)	Annual average
1990	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
1991	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,001 %	0,010 %	0,000 %	0,000 %
1992	0,004 %	0,062 %	0,089 %	0,016 %	0,049 %	0,012 %	0,035 %	0,022 %	0,002 %	0,022 %	0,016 %	0,065 %	0,030 %	0,073 %	0,090 %	0,063 %	0,036 %	0,052 %
1993	0,001 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,026 %	0,003 %	0,000 %	0,001 %	0,004 %	0,000 %	0,011 %	0,003 %	0,024 %	0,014 %	0,017 %	0,006 %
1994	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,000 %
1995	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
1996	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
1997	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,010 %	0,001 %	0,006 %	0,000 %	0,001 %	0,000 %	0,003 %	0,001 %	0,007 %	0,004 %	0,006 %	0,002 %
1998	0,001 %	0,017 %	0,018 %	0,006 %	0,019 %	0,003 %	0,011 %	0,007 %	0,007 %	0,049 %	0,004 %	0,011 %	0,033 %	0,017 %	0,018 %	0,015 %	0,009 %	0,015 %
1999	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2000	0,001 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,021 %	0,002 %	0,000 %	0,001 %	0,002 %	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,000 %	0,002 %
2001	0,001 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,021 %	0,002 %	0,000 %	0,001 %	0,002 %	0,000 %	0,000 %	0,002 %	0,001 %	0,000 %	0,000 %	0,002 %
2002	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %
2003	0,000 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,002 %	0,001 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %
2004	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %
2005	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2006	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %
2007	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,007 %	0,001 %	0,000 %	0,009 %	0,001 %	0,000 %	0,000 %	0,001 %
2008	0,000 %	0,001 %	0,001 %	0,000 %	0,001 %	0,000 %	0,000 %	0,000 %	0,000 %	0,002 %	0,000 %	0,000 %	0,001 %	0,003 %	0,000 %	0,000 %	0,000 %	0,001 %
2009	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %	0,000 %

2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	00	06	06	03	06	01	02	02	00	15	01	03	11	25	04	04	02	05	05
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2011	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	01	00	00	00	00	00	21	02	07	00	01	00	05	01	06	07	09	04	04
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2012	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	02	01	01	00	01	00	53	04	18	01	03	00	12	01	11	16	19	08	08
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2013	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	01	12	13	06	14	02	04	05	05	28	02	07	24	60	08	10	04	12	12
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2014	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	00	00	00	00	00	00	01	00	00	00	00	00	00	00	00	00	00	00	00
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2015	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Pollu- tant av- erage	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	01	04	06	01	04	01	09	02	02	09	02	04	10	08	08	06	04	05	05
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

Annex 7

Uncertainty Analysis

Uncertainty Analysis

- 1.1 Methodology
- 1.2 Uncertainty of the trend
- 1.3 Point source data reported by the plants
- 1.4 Uncertainties in emission data calculated in the emission inventory data system
- 1.5 Activity data uncertainties
- 1.6 Uncertainties in emission factors
- 1.7 QC and planned improvements in uncertainty estimation
- 1.8 Uncertainties by pollutants
- 1.9 References

1.1 Methodology

Changes in chapter	
May 2018	KS, TF

The uncertainty analysis for emission data is carried out at NFR subcategory 3 level for the actual emission sources. The method is Monte Carlo simulation (Tier 2) using @Risk software. The uncertainties of the input parameters are estimated by experts compiling the inventories and those of the measured emissions by the competent authorities that supervise emission monitoring carried out at the individual plants. The emissions of some pollutants from certain sources are poorly understood, for instance some POP compounds from fuel combustion and industrial processes, and therefore estimation of their uncertainty is found to be very challenging at the moment.

The uncertainty analysis covers all emission sources included in the inventory and represents thus the uncertainty of the reported emission data. The possible lack of completeness of emission sources is, however, not reflected in the uncertainty analysis. Information of the completeness of the inventory is presented in Chapter 2.8.

The uncertainty analysis is carried out at the country-level, i.e. uncertainties in emissions by region are not assessed.

Uncertainties are expressed as bounds of 95% confidence interval as percent relative to the mean value as recommended in the GPG.

In this uncertainty analysis, two different types of distributions are used. These are

- Normal distribution, which is used in case uncertainties are symmetrical and $<\pm 100\%$.
- Beta distribution, which are used in case uncertainty is asymmetric, because the upper boundary exceeded 100% (positively skewed Beta distribution)

In cases where positively skewed Beta distribution was used, the uncertainty was high the upper boundary ($>100\%$ and up to 1000%) lower boundary close to 0 (-100%) and mean significantly closer to the lower boundary than the higher one. The distribution function that fitted all these conditions was found to be Beta distribution (@Risk function RiskBetaGeneral) with parameters as specified below:

Alpha1=1 (this shape parameter was kept constant)
Alpha2 defined using mean, Alpha1 and min and max
Min=0
Max=upper boundary.

This distribution type was used for all positively skewed uncertainties. Examples of a RiskBetaGeneral functions are presented below in Figures 2.10 for a cases where the upper bound of uncertainty is $+1000\%$ and $+120\%$, respectively. The distribution function is inside Excel's If-function (the user language is Finnish; JOS means IF).

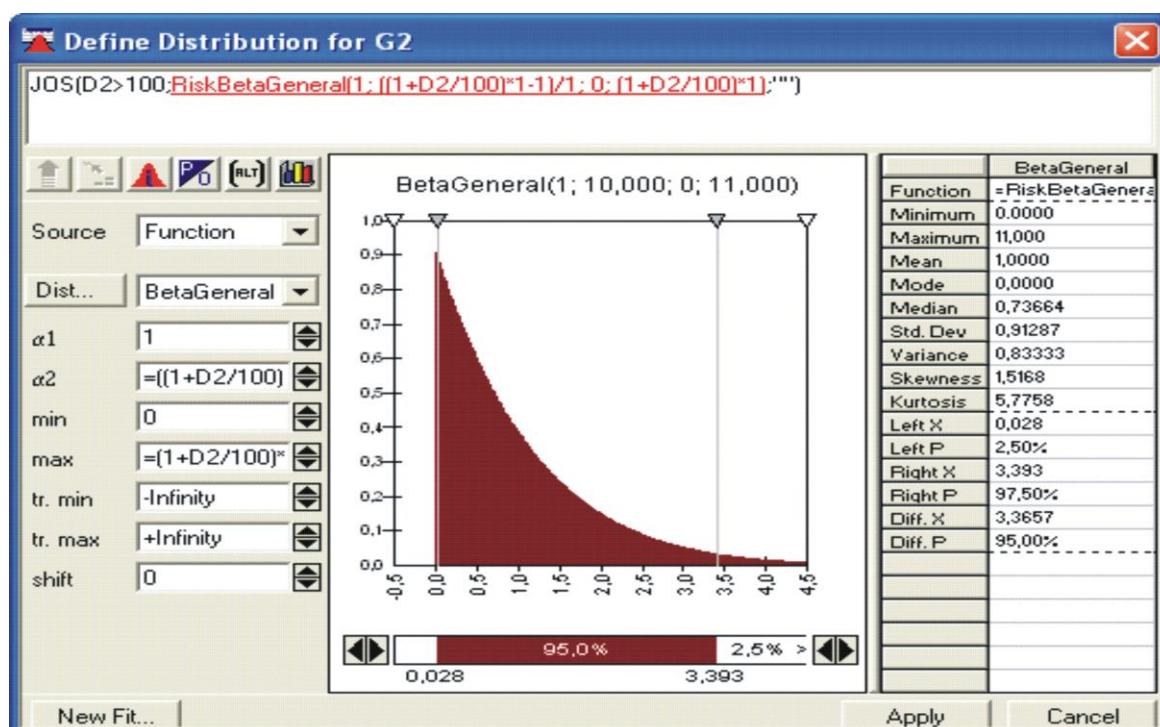


Figure 2.10. An example of the applied beta distribution. The function used can be seen on the top of the picture (JOS = IF in Finnish and cell D2 contains the uncertainty percentage).

The appropriate aggregation of data for the uncertainty analysis is important to avoid over- or underestimation of uncertainty due to correlations. The following assumptions are used in the aggregation level:

- Point source data reported by the plants: emission estimates reported by the operators are considered to be independent. Therefore, uncertainties have been applied separately to the emission estimates of each plant.
- Calculated emissions: Before calculation of uncertainty, those emission sources (e.g. point sources) having the same emission factor were grouped together, and the same uncertainty was applied to the whole group. This reflects the situation that the emission factor uncertainties are correlated across, for instance, different plants. This may overestimate uncertainty when the same emission factor is used for different plants and the real emissions vary notably between these plants (uncertainties potentially cancelling each others) because there are also other factors than technology and fuel affecting the emissions, such as plant operation.
- Emission factors are considered independent across the different sectors, technologies and fuels. This may underestimate uncertainties in the case the emission factors for different technologies are derived from the same data. It can roughly be assumed that this underestimation cancels potential overestimation presented in previous bullet.
- Emission estimates of different pollutants are considered to be independent.
- Activity data are considered to be independent.
- The fuel use uncertainties are the same Statistics Finland uses in the UC analysis for the Finnish greenhouse gas inventory. Thus the fuels are grouped - and the fuel consumption summed up - using the same grouping as Statistics Finland: Solid, Liquid, Gaseous, Biomass and Other fuels.

1.2 Uncertainty of the trend

Changes in chapter	
May 2018	KS, TF

For the purposes of the trend uncertainty analysis, the uncertainty of the base year emissions and the current year are needed. The base year depends on the emission compound as presented in the Table 2.1 below. To ensure comparability between compounds, the uncertainties have been estimated for the year 1990 for all the compounds.

Table 2.1. Base years for Finland for the pollutants regulated under the UNECE Convention of Long-Range Transboundary Air Pollution.

Compound	Base year
SO ₂	1980
NO _x	1987
CO	1980 *
NH ₃	1980 *
NMVOC	1988
HM	1990
TSP	2000 *
POP	1994

* For CO, NH₃ and TSP there is no Protocol base year but instead the year of ini-

The methodology to be used for calculating the trend uncertainty will follow, when implemented, the assumptions listed below:

- activity data were estimated independent between years
- emission data reported by the plants were estimated independent between years
- emission factors were assumed to correlate between years in case the same emission factors were used, and uncertainties for both years were estimated equal
- emissions which were estimated using completely different system (e.g. emissions for the year 1980) were assumed independent from the latest year estimate
- to simplify the calculation and also due to lack of detailed data, partial correlations were not used

1.3 Point source data reported by the plants

Changes in chapter	
May 2018	KS, TF

Emissions of SO₂, NO_x and particulate matter (TSP) are generally included in the emission monitoring programmes of the plants. As this emission monitoring data is being supervised by competent authorities, they can be considered highly reliable.

Those plants that fall under the IPPC installation categories (Integrated Pollution Prevention and Control Directive) report also emissions included in the E-PRTR (European Pollutant Release and Transfer Register) pollutant list. Uncertainty of the E-PRTR pollutant data depend on the estimation method used (measured, calculated by national default emission factors or estimated by plant specific engineering calculations). The methods used in quantifying emissions and their uncertainties are not always known.

Sulphur dioxide, nitrogen oxide and particle emissions

The reporting obligations determined in the environmental permits or monitoring programmes of the plants for SO₂, NO_x and TSP stipulate the emission data production methods. The emission data reports are checked and approved by the supervising authorities and can therefore be considered to be the best known data in the inventory. Under NFR 1 around 95%, under NFR 2 and 3 100% and under NFR 5 around 20% of the emissions are reported by the plants.

For small particles, PM₁₀ and PM_{2.5}, an additional uncertainty is caused by the uncertainty of coefficients used for deriving the small particle fractions from TSP values. This uncertainty is taken into account in the Monte Carlo analysis by adding a separate uncertainty percentage into the calculation: 150% for both PM₁₀ and PM_{2.5} in all emission sources. Black carbon fractions are derived from the PM_{2.5} values, and therefore yet additional uncertainty of 100% in relation to PM_{2.5} is added into the calculation for all black carbon emission sources.

Table 2.2. Uncertainties in SO₂, NO_x and TSP emission data reported by the plants for 1980, 1990 and 2016.

NFR category	SO ₂			NO _x			TSP			
	1980	1990	2016	1987	1990	2016	1980	1990	2000	2016
NFR1 >50MW	NA	±10%	±10%	±10%	±10%	±10%	NA	±10%	±10%	±10%
NFR1 <50MW	NA	±15%	±15%	±20%	±20%	±20%	NA	±20%	±20%	±20%
NFR2	NA	±15%	±15%	±20%	±20%	±20%	NA	±20%	±20%	±20%
NFR2H1 TRS	NA	±25%	±25%	-	-	-	-	-	-	-
NFR5C >50MW	NA	±10%	±10%	±10%	±10%	±10%	NA	±10%	±10%	±10%
NFR5C <50MW	NA	±15%	±15%	±20%	±20%	±20%	NA	±20%	±20%	±20%

Carbon monoxide

Under NFR 1 around 15% and under NFR 2 100% of the emissions are reported by the plants. Detailed reporting rates for the NFR subcategories are presented in Chapter 3.2. CO emissions are generally followed up as an operation control parameter and the emission data reports are checked and approved by the supervising authorities. Therefore plant-specific CO emission data can be considered rather accurate and the uncertainties are estimated to be at ±10% for plants > 50 MW. For smaller plants (<50 MW) the uncertainty is estimated at ±20%. The uncertainties in these emissions are estimated the same for both 1990 and 2016 (Table 2.3).

Table 2.3. Uncertainties in CO emission data reported by the plants for 1980, 1990 and 2016.

NFR category	CO		
	1980	1990	2016
NFR 1, >50 MW	NA	10%	±10%
NFR 1, <50MW	NA	±20%	±20%
NFR 2	NA	±20%	±20%
NFR 5C, > 50 MW	NA	±10%	±10%
NFR 5C, < 50 MW	NA	±20%	±20%

NMVOC

Under NFR 1 around 10% under NFR 2 80%, under NFR 2D3 and 2G around 20% and under NFR 5 around 1% of the emissions are reported by the plants. Detailed reporting rates for the NFR subcategories are presented in Chapter 3.2.

Monitoring of NMVOC emissions is not very often included in the emission monitoring programmes of the plants and therefore the methods used by the plant operators to estimate their NMVOC emissions are not always known. The uncertainties in the NMVOC emission data reported by the plants varies between the different NFR categories depending on whether the emissions are based on direct emission measurements and/or plant specific emission factors or general national emission factors, as is the case in reporting to the EPER register. The NMVOC uncertainties for 1980, 1990 and 2016 are presented in Table 2.4.

Table 2.4. Uncertainties in NMVOC emission data reported by the plants for 1980, 1990 and 2016.

NFR category	NMVOC		
	1988	1990	2016
NFR 1	NA	±30%/NA	±30%
NFR 2 (industry)	±100%	±100%	±100%
NFR 2 (solvents)	±100%	±100%	±100%
NFR 5	±30%	±30%	±30%

Ammonia

NFR 1: Ammonia emission data from combustion of fuels is based on measurements or plant specific emission factors and the uncertainty of these emissions is rather low.

NFR2: Ammonia emissions are based on the monitoring data from the plants but the determination method is unknown.

Table 2.5. Uncertainties in ammonia emission data reported by the plants for 1980, 1990 and 2016.

NFR category	NH ₃		
	1980	1990	2016
NRF 1	NA	±30%	±30%
NFR 2	NA	±100%	±100%

Heavy metals

Operators in the energy production, industry and waste incineration sectors report heavy metals according to their monitoring programmes or under the EPER/PRTR programme. In the metal industry, the emission data is mainly based on plant specific emission factors and the uncertainty for this data can thus be estimated rather low. The percentage of emission data reported by the operators is presented in Chapter 3 in the sub-chapters dedicated to each pollutant.

Uncertainties in the reported mercury emissions are estimated larger than those of other heavy metals because the difficulty in estimation of the emission rate due to the partly gaseous form.

Table 2.6. Uncertainties in heavy metal emission data reported by the plants for 1990 and 2016

NFR category	HM		
	1980	1990	2016
NFR 1, other than Hg	NA	±30%	±30%
NFR 2 (industry), other than Hg	NA	±30%	±30%
NFR 2 (solvents)	NA	-100%...120%	-100%...120%
NFR 5C, other than Hg	NA	±30%	±30%
All NFRs, Hg	NA	±50%	±50%

POP compounds

Monitoring of PCDD/F, PAH-4 and HCB emissions may be included in the monitoring programmes of the plants or the plants report these emissions based on the requirement from the EPER or PRTR programme. At the moment, information of whether these reported data are based on actual measurements/plant specific emission factors or if the operators have calculated the data by the national emission factors, is not clearly recorded into the VAHTI database. Furthermore, measurements of POP emissions contain high uncertainties, especially because the emissions are low.

Percentage of emission data reported by the operators is presented in Chapter 3 in the sub-chapters dedicated to each pollutant.

The estimated uncertainties are -X to +500% for NFR categories 1, 2 and 5 and -X to +600% for NFR categories 2D3 and 2G (solvents).

Table 2.7. Uncertainties in POP emission data reported by the plants for 1990, 1994 and 2016

NFR category	PCDD/F	PAH-4	HCB	PCB
NFR 1	-100% to +500%	-100% to +500%	-100% to +500%	-100% to +500%
NFR 2 (industry)	-100% to +500%	-100% to +500%	-100% to +500%	-100% to +500%
NFR (solvents)	-100% to +600%	-100% to +600%	-100% to +600%	-
NFR 5	-100% to +500%	-100% to +500%	-100% to +500%	-100% to +500%

1.4 *Uncertainties in emission data calculated in the emission inventory data system*

Changes in chapter	
May 2018	KS, TF

For non-point sources the emission data has been calculated using activity data and emission factors, or, for some activities emission estimates or activity data provided by industrial associations, have been used.

Where emission data for non-point sources is calculated using bulk statistical data, the uncertainty is usually considered much higher than for the point source activity data reported by the plants. However, there are exceptions, such as fuel use statistics in the transport sector, which is considered highly accurate.

For point sources, part of the emission estimates have been calculated using activity data such as fuel consumption, use of products or production data. This data has been obtained directly from the plants or from the authorities.

The differences between the uncertainties of emission factors used for calculation of point source and non-point source emissions are considered smaller than the uncertainties for activity data.

1.5 *Activity data uncertainties*

Changes in chapter	
May 2018	KS, TF

Uncertainties in activity data are assumed to depend on the accuracy of reporting by the plants or on the representativeness of statistical data of the activities. The uncertainties of activity data are estimated typically much smaller than those of emission factors. As there are no or few changes in activity data collection, the uncertainty is estimated to be constant for all inventory years.

The uncertainty values used for large point sources and small point sources or non-point sources are estimated as follows:

- For the large installations that have both have the need and ability for accurate record keeping (based on e.g. quality management system requirements) the uncertainties are assumed rather small as presented in Tables 2.8-2.9.
- For smaller facilities and non-point sources the uncertainties are assumed larger as presented in Tables 2.10-2.14.

Table 2.8. Activity data uncertainties for fuel 2016.

NFR	Fuel type	Uncertainty 2016	Basis for UC evaluation
1A	Liquid Fuels	2 or 3 or 5 or 10	Energy balance / expert estimation
1A	Gaseous Fuels	1 or 2 or 3 or 5 or 10	Energy balance / expert estimation
1A1	Liquid Fuels	2 or 3 or 5	Expert estimation, Statistics Finland
1A1	Solid Fuels	1 or 2 or 3 or 5	Expert estimation, Statistics Finland
1A1	Gaseous Fuels	1 or 2 or 3 or 5 or 10	Expert estimation, Statistics Finland
1A1	Biomass	3 or 15	Expert estimation, Statistics Finland
1A1	Peat	2	Expert estimation, Statistics Finland
1A1	Other Fuels	15	Expert estimation, Statistics Finland
1A2	Liquid Fuels	2 or 5 or 10	Expert estimation, Statistics Finland
1A2	Solid Fuels	5	Expert estimation, Statistics Finland
1A2	Gaseous Fuels	2 or 3 or 5 or 10	Expert estimation, Statistics Finland
1A2	Biomass	10 or 15	Expert estimation, Statistics Finland
1A2	Peat	5	Expert estimation, Statistics Finland
1A2	Other Fuels	15	Expert estimation, Statistics Finland
1A3 a. Civil Aviation	Aviation Gasoline and Jet Kerosene	20	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A3 b. Road Transportation	Gasoline	2	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A3 b. Road Transportation	Diesel Oil	1	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A3 b. Road Transportation	Natural Gas	3	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A3 c. Railways	Liquid Fuels	5	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A3 d. Navigation	Residual Oil & Gas / Diesel oil	10	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A3 d. Navigation	Gasoline	20	Expert estimation, Statistics Finland / Technical Research Centre of Finland
1A4	Liquid Fuels	15	Expert estimation, Statistics Finland
1A4	Solid Fuels	30	Expert estimation, Statistics Finland
1A4	Gaseous Fuels	30	Expert estimation, Statistics Finland
1A4	Biomass	20	Expert estimation, Statistics Finland
1A4	Peat	30	Expert estimation, Statistics Finland
1A4	Other Fuels	25	Expert estimation, Statistics Finland
1A5	Liquid Fuels	15	Expert estimation, Statistics Finland
1A5	Gaseous Fuels	12	Simulated
1A5	Biomass	20	Expert estimation, Statistics Finland
1A5	Other Fuels	25	Expert estimation, Statistics Finland
1A5	Peat	30	Expert estimation, Statistics Finland

Table 2.9. Activity data (raw material/production rates) uncertainties for point sources (emissions calculated in the inventory data system) for 1980, 1990 and 2016.

NFR category	Activity data uncertainty		
	1980's	1990's	2000's
NFR 2	NA	±10%	±10%

Table 2.10. Activity data uncertainties for fuel consumption in non-point sources (emissions calculated in the inventory data system) for 1980, 1990 and 2016.

Input	NFR category	Activity data uncertainty 1980's	Activity data uncertainty 1990	Activity data uncertainty 2016
Light Fuel Oil	1A5a	(will be filled in to the next submission)	± 30 %	± 30 %
Natural Gas	1A5a		± 20 %	± 20 %
Wood	1A5a		± 15 %	± 10 %
Liquid Gas	1A5a		± 20 %	± 20 %
Heavy Fuel Oil	1A5a		± 30 %	± 30 %
Sod Peat	1A5a		± 20 %	± 20 %
Industrial Petrol	1A5a		± 20 %	± 20 %
Light Fuel Oil	1A4ai		± 35 %	± 15 %
Natural Gas	1A4ai		± 5 %	± 5 %
Sod Peat	1A4ai		± 25 %	± 30 %
Liquid Gas	1A4ai		± 30 %	± 30 %
Wood	1A4ai		± 20 %	± 20 %
Heavy Fuel Oil	1A4ai		± 30 %	± 15 %
Light Fuel Oil	1A4bi		± 30 %	± 15 %
Black Coal	1A4bi		± 10 %	± 20 %
Natural Gas	1A4bi		± 5 %	± 5 %
Liquid Gas	1A4bi		± 30 %	± 30 %
Sod Peat	1A4bi		± 30 %	± 30 %
Heavy Fuel Oil	1A4bi		± 15 %	± 15 %
Wood	1A4bi		± 20 %	± 20 %
Other fuels	1A4bi		± 25 %	± 25 %
Diesel oil	1A4bi		± 15 %	± 15 %
Motor gasoline	1A4bii		± 15 %	± 15 %
Light Fuel Oil	1A4ci		± 30 %	± 15 %
Natural Gas	1A4ci		± 5 %	± 5 %
Liquid Gas	1A4ci		± 5 %	± 30 %
Sod Peat	1A4ci		± 25 %	± 30 %
Heavy Fuel Oil	1A4ci		± 30 %	± 15 %
Wood	1A4ci		± 20 %	± 20 %
Light Fuel Oil	1A4cii		± 15 %	± 15 %
Industrial Petroleum	1A4cii		± 30 %	± 10 %
Light Fuel Oil	1A4ciii		± 10 %	± 10 %
Jet Fuel	1A5b		± 50 %	± 30 %
Motor Petroleum	1A5b		± 50 %	± 50 %

Table 2.11. Activity data uncertainties for transport fuels: non-point emissions calculated in the inventory data system for 1980, 1990 and 2016.

Input	NFR category	Activity data uncertainty 1980	Activity data uncertainty 1990	Activity data uncertainty 2016
Jet Fuel (aviation)	1A3ai(i)	(will be filled in to the next submission)	± 20 %	± 5 %
Jet Fuel (aviation)	1A3ai(ii)		± 20 %	± 5 %
Jet Fuel (aviation)	1A3aii(i)		± 20 %	± 5 %
Jet Fuel (aviation)	1A3aii(ii)		± 20 %	± 5 %
Aviation Gasoline	1A3aii(i)		± 20 %	± 20 %
Aviation Gasoline	1A3aii(ii)		± 20 %	± 20 %
Motor Petroleum (aviation)	1A3aii(ii)		± 20 %	± 20 %
Diesel Oil (road transport)	1A3bi		± 1 %	± 1 %
Motor Petroleum (road transport)	1A3bi		± 2 %	± 2 %
Natural Gas (road transport)	1A3bi		± 3 %	± 3 %
Diesel Oil (road transport)	1A3bii		± 1 %	± 1 %
Motor Petroleum (road transport)	1A3bii		± 2 %	± 2 %
Natural Gas (road transport)	1A3bii		± 3 %	± 3 %
Diesel Oil (road transport)	1A3biii		± 1 %	± 1 %
Natural Gas (road transport)	1A3biii		± 3 %	± 3 %

Diesel Oil (road transport)	1A3biv		± 1 %	± 1 %
Motor Petroleum (road transport)	1A3biv		± 1 %	± 1 %
Light Fuel Oil (railways)	1A3c		± 5 %	± 2 %
Light Fuel Oil (navigation)	1A3dii		± 10 %	± 15 %
Motor Petroleum (navigation)	1A3dii		± 10 %	± 10 %
Heavy Fuel Oil (navigation)	1A3dii		± 10 %	± 10 %
Light Fuel Oil (off-road)	1A4aai		± 30 %	± 15 %
Liquid Gas (off-road)	1A4aai		± 30 %	± 30 %
Motor petroleum (off-road)	1A4aai		± 5 %	± 5 %
Light Fuel Oil (off-road)	1A2gvii		± 5 %	± 5 %
Motor petroleum (off-road)	1A2gvii		± 30 %	± 5 %
Jet Fuel	1A5b		± 50 %	± 30 %
Motor Petroleum	1A5b		± 50 %	± 50 %

Table 2.12. Activity data (raw material/production rates) for non-point sources in 1980, 1990 and 2016.

NFR category	1980	1990	2016
NFR 2	NA	±30%	±30%

Table 2.13. Activity data uncertainties for livestock population and fertilizer consumption 1980, 1990 and 2016 (Monni et al.i, 2003).

Input	1980	1990	2016
Livestock population	NA	±5%	±3%
N content in the synthetic fertilisers	NA	±10%	±10%

Table 2.14. Activity data uncertainties for landfilled waste and wastewater treatment in 1980, 1990 and 2016 (according to Monni et al., 2003 and Monni, 2004).

Input	1980	1990	2016
NFR 5A landfilled MSW	NA	±30%	±15%
NFR 5A landfilled industrial solid waste	NA	±30%	±15%
NFR 5D, industrial wastewater, COD	NA	±10%	±10%
NFR 5D, domestic wastewater, BOD, densely populated areas	NA	±10%	±10%
NFR 5D, domestic wastewater, BOD, sparsely populated areas	NA	±15%	±15%

For NFR 2 categories the uncertainties are expressed as combined figures including both the emission factor and activity data uncertainties.

1.6 Uncertainties in emission factors

Changes in chapter	
May 2018	KS, TF

SO₂, NO_x and TSP

The SO₂, NO_x and TSP emissions are estimated from technology and fuel specific emission factors.

For those point sources where no SO₂, NO_x or TSP emission data is reported by the operators, the emissions are calculated from activity data and emission factors. For point sources, the calculated default emission is always replaced by emission data reported by the operator, if this is available. Only in cases when the operator has not reported emission data for the specific boiler or process, the default data will be used¹.

¹ The percentages of data reported by the plants and calculated in the inventory data system are presented in Finnish IIR Part 1 Chapter 3 under the subchapters of each pollutant.

The uncertainty in SO₂ emission factors was estimated at ±20% for 2016 and ±30% for 1990 for oil and gas, as sulphur content of these fuels is relatively well known. The uncertainty is estimated somewhat larger, ±40% for coal, peat and biomass.

The uncertainty in NO_x emissions was estimated ±50% for all emission factors in stationary combustion.

The uncertainty in TSP emissions was estimated larger for combustion of coal, peat and biomass (±60%) for 1A1 and 1A2 than for oil and gas combustion (±50%). The difference in uncertainties between fuels was estimated larger for 1A4 and 1A5: ±50% for oil and gas and ±80% for coal, biomass and peat.

The uncertainty values for emission factors are presented in Table 2.15.

Table 2.15. Uncertainties in SO₂, NO_x and TSP emission factors (EF) in calculation of point and diffuse source emissions for 1990 and 2016.

NFR category	SO ₂ Uncertainty			NO _x Uncertainty			TSP Uncertainty			
	1980	1990	2016	1980	1987, 1990	2016	1980	1990	2000	2016
NFR 1A1, NFR 1A2: oil, gas	NA	±30%	±20%	NA	±50%	±50%	NA	±50%	±50%	±50%
NFR 1A1, 1A2: coal, biomass, peat	NA	±40%	±40%	NA	±50%	±50%	NA	±60%	±60%	±60%
NFR 1A3	NA	±50%	±50%	NA	±50%	±50%	NA	±50%	±50%	±50%
NFR 1A4, 1A5: oil, gas	NA	±30%	±20%	NA	±50%	±50%	NA	±50%	±50%	±50%
NFR 1A4, 1A5: coal, biomass, peat	NA	±40%	±40%	NA	±50%	±50%	NA	±80%	±80%	±80%
NFR 1B1a (peat production)	NA	NA	NA	NA	NA	NA	NA	-100 to +1000%	-100 to +1000%	-100 to +1000%
NFR 3	NA	NA	NA	NA	NA	-100 to +200%	NA	-100 to +1000%	-100 to +1000%	-100 to +1000%
NFR 5C	NA	±30%	±20%		±50%	±50%	NA	±50%	±50%	±50%

NFR 1A1 and 1A2: The majority of the plants included in these categories report their SO₂, NO_x and TSP emissions

NFR 1A3: The emission estimates for particular matter from transportation are based on emission factors, the uncertainty of which is estimated at ± 50%.

NFR 1A4 and 1A5: The emission estimates are calculated with emission factors and activity data.

NFR 1B3: The estimates of particle emissions from peat production are poorly understood. Therefore, the uncertainty is estimated to be very large, i.e. –100 to +1000%. NO_x emissions from manure management were added to the 2017 submission. However, the uncertainty estimates from manure management are considered very rough. More reliable estimates will be developed in the future submissions..

NFR 3: The estimates of particle emissions from agriculture are poorly understood. Therefore, the uncertainty is estimated to be very large, i.e. –100 to +1000%.

NFR 5C: The majority of the plants included in these categories report their SO₂, NO_x and TSP emissions.

Note: As mentioned in chapter 1.3, calculation of particle size fractions from total suspended particles introduces additional uncertainty to the emission estimates of the smaller size fractions. However, the uncertainty originating from the allocation of TPS emissions into the different size categories is not estimated presently.

Heavy metals

The uncertainties in heavy metal emission factors are estimated at $\pm 80\%$ for stationary combustion (1A1, 1A2, 1A4), waste incineration (5C) and industrial processes (2). Uncertainties are estimated somewhat larger ($\pm 100\%$) for transportation (1A3) and NFR categories 2D3 and 2G (solvents).

Table 2.16. Uncertainty estimates in heavy metal emission factors for 1990 and 2016.

NFR category	HM	
	1990	2016
NFR 1A1, 1A2, 1A4, 1A5	$\pm 80\%$	$\pm 80\%$
NFR 1A3	$\pm 100\%$	$\pm 100\%$
NFR 2 (industry)	$\pm 80\%$	$\pm 80\%$
NFR 2 (solvents)	$\pm 100\%$	$\pm 100\%$
NFR 5C	$\pm 80\%$	$\pm 80\%$

NM VOC

Uncertainties in NMVOC emission factors are estimated as presented in Table 2.17

Table 2.17. Uncertainties in NMVOC emission factors for 1988, 1990 and 2016.

NFR category	NMVOC		
	1988	1990	2016
NFR 1A1, 1A2	$\pm 80\%$	$\pm 80\%$	$\pm 80\%$
NFR 1A3	$\pm 80\%$, gasoline evaporation $\pm 100\%$	$\pm 80\%$, gasoline evaporation $\pm 100\%$	$\pm 80\%$, gasoline evaporation $\pm 100\%$
NFR 1A4, 1A5	$\pm 80\%$	$\pm 80\%$	$\pm 80\%$
NFR 1B	$\pm 100\%$	$\pm 100\%$	$\pm 100\%$
NFR 2 (industry)	$\pm 80\%$	$\pm 80\%$	$\pm 80\%$
NFR 2 (solvents)	-100% to +200%	-100% to +200%	-100% to +200%
NFR3	NA	NA	-100% to +200%
NFR 5A, 5D	-100% to + 200%	-100% to + 200%	-100% to + 200%

NFR 1A: NMVOC emissions calculated in the emission inventory data system for stationary fuel combustion are estimated by using technology-specific emission factors, the uncertainty of which is estimated to be at $\pm 80\%$ for 1988, 1990 and 2016.

NFR 1A3 NMVOC emissions from the traffic sector are calculated by subtracting the estimate of methane emissions from the estimate of the total emissions of hydrocarbons. The Finnish traffic calculation model LIPASTO provides emission estimates for both hydrocarbons and methane for the different traffic sectors. The uncertainty in the NMVOC emissions is assumed to be $\pm 80\%^2$.

² The UC estimate could be based on the uncertainty of CH₄ and total organic carbon TOC, and the uncertainty of fuel consumption if there would be an estimate for the uncertainty of the TOC.

NFR 1B Uncertainties in the fugitive emissions from fuels (NFR 1B) are estimated somewhat larger, i.e. $\pm 100\%$.

NFR 2 uncertainties are estimated at $\pm 80\%$.

NFR 2D3 and 2G (solvents) NMVOC emissions from NFR 3 are derived from many different sources. The emission estimates are considered to contain rather large uncertainties, i.e. from -100 to $+200\%$ for 1988, 1990 and 2016.

NMVOC emissions from manure management were added to the 2017 submission. However, the uncertainty estimates from manure management are considered very rough. More reliable estimates will be developed in the future submissions.

NFR 5A Emissions for NMVOC emissions from landfills and wastewater treatment have been estimated for the first time for 2006 emissions.

CO

CO emissions are generated during incomplete combustion and vary notably between different combustion processes, fuels and even in case of the same boiler, according to temporary boiler conditions. Therefore, uncertainties in the calculated CO emission factors are estimated relatively large, i.e. $\pm 70\%$, as presented in Table 2.18. Carbon monoxide from stationary combustion and waste incineration are estimated by using emission factors and activity data for those plants that do not report the emissions.

Table 2.18. Uncertainties in CO emission factors in 1980, 1990 and 2016.

NFR category	CO		
	1980	1990	2016
NFR 1A1, 1A2	NA	$\pm 70\%$	$\pm 70\%$
NFR 1A3	NA	$\pm 70\%$	$\pm 70\%$
NFR 1A4, 1A5	NA	$\pm 70\%$	$\pm 70\%$
NFR 5C	NA	$\pm 70\%$	$\pm 70\%$

NH3

NFR 1A3 Emission factors for ammonia are based on ammonia emission factors used in the other Nordic countries and adopted to Finnish conditions through and expert estimation at Technical Research Centre of Finland VTT, which is the expert institute for transport sector emissions in Finland.

NFR 3 Research on agricultural NH_3 emissions has been carried out rather extensively in Finland and globally. Country-specific emission factors taking into account Finnish agricultural practices are used in estimation of emissions. The present NH_3 emission factors take into account various issues on which the emission depend, for instance, animal types, manure treatment and animal feeding methods and fertilization practices. However, natural variability in these emission sources is large, and therefore, uncertainty of -61% to $+186\%$ is estimated for emission factors in agriculture for 2016, for details see Grönroos et al., 2009. Uncertainty in 1990 is previously estimated somewhat lower, $\pm 50\%$, as the old emission factors were based on estimate published in 1995. The 1990 uncertainties of NH_3 will be re-evaluated parallel with the update of the time series.

Table 2.19. Uncertainties in NH₃ emission factors 1980, 1990 and 2016.

NFR category	NH ₃		
	1980	1990	2016
NFR 1A3	NA	±100%	±100%
NFR 3	NA	±50%	-61% to +186%

POP

POP emissions are estimated with using emission factors from different data sources, such as EMEP/EEA Emission Inventory Guidebook, domestic research or international literature. POP emissions from non-point sources are estimated very uncertain, -100% to +1000% and the same value is used for 1990, 1994 and 2016. (Table 2.20)

Table 2.20 Uncertainty for POP emission factors in 1990, 1994 and 2016

NFR	PCDD/F	PAH-4	HCB	PCB	PCP
NFR 1A1, 1A2, 1A4, 1A5	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%
NFR 1A3	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%
NFR 2 (industry)	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%
NFR 2 (solvents)	-100 to +1000%	-100 to +1000%	-100 to +1000%	-	-
NFR 3	-	-	-100 to +1000%	-	-
NFR 5C	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%	-100 to +1000%

1.7 QC and planned improvements in uncertainty estimation

For the majority of the calculated data, uncertainties of activity data and emission factors have been defined separately. In the industrial processes sector, uncertainties of emission data reported by the plants have used.

To enable estimating real time uncertainties re-evaluation of uncertainties is carried out every 5th year for activity data and emission factors as well as for emission data reported by the plants.

The following QA/QC procedures were carried out for the uncertainty analysis in 2009 (2007 data):

- All uncertainty estimates used in the previous submission were evaluated by an external consultant³, and many of the estimates were revised in collaboration with the inventory agency.
- The uncertainty estimates were compared to uncertainty estimates presented the Good Practice Guidance for CLRTAP Inventories.
- Order-of-magnitude comparisons were carried out with other data sources and uncertainty analysis documentations provided by other parties to the CLRTAP conventions.
- Results of these QA/QC procedures lead to changes in some of the inventory uncertainty estimates when compared with the previous submission.

³ Suvi Monni from Benviroc Ltd

In 2013 for 2011 data uncertainty percentages of activity data, emission factors and emission data reported by the plants were re-evaluated and it was considered that there was no need to change the uncertainty percentages.

In 2016 uncertainty values for fuels were updated to correspond to those used in the Finnish greenhouse gas inventory.

THE RESULTS OF THE UNCERTAINTY ANALYSIS FOR THE 2020 SUBMISSION WILL BE UPLOADED IN THE CDR BY 1st MAY 2020

1.8 Uncertainties by pollutants

Changes in chapter	
March 2020	KS, TF

Uncertainties by pollutant and NFR category are calculated for main pollutants (sulphur oxides, nitrogen oxides, ammonia, non-methane volatile organic compounds and carbon monoxide) in Tables 2.22 - 2.30, for particles (black carbon, small particles <2.5 and <10 and total suspended particles) in Tables 2.31 - 2.38 and for persistent organic compounds (hexachlorobenzene, polyaromatic hydrocarbons, polychlorinated biphenyls, polychlorinated dioxins and furanes) in Tables 2.39 - 2.42.

Table 2.21 Total uncertainty of the 2016 emission data by pollutant.

Compound	Uncertainty*	
	Lower, %	Upper, %
Nitrogen oxide	-11	11
Sulphur dioxide	-5	5
Carbon monoxide	-29	31
NMVOC	-25	27
Ammonia ⁴	-44	54
Particulate matter (TSP)	-24	25
Lead	-28	27
Cadmium	-28	28
Mercury	-19	19
Arsenic	-25	25
Chromium	-25	26
Copper	-74	74
Nickel	-15	15
Zinc	-31	32
Hexachlorobenzene	-90	188
Dioxins and furans	-38	51
Polyaromatic hydrocarbons	-81	196
Polychlorinated biphenyls	-64	102
Pentachlorophenol (2011)	-91	233

*Expressed as upper and lower bounds of the 95% confidence interval relative to the mean value.

⁴ Note: the uncertainty estimates (percentages) in calculation of NH₃ uncertainty were not updated. However, due to improved information and data of the ammonia inventory in 2013-2016 the uncertainty percentages should be re-evaluated. It is likely that the re-evaluation lowers the uncertainties.

The improvements carried out in the inventory, especially after 2010, are not reflected in the uncertainties as the uncertainty percentages have not been re-evaluated. The inventory improvement programme has intensified since 2010 in checking of the completeness, consistency and correctness of the calculations and input data and the correspondence of methodologies to Finnish circumstances. A review of the uncertainty analysis will be carried out to the 2021 submission.

Uncertainties of Main Pollutants NH₃, CO, NO_x, NMVOC, and SO_x

Table 2.22 Uncertainties in Ammonia (NH₃) emissions by NFR categories in 2016 data

Note: the uncertainty estimates (percentages) in calculation of NH₃ uncertainty were not updated. However, due to improved information and data of especially the agricultural and small scale combustion ammonia inventories in 2013-2016, as well as the inclusion of new and missing sources in 2015, the uncertainty percentages should be re-evaluated. It is likely that the re-evaluation lowers the uncertainties.

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-26	26
1A2gvii	-81	80
1A2gviii	-21	20
1A3bi	-56	56
1A3bii	-52	51
1A3biii	-56	57
1A3biv	-55	54
1A3c	-80	81
1A3dii	-80	82
1A4ai	-80	87
1A4aai	-78	81
1A4bi	-81	86
1A4bii	-80	83
1A4ci	-81	87
1A4cii	-81	83
1A4ciii	-81	82
1A5a	-81	92
1B1b	-81	93
2B10a	-99	100
2C1	-100	101
2C7b	-101	101
2C7c	-100	100
2D3g	-83	86
2D3i	-101	100
2G	-100	116
2H1	-101	101
2L	-101	99
3B1a	-97	147
3B1b	-96	147
3B2	-97	146
3B3	-97	148
3B4d	-97	146
3B4e	-97	147
3B4gi	-97	147
3B4gii	-97	147
3B4giii	-97	147
3B4giv	-96	147
3B4h	-97	148
3Da1	-41	42
3Da2a	-97	174
3Da2b	-100	112
3Da3	-97	174
3F	-101	112
5B1	-97	162
5D1	-101	101
5E	-101	243
Total	-44	54

Table 2.23 Uncertainties in Carbon monoxide (CO) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-41	42
1A1b	-30	30
1A2a	-39	39
1A2b	-18	18

1A2c	-50	50
1A2d	-49	50
1A2e	-43	43
1A2f	-30	30
1A2gvii	-70	70
1A2gviii	-62	63
1A3ai(i)	-69	71
1A3aii(i)	-63	63
1A3bi	-68	68
1A3bii	-51	51
1A3biii	-71	71
1A3biv	-70	70
1A3c	-70	71
1A3dii	-70	73
1A3ei	-71	70

1A4ai	-48	51
1A4aii	-71	74
1A4bi	-71	77
1A4bii	-70	74
1A4ci	-52	55
1A4cii	-71	74
1A4ciii	-70	72
1A5a	-66	66
1A5b	-55	66
2C1	-20	20
2C7a	-20	21
2G	-100	116
3F	-100	113
Total	-29	31

Table 2.24 Uncertainties in Nitrogen oxides (NOx) emissions by NFR categories in 2016

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-9	9
1A1b	-17	17
1A2a	-20	20
1A2b	-20	20
1A2c	-19	19
1A2d	-9	9
1A2e	-19	19
1A2f	-17	17
1A2gvii	-51	51
1A2gviii	-16	16
1A3ai(i)	-51	52
1A3aii(i)	-51	51
1A3bi	-36	36
1A3bii	-49	49
1A3biii	-51	51
1A3biv	-42	43
1A3c	-50	51
1A3dii	-51	52
1A3ei	-20	21
1A4ai	-37	39
1A4aii	-50	53
1A4bi	-42	46
1A4bii	-51	55

1A4ci	-32	35
1A4cii	-51	55
1A4ciii	-50	52
1A5a	-33	35
1A5b	-63	81
2B10a	-21	20
2B2	-20	20
2G	-100	117
3B1a	-97	152
3B1b	-97	153
3B2	-97	154
3B3	-97	153
3B4d	-97	154
3B4e	-97	155
3B4gi	-97	151
3B4gii	-97	153
3B4giii	-97	153
3B4giv	-97	154
3B4h	-97	154
3Da1	-102	101
3Da2a	-97	179
3Da2b	-97	165
3Da3	-97	180
3F	-100	113
Total	-11	11

Table 2.25 Uncertainties in Non-Methane Volatile Organic Compounds (NMVOC) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-35	34
1A1b	-28	29
1A2a	-50	51
1A2b	-39	39
1A2c	-40	40
1A2d	-42	42
1A2e	-57	57
1A2f	-36	36
1A2gvii	-80	81
1A2gviii	-50	51
1A3ai(i)	-81	81
1A3aii(i)	-79	78
1A3bi	-74	74
1A3bii	-69	69
1A3biii	-81	81
1A3biv	-77	78
1A3bv	-97	153
1A3c	-80	80
1A3dii	-80	82
1A3ei	-80	81
1A4ai	-53	55
1A4aii	-76	80
1A4bi	-80	86
1A4bii	-80	84
1A4ci	-74	85
1A4cii	-81	84
1A4ciii	-80	83
1A5a	-55	56
1A5b	-76	100
1B1b	-80	83
1B2aiv	-31	30
1B2av	-93	99
1B2b	-101	101
2A1	-86	87
2A3	-99	100
2B10a	-100	101
2B10b	-100	101
2C1	-99	100
2C2	-100	100
2C6	-81	82
2C7a	-100	100
2C7b	-101	101
2C7c	-100	101
2D3a	-97	158
2D3b	-82	92
2D3c	-81	93
2D3d	-74	103
2D3e	-94	154
2D3g	-78	86
2D3h	-85	86
2D3i	-88	156
2G	-97	167
2H1	-70	72
2H2	-81	93
2I	-64	68
2L	-99	100
3B1a	-97	153
3B1b	-97	152
3B2	-97	154
3B3	-97	154
3B4d	-97	154
3B4e	-97	154
3B4gi	-97	154
3B4gii	-97	153
3B4giii	-97	153
3B4giv	-97	154
3B4h	-97	153
3Da2a	-97	180
3Da3	-97	178
3De	-101	112
3F	-100	111
5A	-97	155
5B2	-97	154
5D1	-93	149
5D2	-97	154
Total	-25	27

Table 2.26 Uncertainties in Sulphur oxides (SO_x, calculated as SO₂) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-9	9
1A1b	-13	14
1A2a	-10	10
1A2b	-15	15
1A2c	-14	14
1A2d	-8	8
1A2e	-14	14
1A2f	-17	18
1A2gvii	-51	51
1A2gviii	-13	13
1A3ai(i)	-51	51
1A3aii(i)	-51	51
1A3bi	-39	38
1A3bii	-49	49
1A3biii	-51	51
1A3biv	-48	48
1A3c	-50	50
1A3dii	-51	53
1A3ei	-21	21
1A4ai	-23	25
1A4aii	-51	53
1A4bi	-21	23
1A4bii	-51	54
1A4ci	-25	28
1A4cii	-52	55
1A4ciii	-51	52
1A5a	-25	28
1A5b	-63	81
1B1b	-15	16
2B10a	-16	16
2C1	-15	16
2C2	-15	15
2C7a	-16	16
2C7b	-15	16
2C7c	-16	16
2D3g	-26	25
2D3i	-25	25
2G	-101	116
2H1	-17	17
2L	-26	26
3F	-100	113
Total	-5	5

Uncertainties in particle emissions: BC, PM_{2.5}, PM₁₀ and TSP

Table 2.27 Uncertainties in BC emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-78	105
1A1b	-96	136
1A2a	-96	136
1A2b	-96	137
1A2c	-96	137
1A2d	-96	136
1A2e	-96	137
1A2f	-96	135
1A2gvii	-101	246
1A2gviii	-96	137
1A3ai(i)	-101	248
1A3aii(i)	-100	248
1A3bi	-97	216
1A3bii	-101	249
1A3biii	-100	249
1A3biv	-96	216
1A3bvi	-100	248
1A3bvii	-101	246
1A3c	-100	249
1A3dii	-101	249
1A4ai	-87	172
1A4aii	-100	248
1A4bi	-96	239
1A4bii	-101	251
1A4ci	-93	240
1A4cii	-101	252
1A4ciii	-101	249
1A5a	-99	265
1A5b	-100	270
1B1b	-96	136

2A2	-96	136
2A3	-96	136
2B10a	-92	185
2B6	-96	136
2C1	-96	136
2C2	-96	136
2C3	-96	136
2C7a	-96	136

2D3b	-100	432
2D3i	-96	135
2G	-101	443
2H1	-87	113
3F	-100	434
5C1bv	-100	430
5E	-101	432
Total	-56	94

Table 2.28 Uncertainties in Small particles PM2.5 emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-76	94
1A1b	-96	136
1A2a	-96	136
1A2b	-96	136
1A2c	-96	136
1A2d	-96	135
1A2e	-96	135
1A2f	-96	136
1A2gvii	-97	165
1A2gviii	-96	136
1A3ai(i)	-97	165
1A3aii(i)	-95	162
1A3bi	-89	145
1A3bii	-96	164
1A3biii	-97	163
1A3biv	-88	143
1A3bvi	-97	164
1A3bvii	-97	165
1A3c	-97	164
1A3dii	-97	165
1A4ai	-77	116
1A4aii	-96	166
1A4bi	-89	173
1A4bii	-97	167
1A4ci	-87	172
1A4cii	-97	167
1A4ciii	-97	165
1A5a	-94	188
1A5b	-97	194
1B1b	-96	135
1B1c	-100	359

1B2av	-97	137
2A2	-96	136
2A3	-96	136
2A5a	-86	116
2A5b	-99	357
2A5c	-100	364
2B10a	-93	184
2B10b	-100	367
2B6	-96	135
2C1	-96	135
2C2	-96	136
2C3	-96	137
2C7a	-96	136
2C7c	-96	136
2C7d	-100	375
2D3b	-100	365
2D3d	-96	134
2D3e	-100	220
2D3g	-96	136
2D3i	-96	137
2G	-100	375
2H1	-87	114
2H2	-94	332
2L	-96	135
3B1a	-100	360
3B1b	-100	368
3B3	-100	358
3B4e	-100	367
3B4gi	-100	364
3B4gii	-100	369
3B4giii	-100	364
3B4giv	-100	363
3Dc	-100	365
3F	-100	367

5A	-100	366
5C1bv	-100	366

5E	-100	373
Total	-44	58

Table 2.29 Uncertainties in Small particles PM10 emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-76	95
1A1b	-96	136
1A2a	-96	136
1A2b	-96	136
1A2c	-96	136
1A2d	-96	136
1A2e	-97	135
1A2f	-97	137
1A2gvii	-97	165
1A2gviii	-96	135
1A3ai(i)	-97	165
1A3aii(i)	-95	163
1A3bi	-89	145
1A3bii	-97	164
1A3biii	-97	163
1A3biv	-88	142
1A3bvi	-97	162
1A3bvii	-97	163
1A3c	-97	165
1A3dii	-96	166
1A4ai	-78	116
1A4aii	-97	166
1A4bi	-89	174
1A4bii	-96	169
1A4ci	-87	171
1A4cii	-96	166
1A4ciii	-97	166
1A5a	-94	189
1A5b	-97	191
1B1b	-96	136
1B1c	-100	365
1B2av	-96	136
2A2	-96	136
2A3	-96	136

2A5a	-86	115
2A5b	-99	364
2A5c	-100	371
2B10a	-93	186
2B10b	-100	371
2B6	-96	135
2C1	-96	137
2C2	-96	136
2C3	-96	137
2C7a	-96	137
2C7c	-96	136
2C7d	-100	369
2D3b	-100	367
2D3d	-96	135
2D3e	-100	223
2D3g	-96	136
2D3i	-96	136
2G	-100	369
2H1	-87	115
2H2	-94	335
2I	-96	135
2L	-96	136
3B1a	-100	367
3B1b	-100	366
3B3	-100	361
3B4e	-100	359
3B4gi	-100	357
3B4gii	-100	366
3B4giii	-100	362
3B4giv	-100	362
3Dc	-100	357
3F	-100	367
5A	-100	357
5C1bv	-100	359
5E	-100	367
Total	-44	58

Table 2.30 Uncertainties in Total Suspended Particles (TSP) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-21	21
1A1b	-21	20
1A2a	-21	20
1A2b	-21	21
1A2c	-20	20
1A2d	-20	21
1A2e	-21	21
1A2f	-21	20
1A2gvii	-51	51
1A2gviii	-21	21
1A3ai(i)	-51	51
1A3aii(i)	-50	51
1A3bi	-45	45
1A3bii	-51	50
1A3biii	-50	50
1A3biv	-44	44
1A3bvi	-50	50
1A3bvii	-50	50
1A3c	-51	51
1A3dii	-51	52
1A4ai	-39	41
1A4aii	-51	54
1A4bi	-69	73
1A4bii	-51	54
1A4ci	-67	77
1A4cii	-52	55
1A4ciii	-51	52
1A5a	-76	77
1A5b	-62	81
1B1b	-20	20
1B1c	-98	242
1B2av	-20	20
2A2	-21	21
2A3	-21	20
2A5a	-27	45
2A5b	-97	242
2A5c	-98	249
2B10a	-82	81
2B10b	-98	250
2B6	-21	21
2C1	-21	20
2C2	-21	20
2C3	-20	21
2C7a	-21	20
2C7c	-20	20
2C7d	-98	246
2D3b	-98	252
2D3d	-21	21
2D3e	-100	101
2D3g	-20	21
2D3i	-21	21
2G	-98	252
2H1	-28	28
2H2	-90	229
2I	-21	21
2L	-21	20
3B1a	-98	239
3B1b	-98	243
3B3	-98	239
3B4e	-98	240
3B4gi	-98	242
3B4gii	-98	238
3B4giii	-98	240
3B4giv	-98	239
3Dc	-98	241
3F	-98	246
5A	-98	243
5C1bv	-98	239
5E	-98	250
Total	-24	25

Uncertainties of Heavy Metals

Table 2.31 Uncertainties in Arsenic (As) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-42	42
1A1b	-80	81
1A2a	-36	36
1A2b	-80	79
1A2c	-64	64
1A2d	-63	63
1A2e	-74	75
1A2f	-62	61
1A2gviii	-43	43
1A3bi	-85	86
1A3bii	-96	96
1A3biii	-100	101
1A3biv	-97	99
1A3bvi	-100	100
1A3dii	-102	102
1A4ai	-48	52
1A4bi	-66	70
1A4ci	-78	89
1A4ciii	-101	102
1A5a	-61	63
1B1b	-31	31
2A5b	-30	30
2C1	-30	30
2C2	-31	31
2C6	-31	31
2C7a	-31	31
2C7c	-31	31
2G	-100	117
3F	-100	112
5C1bv	-81	82
5E	-100	116
Total	-25	25

Table 2.32 Uncertainties in Cadmium (Cd) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-41	42
1A1b	-72	71
1A2a	-30	30
1A2b	-80	81
1A2c	-62	61
1A2d	-75	74
1A2e	-52	52
1A2f	-55	55
1A2gvii	-101	101
1A2gviii	-73	75
1A3bi	-75	75
1A3bii	-98	99
1A3biii	-102	100
1A3biv	-95	95
1A3bvi	-101	101
1A3c	-100	101
1A3dii	-100	102
1A4ai	-74	79
1A4aaii	-98	102
1A4bi	-80	85
1A4bii	-101	104
1A4ci	-66	69
1A4cii	-101	103
1A4ciii	-101	102
1A5a	-80	81
1B1b	-30	31
2A5b	-31	30
2C1	-31	30
2C2	-31	31
2C6	-31	31
2C7a	-30	30
2C7c	-31	31
2G	-100	115
3F	-100	113
5C1bv	-81	82
5E	-100	117
Total	-28	28

Table 2.33 Uncertainties in Chromium (Cr) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-38	38
1A1b	-80	79
1A2a	-28	28
1A2b	-81	80
1A2c	-58	59
1A2d	-38	38
1A2e	-70	71
1A2f	-60	60
1A2gvii	-101	101
1A2gviii	-70	72
1A3bi	-71	71
1A3bii	-101	100
1A3biii	-100	100
1A3biv	-88	88
1A3bvi	-100	101
1A3c	-101	100
1A3dii	-101	103
1A4ai	-69	74
1A4aaii	-98	101
1A4bi	-80	85
1A4bii	-101	104
1A4ci	-59	63
1A4cii	-101	104
1A4ciii	-100	101
1A5a	-80	81
1B1b	-31	30
2A5b	-31	30
2C1	-31	31
2C2	-31	31
2C7c	-31	30
2G	-100	116
3F	-101	114
5C1bv	-80	82
5E	-100	117
Total	-25	26

Table 2.34 Uncertainties in Copper (Cu) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-38	38
1A1b	-76	75
1A2a	-43	44
1A2b	-80	81
1A2c	-53	53
1A2d	-32	32
1A2e	-73	72
1A2f	-58	58
1A2gvii	-100	101
1A2gviii	-71	71
1A3bi	-80	80
1A3bii	-97	98
1A3biii	-100	100
1A3biv	-96	96
1A3bvi	-100	100
1A3c	-100	101
1A3dii	-99	102
1A4ai	-49	53
1A4aaii	-99	102
1A4bi	-73	77
1A4bii	-101	105
1A4ci	-74	85
1A4cii	-100	103
1A4ciii	-100	101
1A5a	-80	80
1B1b	-30	31
2A5b	-30	30
2B10a	-31	30
2C1	-31	31
2C2	-31	30
2C6	-30	30
2C7a	-31	30
2C7c	-31	30
2G	-100	115
3F	-101	113
5C1bv	-80	82

5E	-101	116
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Total	-74	74
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Table 2.35 Uncertainties in Mercury (Hg) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-34	34
1A1b	-76	76
1A2a	-61	62
1A2b	-80	79
1A2c	-39	39
1A2d	-56	57
1A2e	-42	42
1A2f	-39	38
1A2gviii	-43	43
1A3bi	-79	77
1A3bii	-98	98
1A3biii	-100	100
1A3biv	-96	97
1A3bvi	-100	100
1A3dii	-100	102
1A4ai	-67	71
1A4bi	-80	85
1A4ci	-58	64
1A4ciii	-100	101
1A5a	-78	79
1B1b	-81	82
2A5b	-50	50
2B10a	-51	51
2C1	-51	50
2C2	-50	50
2C6	-51	50
2C7c	-51	51
2G	-101	115
3F	-102	113
5C1bv	-80	81
5E	-100	117
Total	-19	19

Table 2.36 Uncertainties in Nickel (Ni) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-31	31
1A1b	-36	36
1A2a	-29	29
1A2b	-62	62
1A2c	-76	77
1A2d	-36	36
1A2e	-44	44
1A2f	-58	58
1A2gvii	-101	101
1A2gviii	-48	47
1A3bi	-77	76
1A3bii	-98	98
1A3biii	-101	102
1A3biv	-96	96
1A3bvi	-101	100
1A3c	-99	101
1A3dii	-100	102
1A4ai	-65	68
1A4aii	-98	102
1A4bi	-76	82
1A4bii	-100	104
1A4ci	-51	54
1A4cii	-101	104
1A4ciii	-101	103
1A5a	-49	51
1B1b	-31	30
2A5b	-31	30
2B10a	-30	31
2C1	-30	31
2C2	-30	30
2C7a	-30	30
2C7b	-30	30
2C7c	-30	30
2G	-100	116
3F	-100	113
5C1bv	-80	81
Total	-15	15

Table 2.37 Uncertainties in Lead (Pb) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-37	37
1A1b	-79	78
1A2a	-27	27
1A2b	-80	81
1A2c	-71	70
1A2d	-76	76
1A2e	-66	65
1A2f	-60	60
1A2gviii	-67	68
1A3aii(i)	-101	106
1A3bi	-71	71
1A3bii	-99	99
1A3biii	-101	100
1A3biv	-90	90
1A3bvi	-100	101
1A3dii	-100	102
1A4ai	-47	49
1A4bi	-76	80
1A4ci	-68	76
1A4ciii	-100	102
1A5a	-75	76
1B1b	-30	31
2A5b	-30	31
2C1	-31	31
2C2	-30	30
2C6	-31	31
2C7a	-30	30
2C7c	-30	30
2G	-101	116
3F	-100	112
5C1bv	-80	81
5E	-101	117
Total	-28	27

Table 2.38 Uncertainties in Zinc (Zn) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-50	50
1A1b	-68	68
1A2a	-32	33
1A2b	-80	81
1A2c	-48	49
1A2d	-56	57
1A2e	-50	50
1A2f	-52	52
1A2gvii	-100	101
1A2gviii	-65	66
1A3bi	-75	76
1A3bii	-98	100
1A3biii	-101	100
1A3biv	-95	95
1A3bvi	-102	101
1A3c	-100	100
1A3dii	-100	102
1A4ai	-79	84
1A4aii	-98	102
1A4bi	-80	86
1A4bii	-100	102
1A4ci	-71	76
1A4cii	-100	104
1A4ciii	-101	102
1A5a	-81	82
1B1b	-31	30
2C1	-30	31
2C2	-30	30
2C6	-31	31
2C7a	-30	30
2C7c	-30	31
2G	-102	117
3F	-101	112
5C1bv	-80	82
Total	-31	32

Uncertainties of Persistent Organic Compounds (POPs)

Table 2.39 Uncertainties in Hexachlorobenzene (HCB) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-97	236
1A2a	-98	242
1A2c	-98	240
1A2d	-97	241
1A2e	-98	237
1A2f	-98	241
1A2gviii	-95	260
1A3bi	-98	238
1A3bii	-98	238
1A3biii	-98	241
1A3biv	-98	239
1A3dii	-98	240
1A4ai	-98	242
1A4bi	-98	241
1A4ci	-94	228
1A4ciii	-98	239
1A5a	-94	231
2B10a	-98	213
2C1	-98	284
2C7a	-98	239
2C7c	-98	241
2D3i	-98	254
3Df	-98	243
5C1bv	-98	237
Total	-90	188

Table 2.40 Uncertainties in Polyaromatic Hydrocarbon (PAH-4) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-73	117
1A1b	-80	136
1A2a	-86	186
1A2b	-87	158
1A2c	-88	176
1A2d	-78	145
1A2e	-72	122
1A2f	-75	145
1A2gvii	-98	238
1A2gviii	-86	197
1A3bi	-98	237
1A3bii	-98	239
1A3biii	-98	241
1A3biv	-98	239
1A3c	-98	237
1A4ai	-87	160
1A4aii	-96	236
1A4bi	-97	241
1A4bii	-98	241
1A4ci	-89	207
1A4cii	-98	241
1A5a	-85	174
1B1b	-98	241
2A1	-98	242
2B10a	-98	215
2C1	-93	223
2C2	-98	243
2D3i	-97	242
2G	-98	248
3F	-98	250
5C1bv	-98	242
Total	-81	196

Table 2.41 Uncertainties in Polychlorinated biphenyls (PCBs) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A2gviii	-100	317
1A3bi	-80	138
1A3bii	-86	157
1A3biii	-87	158
1A3biv	-83	152
1A3dii	-98	244
1A4ai	-97	239
1A4bi	-98	243
1A4ci	-98	244
1A4ciii	-98	242
1B1b	-98	243
1B2aiv	-98	247
2A1	-98	249
2A2	-98	245
2B10a	-97	214
2C1	-88	167
2C3	-98	249
2C7a	-98	243
2C7c	-90	196
5C1bv	-98	250
Total	-64	102

Table 2.42 Uncertainties in Polychlorinated dioxins and furans (PCDD/F) emissions by NFR categories in 2016 data

NFR	Uncertainty	
	Lower%	Upper%
1A1a	-68	106
1A1b	-79	169
1A2a	-69	118
1A2b	-90	191
1A2c	-76	156
1A2d	-79	138
1A2e	-85	187
1A2f	-76	162
1A2gviii	-82	168
1A3bi	-49	121
1A3bii	-49	119
1A3biii	-49	120
1A3biv	-49	119
1A3dii	-98	240
1A3ei	-98	241
1A4ai	-90	219
1A4bi	-97	243
1A4ci	-89	192
1A4ciii	-98	238
1A5a	-95	236
1B1b	-98	242
2A1	-98	248
2A2	-98	247
2A3	-98	248
2B10a	-98	217
2C1	-97	214
2C6	-98	241
2C7a	-98	241
2C7c	-97	212
2D3b	-98	251
2G	-98	250
2L	-98	249
3F	-98	247
5C1bv	-98	239
5E	-98	251
Total	-38	51

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- EEA (2013). EMEP/EEA Emission Inventory Guidebook.
- Monni. S. & Syri. S.. Savolainen. I. (2003). Uncertainties in the Finnish greenhouse gas emission inventory. Environmental Science & Policy. Vol. 7 (2004) NO:2. 87-98.
- Monni. S (2004). Uncertainties in the Finnish 2002 Greenhouse Gas Emission Inventory. VTT. Espoo. 31 p. + app. 18 p. VTT Working

Papers 5. <http://www.vtt.fi/inf/pdf/workingpapers/2004/W5.pdf>

Annex 8

Energy Balance

Energy balances are available in Finland's PX-Web databases from http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin_ene_ehk/stat-fin_ehk_pxt_002.px/?rxid=5c37441a-ed98-40ad-bfb5-5f29f4898d81

You can select the years, fuels and quantity (TJ), Twh, Share (%) and Annual change (%) and make searches to create output files and graphs as presented in Figure x.

002 -- Total energy consumption by source (detailed)

Select variableAbout table

Mark your selections and choose between table on screen and file format. Marking tips
For variables marked * you need to select at least one value

Year * ✓ ← → ✕ Total 48 Selected 0 2012 2013 2014 2015 2016 2017 Search ☐ Beginning of row	Source * ✓ ← → ✕ Total 26 Selected 0 Diesel fuel Refinery gases etc. Town gas Light fuel oil Recycled fuels Recycled oil Search ☐ Beginning of row	Tiedot * ✓ ← → ✕ Total 4 Selected 0 Quantity, TJ TWh Share % Annual change % Search ☐ Beginning of row
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Number of selected data cells are: 0 (maximum number allowed is 1,000,000)

Table - Layout 2

Chart - Line

Chart - Bar

Table - Layout 1

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Figure x. Energy balance data available from Finland's PX-Web databases