

# Supplementary material

Table S1. Emission factors

	Sector	Final energy factor	Carbon emission factor	Source
Stationary	District heat	-	0.26 t CO <sub>2</sub> -eq/MWh	[1]
	Gas	-	0.25 t CO <sub>2</sub> -eq/MWh	[1]
	Electricity	-	0.55 t CO <sub>2</sub> -eq/MWh	[1]
Public transport	S-Bahn	20.27 Wh/km	0.60 g CO <sub>2</sub> /Wh	[2]
	U6	20.27 Wh/km	0.60 g CO <sub>2</sub> /Wh	[2]
	U9	20.27 Wh/km	0.60 g CO <sub>2</sub> /Wh	[2]
	M13	20.27 Wh/km	0.60 g CO <sub>2</sub> /Wh	[2]
	50	20.27 Wh/km	0.60 g CO <sub>2</sub> /Wh	[2]
Road traffic	Cars	0,78 kWh/veh-km	312 g CO <sub>2</sub> -eq/kWh (diesel) 304 CO <sub>2</sub> -eq/kWh (petrol)	[3]
	Trucks	2,73 kWh/veh-km	312 CO <sub>2</sub> -eq/kWh	[3]
	Vans <= 3.5 t	0,82 kWh/veh-km	312 CO <sub>2</sub> -eq/kWh	[3]
	Buses	4,44 kWh/veh-km	312 CO <sub>2</sub> -eq/kWh	[3]
	Coaches	4,11 kWh/veh-km	312 CO <sub>2</sub> -eq/kWh	[3]
	Motor cycles	0,33 kWh/veh-km	312 CO <sub>2</sub> -eq/kWh	[3]

Table S2. Household size and corresponding occurrence

Household size	Occurrence of the household size [%]
1-person household	36.26 %
2-person household	26.85 %
3-person household	11.47 %
≥ 4-person household	25.42 %

Table S3. Base price / Purchaser Price ratios

CES category	Base price / Purchaser price
Food	0.73
Alcohol and tobacco	0.2
Men's clothing	0.51
Women's clothing	0.51
Clothing for children under 14	0.51

Other clothing and accessories	0.51
Shoes and shoe accessories	0.51
Repairs, cleaning, lending	0.56
Apartment rents, etc.	0.8
Energy	0.41
House maintenance	0.61
Furniture and furnishings	0.46
Carpets and other floor covering	0.46
Refrigerators and freezers	0.56
Other major household appliances	0.56
Small electrical household appliances	0.56
Home textiles	0.46
Other consumer goods for household management	0.61
Consumer goods for household management	0.61
Services for household management	0.61
Commodity for health care	0.61
Consumer goods for health care	0.61
Services for health care	0.61
Motor vehicles	0.61
Motor vehicles and bicycles	0.61
Spare parts and accessories for motor vehicles and motorcycles	0.61
Fuels and lubricants	0.31
Maintenance, repairs of motor vehicles, motorcycles and bicycles	0.61
Other services	0.61
Passenger transportation, transport services	0.61
Telephone, fax machines, answering machines	0.56
Postal and telecommunication services	0.61
Radio receivers and the like	0.56
Television and video equipment, TV antennas	0.56
Photographic, cinematographic and optical equipment	0.56
Data processing equipment and software (incl. downloads)	0.61
Image, data and sound carriers (incl. downloads)	0.61
Other durable goods and equipment for culture, sports, camping, etc.	0.51
Toys and hobbies	0.51
Flowers and gardens	0.61
Pets	0.61
Recreational and cultural services	0.61
Books	0.51
Newspapers, magazines, etc.	0.61
Other consumer goods	0.61
Repairs for leisure, entertainment and culture	0.61
Package tours	0.61
Tutoring	0.61
Fees, child care	0.61
Catering services	0.61
Accommodation services	0.73

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Jewellery, watches	0.41
Other personal effects	0.61
Personal care services	0.61
Personal care articles and equipment	0.51
Other services	0.61

Table S4. Streets in Wedding

Name of the street	Length of the section [km]	Daily average traffic volume [number of vehicles]
Londoner Str.	0.648	13592
Am Nordhafen	0.244	2862
Reginhardstr.	0.09	5940
Transvaalstr.	1.281	59400
Dohnagestell	0.501	21240
Barfusstr.	0.944	63900
Müllerstr.	3.693	580320
Chausseestr.	0.444	51570
Amrumer Str.	1.172	138960
Afrikanische Str.	1.826	197550
Sylter Str.	0.363	18505
Nordufer	0.354	18505
Reinickendorfer Str.	1.803	314730
Luxemburger Str.	0.812	95040
Sellerstr.	0.445	24120
Louise-Schroeder-Platz	0.119	21600
Fennstr.	0.766	146430
Föhrer Str.	0.455	125280
Seestr.	3.16	774810
Total	19.12	2674354

Table S5. Summary of territorial energy consumption and resulting carbon emissions

		Energy consumption [MWh / a]	CO2 [t CO2-eq / a]	Share of carbon emissions
Public transport	District heat	299 395.95	78 741.13	19.64%
	Gas	492 802.90	121 722.32	30.36%
	Electricity	276 511.39	153 187.31	38.21%
	Urban Railway	1 663.13	997.88	0.25%
	Metro 6	6 062.19	3 637.32	0.91%

Road traffic	Metro 9	2 777.34	1 666.41	0.42%
	Tram M13	291.23	174.74	0.04%
	Tram 50	159.22	95.53	0.02%
	Cars	98 722.69	30 327.61	7.56%
	Trucks > 3.5 t	12 525.54	3 907.97	0.97%
	Delivery vans ≤ 3.5 t	12 602.97	3 932.13	0.98%
	Buses	5 276.11	1 646.15	0.41%
	Coaches	1 733.38	540.82	0.13%
	Motorcycles	1 215.92	369.64	0.09%
	Total		400 946.95	

Table S6. Consumption-based results by sectors

Sector	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	GHG [kg CO <sub>2</sub> -eq]
Real estate services (70)	3.16E+07	1.89E+06	4.88E+05	3.40E+07
Animal products nec	3.57E+06	1.47E+07	4.83E+06	2.31E+07
Steam and hot water supply services	2.21E+07	2.78E+05	2.12E+05	2.26E+07
Electricity by coal	1.82E+07	4.33E+05	2.48E+05	1.89E+07
Crops nec	3.66E+06	1.10E+07	3.39E+06	1.81E+07
Chemicals nec	1.03E+07	2.27E+06	3.70E+05	1.30E+07
Leather and leather products (19)	4.07E+06	7.68E+06	9.70E+05	1.27E+07
Hotel and restaurant services (55)	8.88E+06	2.33E+06	1.03E+06	1.22E+07
Ceramic goods	8.53E+06	9.50E+05	1.16E+05	9.59E+06
Products of meat cattle	9.92E+05	6.07E+06	2.09E+06	9.15E+06
Wheat	2.40E+06	2.42E+05	5.75E+06	8.39E+06
Other Bituminous Coal	4.15E+06	3.80E+06	4.28E+04	8.00E+06
Rubber and plastic products (25)	6.83E+06	5.85E+05	9.26E+04	7.51E+06
Cereal grains nec	2.10E+06	2.89E+05	5.03E+06	7.42E+06
Dairy products	2.70E+06	3.59E+06	9.46E+05	7.24E+06
Processed rice	2.27E+06	4.14E+06	5.25E+05	6.93E+06
Meat animals nec	6.83E+05	4.12E+06	1.35E+06	6.15E+06
Textiles (17)	4.72E+06	1.10E+06	2.05E+05	6.03E+06
Other transport equipment (35)	5.10E+06	6.00E+05	7.74E+04	5.78E+06
Wearing apparel; furs (18)	4.27E+06	1.10E+06	2.51E+05	5.62E+06
Motor vehicles, trailers and semi-trailers (34)	5.01E+06	5.21E+05	7.79E+04	5.61E+06
Beverages	3.74E+06	1.01E+06	7.51E+05	5.49E+06
Patent Fuel	4.09E+06	1.17E+06	5.40E+04	5.32E+06
BKB/Peat Briquettes	4.03E+06	1.13E+06	5.32E+04	5.22E+06
Vegetables, fruit, nuts	3.50E+06	4.01E+05	9.79E+05	4.89E+06
Furniture; other manufactured goods n.e.c. (36)	4.01E+06	5.81E+05	7.15E+04	4.66E+06
Supporting and auxiliary transport services; travel agency services (63)	4.01E+06	2.95E+05	5.21E+04	4.36E+06
Machinery and equipment n.e.c. (29)	3.71E+06	4.47E+05	5.47E+04	4.22E+06
Raw milk	4.15E+05	3.03E+06	7.53E+05	4.20E+06

Electricity by gas	3.61E+06	8.81E+04	7.72E+03	3.71E+06
Sea and coastal water transportation services	3.53E+06	6.30E+04	2.04E+04	3.62E+06
Electricity by petroleum and other oil derivatives	3.44E+06	1.10E+05	1.10E+04	3.56E+06
Recreational, cultural and sporting services (92)	3.17E+06	2.94E+05	8.13E+04	3.54E+06
Food products nec	1.79E+06	1.15E+06	6.03E+05	3.54E+06
Paper and paper products	2.63E+06	3.17E+05	8.91E+04	3.04E+06
Plastic waste for treatment: incineration	2.77E+06	1.32E+05	3.51E+04	2.93E+06
Anthracite	1.83E+06	1.06E+06	2.34E+04	2.92E+06
Office machinery and computers (30)	2.52E+06	3.16E+05	4.63E+04	2.88E+06
Fabricated metal products, except machinery and equipment (28)	2.51E+06	2.65E+05	3.47E+04	2.81E+06
Wood waste for treatment: landfill	1.70E+06	9.40E+05	3.86E+04	2.68E+06
Intert/metal waste for treatment: incineration	2.53E+06	8.20E+04	2.93E+04	2.64E+06
Electricity by biomass and waste	2.48E+06	8.07E+04	8.07E+04	2.64E+06
Railway transportation services	2.38E+06	2.10E+05	3.56E+04	2.62E+06
Health and social work services (85)	2.06E+06	3.69E+05	1.30E+05	2.56E+06
Textiles waste for treatment: incineration	2.28E+06	8.65E+04	2.53E+04	2.39E+06
Sugar	1.38E+06	4.48E+05	5.39E+05	2.37E+06
Electrical machinery and apparatus n.e.c. (31)	2.02E+06	2.23E+05	3.26E+04	2.27E+06
Other land transportation services	1.88E+06	2.86E+05	3.59E+04	2.20E+06
Cement, lime and plaster	2.09E+06	3.76E+04	7.02E+03	2.13E+06
N-fertiliser	2.03E+06	6.73E+04	1.23E+04	2.11E+06
Products of forestry, logging and related services (02)	1.32E+06	4.97E+05	1.38E+05	1.96E+06
Poultry	8.79E+05	1.93E+05	8.72E+05	1.94E+06
Membership organisation services n.e.c. (91)	1.63E+06	1.91E+05	5.24E+04	1.87E+06
Electricity by Geothermal	1.57E+06	2.28E+05	3.89E+04	1.84E+06
Crude petroleum and services related to crude oil extraction, excluding surveying	1.09E+06	7.29E+05	2.64E+04	1.84E+06
Products of meat pigs	1.11E+06	3.80E+05	3.02E+05	1.79E+06
Radio, television and communication equipment and apparatus (32)	1.50E+06	1.98E+05	2.68E+04	1.72E+06
Printed matter and recorded media (22)	1.51E+06	1.24E+05	2.66E+04	1.66E+06
Food waste for treatment: incineration	1.56E+06	7.87E+04	2.11E+04	1.66E+06
Kerosene	9.38E+05	6.58E+05	1.86E+04	1.61E+06
Gas/Diesel Oil	1.12E+06	4.78E+05	8.63E+03	1.61E+06
Kerosene Type Jet Fuel	1.12E+06	4.72E+05	7.80E+03	1.60E+06
Paper waste for treatment: incineration	1.49E+06	8.04E+04	2.05E+04	1.59E+06
Motor Gasoline	1.11E+06	4.72E+05	8.05E+03	1.59E+06
Post and telecommunication services (64)	1.46E+06	1.05E+05	2.38E+04	1.59E+06
Liquefied Petroleum Gases (LPG)	1.06E+06	4.68E+05	8.21E+03	1.54E+06

Wood and products of wood and cork (except furniture); articles of straw and plaiting materials (20)	1.22E+06	1.74E+05	3.36E+04	1.43E+06
Meat products nec	6.80E+05	4.35E+05	2.29E+05	1.34E+06
Other services (93)	1.19E+06	1.05E+05	2.00E+04	1.31E+06
Fish products	6.60E+05	4.15E+05	1.94E+05	1.27E+06
Air transport services (62)	1.16E+06	4.65E+04	1.67E+04	1.23E+06
Other non-metallic mineral products	1.09E+06	9.67E+04	1.08E+04	1.20E+06
Fish and other fishing products; services incidental of fishing (05)	1.06E+06	9.67E+04	2.51E+04	1.19E+06
Sale, maintenance, repair of motor vehicles, motor vehicles parts, motorcycles, motor cycles parts and accessoires	1.15E+06	1.01E+04	8.29E+03	1.17E+06
Transmission services of electricity	1.06E+06	3.64E+04	1.36E+04	1.11E+06
Distribution and trade services of electricity	1.06E+06	3.68E+04	1.36E+04	1.11E+06
Inland water transportation services	9.06E+05	4.51E+04	1.05E+04	9.61E+05
Gas Works Gas	8.77E+05	4.62E+04	4.80E+03	9.28E+05
Products of meat poultry	5.19E+05	2.42E+05	1.54E+05	9.15E+05
Distribution services of gaseous fuels through mains	8.36E+05	4.54E+04	5.36E+03	8.86E+05
Biogasoline	7.62E+05	5.75E+04	1.43E+04	8.34E+05
Construction work (45)	7.80E+05	3.80E+04	8.72E+03	8.27E+05
Bricks, tiles and construction products, in baked clay	7.66E+05	2.99E+04	6.04E+03	8.02E+05
Education services (80)	7.14E+05	6.08E+04	1.55E+04	7.91E+05
Other Liquid Biofuels	6.48E+05	5.30E+04	1.25E+04	7.13E+05
products of Vegetable oils and fats	3.77E+05	1.52E+05	1.82E+05	7.11E+05
Biodiesels	6.42E+05	4.88E+04	1.24E+04	7.03E+05
Oil seeds	2.07E+05	3.49E+04	4.51E+05	6.93E+05
Medical, precision and optical instruments, watches and clocks (33)	6.27E+05	4.60E+04	8.83E+03	6.82E+05
Tobacco products (16)	3.95E+05	1.92E+05	4.80E+04	6.34E+05
Other waste for treatment: waste water treatment	4.81E+05	1.85E+04	5.41E+03	5.05E+05
Retail trade services of motor fuel	4.73E+05	6.80E+03	3.24E+03	4.83E+05
P- and other fertiliser	4.06E+05	4.91E+04	7.63E+03	4.63E+05
Peat	4.02E+05	4.01E+04	5.66E+03	4.48E+05
Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)	4.20E+05	3.69E+03	3.38E+03	4.28E+05
Chemical and fertilizer minerals, salt and other mining and quarrying products n.e.c.	3.03E+05	3.43E+04	7.39E+03	3.45E+05
Electricity nec	1.91E+05	1.62E+04	2.28E+03	2.09E+05
Research and development services (73)	1.82E+05	1.82E+04	3.61E+03	2.04E+05
Wood waste for treatment: incineration	1.91E+05	9.37E+03	2.55E+03	2.03E+05
Electricity by hydro	1.71E+05	2.00E+04	2.55E+03	1.94E+05
Wholesale trade and commission trade services, except of motor vehicles and motorcycles (51)	1.66E+05	3.92E+03	1.78E+03	1.72E+05

Electricity by nuclear	1.42E+05	1.47E+04	1.80E+03	1.58E+05
Electricity by wind	1.39E+05	1.37E+04	1.78E+03	1.54E+05
Other business services (74)	1.43E+05	7.66E+03	2.45E+03	1.53E+05
Computer and related services (72)	1.40E+05	8.16E+03	2.01E+03	1.50E+05
Services auxiliary to financial intermediation (67)	1.10E+05	1.46E+04	4.02E+03	1.29E+05
Public administration and defence services; compulsory social security services (75)	1.10E+05	1.21E+04	4.36E+03	1.27E+05
Electricity by solar photovoltaic	1.14E+05	1.00E+04	1.55E+03	1.26E+05
Insurance and pension funding services, except compulsory social security services (66)	1.10E+05	7.83E+03	2.17E+03	1.20E+05
Renting services of machinery and equipment without operator and of personal and household goods (71)	9.97E+04	5.39E+03	2.67E+03	1.08E+05
Financial intermediation services, except insurance and pension funding services (65)	1.00E+05	5.55E+03	1.62E+03	1.08E+05
Private households with employed persons (95)	6.16E+03	3.41E+02	1.96E+01	6.52E+03

Table S7. Consumption-based results by country

Country	CO2	CH4	N2O	GHG [kg CO2-eq]
Austria	1.05E+06	9.62E+05	2.99E+05	2.31E+06
Australia	3.08E+05	1.79E+05	5.60E+04	5.44E+05
Belgium	1.82E+06	4.21E+05	2.24E+05	2.47E+06
Bulgaria	4.37E+05	3.19E+05	9.73E+04	8.53E+05
Brazil	7.18E+05	2.20E+06	9.90E+05	3.90E+06
Canada	3.96E+05	8.44E+04	6.47E+04	5.45E+05
Switzerland	9.42E+05	2.07E+05	4.26E+04	1.19E+06
China	1.71E+07	3.79E+06	8.89E+05	2.18E+07
Cyprus	1.23E+04	2.77E+03	6.84E+02	1.58E+04
Czech Republic	2.30E+06	5.58E+05	3.87E+05	3.24E+06
Germany	1.93E+08	3.32E+07	1.97E+07	2.46E+08
Denmark	6.77E+05	1.54E+05	1.93E+05	1.02E+06
Estonia	1.24E+05	3.19E+04	2.84E+04	1.85E+05
Spain	1.33E+06	5.47E+05	2.92E+05	2.17E+06
Finland	3.48E+05	5.35E+04	4.06E+04	4.42E+05
France	3.26E+06	8.58E+05	8.26E+05	4.94E+06
United Kingdom	1.86E+06	1.11E+06	4.09E+05	3.38E+06
Greece	4.78E+05	1.34E+05	5.53E+04	6.67E+05
Croatia	1.43E+05	2.50E+04	3.15E+03	1.71E+05
Hungary	8.88E+05	2.32E+05	1.90E+05	1.31E+06
Indonesia	7.33E+05	3.08E+05	1.29E+05	1.17E+06
Ireland	4.14E+05	3.10E+05	1.17E+05	8.41E+05
India	3.69E+06	7.90E+06	8.58E+05	1.25E+07

Italy	2.71E+06	8.03E+05	2.17E+05	3.73E+06
Japan	7.66E+05	6.48E+04	8.18E+03	8.39E+05
South Korea	7.45E+05	1.30E+05	1.33E+04	8.88E+05
Lithuania	1.07E+05	5.21E+04	2.16E+05	3.75E+05
Luxembourg	1.48E+05	5.56E+04	1.58E+04	2.20E+05
Latvia	8.58E+04	5.76E+04	3.98E+04	1.83E+05
Malta	3.03E+04	6.46E+03	4.56E+02	3.72E+04
Mexico	4.84E+05	1.28E+06	4.79E+05	2.25E+06
Netherlands	3.25E+06	1.09E+06	4.97E+05	4.83E+06
Norway	3.62E+05	2.25E+05	2.02E+04	6.07E+05
Poland	3.34E+06	2.59E+06	5.55E+05	6.48E+06
Portugal	4.61E+05	3.17E+05	1.01E+05	8.78E+05
Romania	7.56E+05	4.61E+05	2.04E+05	1.42E+06
Russia	2.69E+06	1.00E+06	3.62E+04	3.73E+06
Sweden	3.70E+05	1.05E+05	7.71E+04	5.52E+05
Slovenia	2.50E+05	5.06E+04	6.06E+03	3.06E+05
Slovakia	7.70E+05	2.32E+05	5.81E+04	1.06E+06
Turkey	9.16E+05	2.09E+05	6.32E+04	1.19E+06
Taiwan	1.11E+06	3.64E+05	3.71E+04	1.51E+06
United States	4.31E+06	8.48E+05	3.05E+05	5.46E+06
RoW Asia and Pacific	7.79E+06	1.20E+07	1.42E+06	2.12E+07
RoW Europe	1.11E+06	4.40E+05	3.31E+05	1.88E+06
RoW Africa	1.82E+06	3.72E+06	1.07E+06	6.61E+06
RoW America	1.85E+06	9.46E+06	3.85E+06	1.52E+07
RoW Middle East	5.76E+06	9.20E+05	4.45E+05	7.12E+06
South Africa	9.75E+05	5.32E+05	3.83E+04	1.55E+06

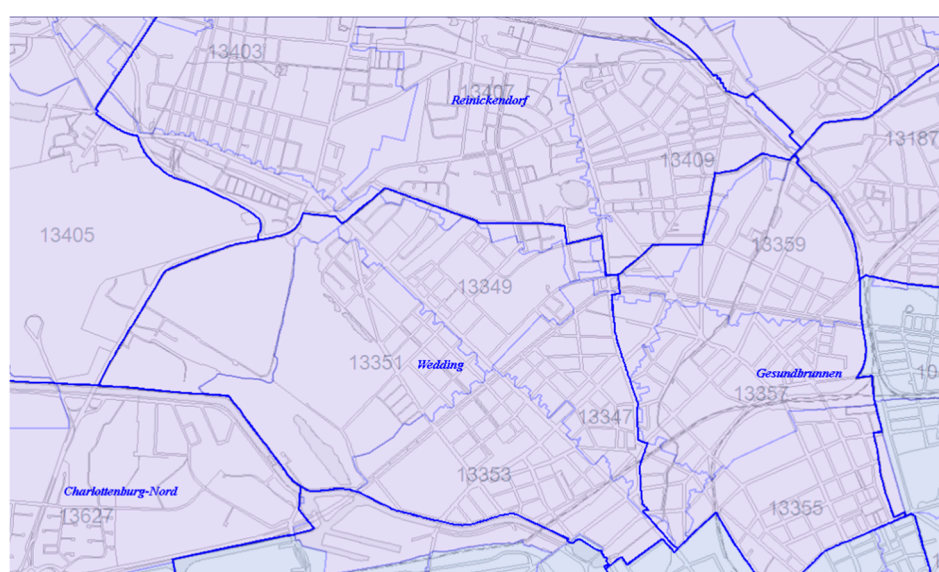


Figure S1. Map of Wedding [4]



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