

Appendix of experiments

The configurations of experiments for Fractional Factorial analysis, the Method of Morris and the Sobol Method are reported in the following three tables. The values used by CEGOIA for the actual parameters have been removed from the table as these are proprietary.

Variables, groups, assessments, skews and multipliers used for Fractional Factorial analysis

No.	Group name	CEGOIA name	Assessment	Skew	Lower multiplier	Upper multiplier
1	agefactor_infra	age_factor_1900_infrastructure	certain	symmetrical	0,85	1,15
		age_factor_1900_1945_infrastructure	certain	symmetrical	0,85	1,15
2	agefactor_insulres	age_factor_1900_insulation_residential	certain	symmetrical	0,85	1,15
3	chs_coldloss_wko	collective_heat_sources_cold_loss_factor_wko	certain	symmetrical	0,85	1,15
4	chs_cost_biomassplant	collective_heat_sources_costs_biomass_plant_none	very uncertain	positive	0,85	1,50
5	chs_cost_ccplant	collective_heat_sources_costs_combined_cycle_plant_none	very uncertain	positive	0,85	1,50
6	chs_cost_geothermal	collective_heat_sources_costs_geothermal_energy_geothermal_investment	very uncertain	positive	0,85	1,50
		collective_heat_sources_costs_geothermal_energy_mt_geothermal_investment	very uncertain	positive	0,85	1,50
7	chs_cost_geothermalMT	collective_heat_sources_costs_pvt_none	very uncertain	positive	0,85	1,50
8	chs_cost_pvt	collective_heat_sources_costs_pvt_wko_pvt_none	very uncertain	positive	0,85	1,50
		collective_heat_sources_heat_supply_pvt	very uncertain	positive	0,85	1,50
		collective_heat_sources_costs_sea_water_vvlt_none	very uncertain	positive	0,85	1,50
9	chs_cost_seawater	collective_heat_sources_costs_sea_water_vvlt_none	very uncertain	positive	0,85	1,50
10	chs_cost_surfacewater	collective_heat_sources_costs_surface_water_vlt_none	very uncertain	positive	0,85	1,50
11	chs_cost_wasteheat	collective_heat_sources_costs_waste_heat_industry_none	very uncertain	positive	0,85	1,50
12	chs_cost_wasteheatLT	collective_heat_sources_costs_waste_heat_lt_none	very uncertain	positive	0,85	1,50
13	chs_cost_wastetoplant	collective_heat_sources_costs_waste_to_energy_plant_none	very uncertain	positive	0,85	1,50
14	chs_cost_wkk	collective_heat_sources_costs_wkk_none	very uncertain	positive	0,85	1,50
15	chs_cost_wko	collective_heat_sources_costs_wko_none	very uncertain	positive	0,85	1,50
16	chs_eff_biomassplant	collective_heat_sources_efficiency_biomass_plant	certain	symmetrical	0,85	1,15
17	chs_eff_ccplant	collective_heat_sources_efficiency_combined_cycle_plant	certain	symmetrical	0,85	1,15
18	chs_eff_geothermal	collective_heat_sources_efficiency_geothermal_energy	certain	symmetrical	0,85	1,15
19	chs_eff_geothermalMT	collective_heat_sources_efficiency_geothermal_energy_mt	certain	symmetrical	0,85	1,15
20	chs_eff_heatupgrade	collective_heat_sources_efficiency_heat_upgrade	certain	symmetrical	0,85	1,15
21	chs_eff_pvt	collective_heat_sources_efficiency_pvt	certain	symmetrical	0,85	1,15
22	chs_eff_seawater	collective_heat_sources_efficiency_sea_water_vvlt	certain	symmetrical	0,85	1,15
23	chs_eff_surfacewater	collective_heat_sources_efficiency_surface_water_vlt	certain	symmetrical	0,85	1,15
24	chs_eff_wasteheat	collective_heat_sources_efficiency_waste_heat_industry	certain	symmetrical	0,85	1,15
25	chs_eff_wasteheatLT	collective_heat_sources_efficiency_waste_heat_lt	certain	symmetrical	0,85	1,15
26	chs_eff_wastetoplant	collective_heat_sources_efficiency_waste_to_energy_plant	certain	symmetrical	0,85	1,15
27	chs_eff_wkk	collective_heat_sources_efficiency_wkk	certain	symmetrical	0,85	1,15
28	chs_eff_wko	collective_heat_sources_efficiency_wko	certain	symmetrical	0,85	1,15
29	chs_eff_wwksupply	collective_heat_sources_efficiency_wkk_supply	certain	symmetrical	0,85	1,15
30	chs_effcold_wko	collective_heat_sources_efficiency_coldnet_wko	certain	symmetrical	0,85	1,15
31	chs_heatloss_biomassplant	collective_heat_sources_heat_loss_factor_biomass_plant	certain	symmetrical	0,85	1,15
32	chs_heatloss_ccplant	collective_heat_sources_heat_loss_factor_combined_cycle_plant	certain	symmetrical	0,85	1,15
33	chs_heatloss_geothermal	collective_heat_sources_heat_loss_factor_geothermal_energy	certain	symmetrical	0,85	1,15
34	chs_heatloss_geothermalMT	collective_heat_sources_heat_loss_factor_geothermal_energy_mt	certain	symmetrical	0,85	1,15
35	chs_heatloss_pvt	collective_heat_sources_heat_loss_factor_pvt	certain	symmetrical	0,85	1,15
36	chs_heatloss_seawater	collective_heat_sources_heat_loss_factor_sea_water_vvlt	certain	symmetrical	0,85	1,15
37	chs_heatloss_surfacewater	collective_heat_sources_heat_loss_factor_surface_water_vlt	certain	symmetrical	0,85	1,15
38	chs_heatloss_wasteheat	collective_heat_sources_heat_loss_factor_waste_heat_industry	certain	symmetrical	0,85	1,15
39	chs_heatloss_wasteheatLT	collective_heat_sources_heat_loss_factor_waste_heat_lt	certain	symmetrical	0,85	1,15
40	chs_heatloss_wastetoplant	collective_heat_sources_heat_loss_factor_waste_to_energy_plant	certain	symmetrical	0,85	1,15
41	chs_heatloss_wkk	collective_heat_sources_heat_loss_factor_wkk	certain	symmetrical	0,85	1,15
42	chs_heatloss_wko	collective_heat_sources_heat_loss_factor_wko	certain	symmetrical	0,85	1,15
43	chs_maint_biomassplant	collective_heat_sources_maintenance_biomass_plant	uncertain	symmetrical	0,75	1,25
44	chs_maint_ccplant	collective_heat_sources_maintenance_combined_cycle_plant	uncertain	symmetrical	0,75	1,25
45	chs_maint_geothermal	collective_heat_sources_maintenance_geothermal_energy	uncertain	symmetrical	0,75	1,25
46	chs_maint_geothermalMT	collective_heat_sources_maintenance_geothermal_energy_mt	uncertain	symmetrical	0,75	1,25
47	chs_maint_pvt	collective_heat_sources_maintenance_pvt	uncertain	symmetrical	0,75	1,25
48	chs_maint_seawater	collective_heat_sources_maintenance_sea_water_vvlt	uncertain	symmetrical	0,75	1,25
49	chs_maint_surfacewater	collective_heat_sources_maintenance_surface_water_vlt	uncertain	symmetrical	0,75	1,25
50	chs_maint_wasteheat	collective_heat_sources_maintenance_waste_heat_industry	uncertain	symmetrical	0,75	1,25
51	chs_maint_wasteheatLT	collective_heat_sources_maintenance_waste_heat_lt	uncertain	symmetrical	0,75	1,25
52	chs_maint_wastetoplant	collective_heat_sources_maintenance_waste_to_energy_plant	uncertain	symmetrical	0,75	1,25
53	chs_maint_wkk	collective_heat_sources_maintenance_wkk	uncertain	symmetrical	0,75	1,25
54	chs_maint_wko	collective_heat_sources_maintenance_wko	uncertain	symmetrical	0,75	1,25
55	chs_prodcost_biomassplant	collective_heat_sources_production_costs_biomass_plant_none	very uncertain	positive	0,85	1,50
56	chs_prodcost_ccplant	collective_heat_sources_production_costs_combined_cycle_plant_none	very uncertain	positive	0,85	1,50

57	chs_prodcost_wastetoplant	collective_heat_sources_production_costs_waste_to_energy_plant_none	very uncertain	positive	0,85	1,50
58	curve_COP_heatexchanger_2050	COP_heat_exchanger_with_heatpump_2050	very uncertain	symmetrical	0,50	1,50
59	curve_COP_heatpump_2050	COP_heatpump_2050	very uncertain	symmetrical	0,50	1,50
60	curve_fast_2050	fast_2050	certain	symmetrical	0,85	1,15
61	curve_investment_geothermal_2050	geothermal_investment_2050	very uncertain	symmetrical	0,50	1,50
62	curve_price_electricity_2050	electricity_price_2050	very uncertain	positive	0,85	1,50
63	curve_price_gas_2050	gas_price_2050	very uncertain	positive	0,85	1,50
64	curve_price_greenegas_2050	green_gas_price_2050	very uncertain	positive	0,85	1,50
65	curve_price_naturalgas_2050	natural_gas_price_2050	very uncertain	positive	0,85	1,50
66	curve_slow_2050	slow_2050	certain	symmetrical	0,85	1,15
67	demand_residential_cooling	energy_demand_residential_space_cooling_3	very uncertain	symmetrical	0,50	1,50
		energy_demand_residential_space_cooling_2	very uncertain	symmetrical	0,50	1,50
		energy_demand_residential_space_cooling_1	very uncertain	symmetrical	0,50	1,50
		energy_demand_residential_space_cooling_0	very uncertain	symmetrical	0,50	1,50
68	demand_residential_heat_stacked_19001945	heat_demand_residential_stacked_1900_1945	very uncertain	symmetrical	0,50	1,50
69	demand_residential_heat_stacked_19461991	heat_demand_residential_stacked_1946_1991	very uncertain	symmetrical	0,50	1,50
70	demand_residential_heat_stacked_19922005	heat_demand_residential_stacked_1992_2005	very uncertain	symmetrical	0,50	1,50
71	demand_residential_heat_stacked_2006after	heat_demand_residential_stacked_after_2005	very uncertain	symmetrical	0,50	1,50
72	demand_residential_heat_stacked_prior1900	heat_demand_residential_stacked_before_1900	very uncertain	symmetrical	0,50	1,50
73	demand_residential_heat_unstacked_19001945	heat_demand_residential_detached_1900_1945	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_semi_detached_1900_1945	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_end_of_terrace_1900_1945	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_mid_terrace_1900_1945	very uncertain	symmetrical	0,50	1,50
74	demand_residential_heat_unstacked_19461991	heat_demand_residential_detached_1946_1991	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_semi_detached_1946_1991	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_end_of_terrace_1946_1991	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_mid_terrace_1946_1991	very uncertain	symmetrical	0,50	1,50
75	demand_residential_heat_unstacked_19922005	heat_demand_residential_detached_1992_2005	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_semi_detached_1992_2005	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_end_of_terrace_1992_2005	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_mid_terrace_1992_2005	very uncertain	symmetrical	0,50	1,50
76	demand_residential_heat_unstacked_2006after	heat_demand_residential_detached_after_2005	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_semi_detached_after_2005	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_end_of_terrace_after_2005	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_mid_terrace_after_2005	very uncertain	symmetrical	0,50	1,50
77	demand_residential_heat_unstacked_prior1900	heat_demand_residential_detached_before_1900	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_semi_detached_before_1900	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_end_of_terrace_before_1900	very uncertain	symmetrical	0,50	1,50
		heat_demand_residential_mid_terrace_before_1900	very uncertain	symmetrical	0,50	1,50
78	demand_residential_tapwater	energy_demand_residential_hot_tap_water	uncertain	symmetrical	0,75	1,25
79	demand_residential_ventilation	energy_demand_residential_ventilation_3	uncertain	symmetrical	0,75	1,25
		energy_demand_residential_ventilation_2	uncertain	symmetrical	0,75	1,25
80	demand_utility_appliances	energy_demand_utility_electrical_appliances_meeting	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_electrical_appliances_healthcare	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_electrical_appliances_offices	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_electrical_appliances_lodging	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_electrical_appliances_education	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_electrical_appliances_sports	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_electrical_appliances_retail	uncertain	symmetrical	0,75	1,25
81	demand_utility_cooling	energy_demand_utility_space_cooling_meeting	very uncertain	symmetrical	0,50	1,50
		energy_demand_utility_space_cooling_healthcare	very uncertain	symmetrical	0,50	1,50
		energy_demand_utility_space_cooling_offices	very uncertain	symmetrical	0,50	1,50
		energy_demand_utility_space_cooling_lodging	very uncertain	symmetrical	0,50	1,50
		energy_demand_utility_space_cooling_education	very uncertain	symmetrical	0,50	1,50
		energy_demand_utility_space_cooling_sports	very uncertain	symmetrical	0,50	1,50
		energy_demand_utility_space_cooling_retail	very uncertain	symmetrical	0,50	1,50
82	demand_utility_heat_19201974_lv0	space_heating_utility_offices_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_1920_1974_0_space_heating	uncertain	symmetrical	0,75	1,25
83	demand_utility_heat_19201974_lv1	space_heating_utility_offices_1920_1974_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_1920_1974_1_space_heating	uncertain	symmetrical	0,75	1,25

		space_heating_utility_lodging_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
94	demand_utility_heat_prior1_920_lv0	space_heating_utility_offices_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_before_1920_0_space_heating	uncertain	symmetrical	0,75	1,25
95	demand_utility_heat_prior1_920_lv1	space_heating_utility_offices_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_before_1920_1_space_heating	uncertain	symmetrical	0,75	1,25
96	demand_utility_heat_prior1_920_lv2	space_heating_utility_offices_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
97	demand_utility_tapwater	energy_demand_utility_hot_tap_water_meeting	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_hot_tap_water_healthcare	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_hot_tap_water_offices	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_hot_tap_water_lodging	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_hot_tap_water_education	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_hot_tap_water_sports	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_hot_tap_water_retail	uncertain	symmetrical	0,75	1,25
98	demand_utility_ventilation	energy_demand_utility_ventilation_meeting	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_ventilation_healthcare	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_ventilation_offices	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_ventilation_lodging	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_ventilation_education	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_ventilation_sports	uncertain	symmetrical	0,75	1,25
		energy_demand_utility_ventilation_retail	uncertain	symmetrical	0,75	1,25
99	depreciate_buildinginstall	depreciation_period_building_installations	very uncertain	positive	0,85	1,50
100	depreciate_buildingmod	depreciation_period_building_modification	very uncertain	positive	0,85	1,50
101	depreciate_collectiveinstall	depreciation_period_collective_installations	very uncertain	positive	0,85	1,50
102	depreciate_infra_electricity	depreciation_period_infrastructure_electricity	very uncertain	positive	0,85	1,50
103	depreciate_infra_gas	depreciation_period_infrastructure_gas	very uncertain	positive	0,85	1,50
104	depreciate_infra_hydrogen	depreciation_period_infrastructure_hydrogen	very uncertain	positive	0,85	1,50
105	depreciate_infra_waterHT	depreciation_period_infrastructure_water_ht	very uncertain	positive	0,85	1,50
106	depreciate_infra_waterLT	depreciation_period_infrastructure_water_lt	very uncertain	positive	0,85	1,50
107	depreciate_infra_waterMT	depreciation_period_infrastructure_water_mt	very uncertain	positive	0,85	1,50
108	depreciate_infra_waterVLT	depreciation_period_infrastructure_water_vlt	very uncertain	positive	0,85	1,50
109	depreciate_infra_waterWKO	depreciation_period_infrastructure_water_wko	very uncertain	positive	0,85	1,50
110	discount_infra_electricity	discount_rate_infrastructure_electricity	uncertain	symmetrical	0,75	1,25
111	discount_infra_gas	discount_rate_infrastructure_gas	uncertain	symmetrical	0,75	1,25
112	discount_infra_hydrogen	discount_rate_infrastructure_hydrogen	uncertain	symmetrical	0,75	1,25
113	discount_infra_waterHT	discount_rate_infrastructure_water_ht	uncertain	symmetrical	0,75	1,25
114	discount_infra_waterLT	discount_rate_infrastructure_water_lt	uncertain	symmetrical	0,75	1,25
115	discount_infra_waterMT	discount_rate_infrastructure_water_mt	uncertain	symmetrical	0,75	1,25
116	discount_infra_waterVLT	discount_rate_infrastructure_water_vlt	uncertain	symmetrical	0,75	1,25
117	discount_infra_waterWKO	discount_rate_infrastructure_water_wko	uncertain	symmetrical	0,75	1,25
118	discount_residential	discount_rate_residential	uncertain	symmetrical	0,75	1,25
119	discount_residentialcorp	discount_rate_residential_corporation	uncertain	symmetrical	0,75	1,25
120	discount_utility	discount_rate_utility	uncertain	symmetrical	0,75	1,25
121	distribsystem_cost_radiador HT	distribution_system_costs_ht_radiador_none	very uncertain	symmetrical	0,50	1,50
122	distribsystem_cost_radiador LT	distribution_system_costs_lt_radiador_none	very uncertain	symmetrical	0,50	1,50
123	dwelling_equivalent	general_dwelling_equivalent	very uncertain	negative	0,50	1,15
124	heatnet_capacity_peak	heat_net_peak_capacity	uncertain	symmetrical	0,75	1,25
125	heatnet_capacity_peakprovision	heat_net_heat_net_capacity_peak_provision	uncertain	symmetrical	0,75	1,25
126	heatnet_capacityloss_peak	heat_net_peak_capacity_loss	uncertain	symmetrical	0,75	1,25
127	heatnet_connection_stackable	heat_net_connection_unstacked	very uncertain	symmetrical	0,50	1,50
128	heatnet_connection_stackable_blockavailable	heat_net_connection_stacked_block_heating_available	very uncertain	symmetrical	0,50	1,50
129	heatnet_connection_unstacked	heat_net_connection_stacked	very uncertain	symmetrical	0,50	1,50
130	heatnet_connection_utility	heat_net_connection_utility	very uncertain	symmetrical	0,50	1,50

131	heatnet_discount	heat_net_discount	uncertain	symmetrical	0,75	1,25
132	heatnet_efficiency_cofiring	heat_net_co_firing_efficiency	uncertain	symmetrical	0,75	1,25
133	heatnet_investment	heat_net_substation_investment	uncertain	symmetrical	0,75	1,25
		heat_net_heat_transfer_station_investment	uncertain	symmetrical	0,75	1,25
		heat_net_heat_transfer_station_investment_without_peakinstallati on	uncertain	symmetrical	0,75	1,25
134	heatnet_investment_collective_heatpump	heat_net_collective_heat_pump_investment	very uncertain	symmetrical	0,50	1,50
135	heatnet_maintenance	heat_net_substation_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_transport_pipe_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_main_pipe_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_side_pipe_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_heat_transfer_station_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_connection_maintenance	uncertain	symmetrical	0,75	1,25
136	heatnet_maintenance_collective_heatpump	heat_net_collective_heat_pump_maintenance	uncertain	symmetrical	0,75	1,25
137	heatnet_overcapacity	heat_net_overcapacity	uncertain	symmetrical	0,75	1,25
138	heatnet_peakfactor_geothermal_residential	heat_net_peak_gas_factor_geothermal_3	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_0	uncertain	symmetrical	0,75	1,25
139	heatnet_peakfactor_geothermal_utility	heat_net_peak_gas_factor_geothermal_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_0	uncertain	symmetrical	0,75	1,25
140	heatnet_peakfactor_residential	heat_net_peak_gas_factor_3	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_0	uncertain	symmetrical	0,75	1,25
141	heatnet_peakfactor_utility	heat_net_peak_gas_factor_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_0	uncertain	symmetrical	0,75	1,25
142	heatnet_simultaneity	heat_net_simultaneity	uncertain	symmetrical	0,75	1,25
143	infra_electricity_capex	infrastructure_electricity_costs_per_meter_capex	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_costs_per_object_capex	very uncertain	symmetrical	0,50	1,50
144	infra_electricity_opex	infrastructure_electricity_costs_per_meter_opex	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_costs_per_object_opex	very uncertain	symmetrical	0,50	1,50
145	infra_electricity_utility	infrastructure_electricity_meeting	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_healthcare	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_offices	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_lodging	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_education	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_sports	very uncertain	symmetrical	0,50	1,50
		infrastructure_electricity_retail	very uncertain	symmetrical	0,50	1,50
146	infra_gas_capex	infrastructure_gas_costs_per_meter_capex	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_costs_per_object_capex	very uncertain	symmetrical	0,50	1,50
147	infra_gas_capex_removal	infrastructure_gas_removal_costs_per_meter_capex	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_removal_costs_per_object_capex	very uncertain	symmetrical	0,50	1,50
148	infra_gas_opex	infrastructure_gas_costs_per_meter_opex	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_costs_per_object_opex	very uncertain	symmetrical	0,50	1,50
149	infra_gas_utility	infrastructure_gas_meeting	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_healthcare	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_offices	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_lodging	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_education	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_sports	very uncertain	symmetrical	0,50	1,50
		infrastructure_gas_retail	very uncertain	symmetrical	0,50	1,50
150	infra_hydrogen_capex	infrastructure_hydrogen_costs_per_meter_capex	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_costs_per_object_capex	very uncertain	symmetrical	0,50	1,50
151	infra_hydrogen_opex	infrastructure_hydrogen_costs_per_meter_opex	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_costs_per_object_opex	very uncertain	symmetrical	0,50	1,50
152	infra_hydrogen_utility	infrastructure_hydrogen_meeting	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_healthcare	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_offices	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_lodging	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_education	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_sports	very uncertain	symmetrical	0,50	1,50
		infrastructure_hydrogen_retail	very uncertain	symmetrical	0,50	1,50
153	infra_investment_collective_heatpump	infrastructure_water_mt_collective_heat_pump_investment	very uncertain	symmetrical	0,50	1,50
		infrastructure_water_lt_collective_heat_pump_investment	very uncertain	symmetrical	0,50	1,50
154	infra_maintenance_collective_heatpump	infrastructure_water_mt_collective_heat_pump_maintenance	uncertain	symmetrical	0,75	1,25
		infrastructure_water_lt_collective_heat_pump_maintenance	uncertain	symmetrical	0,75	1,25
		infrastructure_water_wko_collective_heat_pump_maintenance	uncertain	symmetrical	0,75	1,25
155	infra_substationpower	infrastructure_water_ht_substation_power	certain	symmetrical	0,85	1,15
		infrastructure_water_mt_substation_power	certain	symmetrical	0,85	1,15
		infrastructure_water_lt_substation_power	certain	symmetrical	0,85	1,15

		primary_system_fraction_hybrid_hydrogen_ventilation_heatpump_space_heating_2_hydrogen	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_hydrogen_ventilation_heatpump_space_heating_1_hydrogen	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_hydrogen_ventilation_heatpump_space_heating_1_hydrogen	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_hydrogen_ventilation_heatpump_space_heating_0_hydrogen	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_hydrogen_ventilation_heatpump_hot_tap_water_hydrogen	certain	symmetrical	0,85	1,15
238	primary_hydrogenventilationHP_maintenance	primary_system_maintenance_hybrid_hydrogen_ventilation_heatpump	very uncertain	symmetrical	0,50	1,50
239	primary_pelletboiler_cost	primary_system_costs_pellet_boiler_none	very uncertain	symmetrical	0,50	1,50
240	primary_pelletboiler_efficiency	primary_system_efficiency_pellet_boiler_space_heating_biomass_none	very uncertain	symmetrical	0,50	1,50
		primary_system_efficiency_pellet_boiler_hot_tap_water_biomass_none	very uncertain	symmetrical	0,50	1,50
		primary_system_efficiency_pellet_boiler_space_heating_electricity_none	certain	symmetrical	0,85	1,15
241	primary_pelletboiler_maintenance	primary_system_maintenance_pellet_boiler	very uncertain	symmetrical	0,50	1,50
242	primary_waterHP_cost	primary_system_costs_heatpump_water_water_none	very uncertain	symmetrical	0,50	1,50
243	primary_waterHP_efficiency	primary_system_efficiency_heatpump_water_water_space_heating_3_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_heating_1_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_cooling_electricity_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
244	primary_waterHP_maintenance	primary_system_maintenance_heatpump_water_water	very uncertain	symmetrical	0,50	1,50
245	reinforcement_cost_residential	grid_reinforcement_costs_residential	very uncertain	symmetrical	0,50	1,50
246	secondary_airco_cost	secondary_system_costs_split_system_air_conditioner_none	very uncertain	symmetrical	0,50	1,50
247	secondary_airco_efficiency	secondary_system_efficiency_split_system_air_conditioner_space_cooling_electricity_none	certain	symmetrical	0,85	1,15
248	secondary_airco_fraction	secondary_system_fraction_split_system_air_conditioner_space_cooling_electricity	certain	symmetrical	0,85	1,15
249	secondary_airco_maintenance	secondary_system_maintenance_split_system_air_conditioner	very uncertain	symmetrical	0,50	1,50
250	secondary_mechanical_cost	secondary_system_costs_mechanical_ventilation_none	very uncertain	symmetrical	0,50	1,50
251	secondary_mechanical_efficiency	secondary_system_efficiency_mechanical_ventilation_ventilation_electricity_none	certain	symmetrical	0,85	1,15
252	secondary_mechanical_fraction	secondary_system_fraction_mechanical_ventilation_ventilation_electricity	certain	symmetrical	0,85	1,15
253	secondary_mechanical_maintenance	secondary_system_maintenance_mechanical_ventilation	very uncertain	symmetrical	0,50	1,50
254	secondary_shower_cost	secondary_system_costs_heat_recovery_shower_none	very uncertain	symmetrical	0,50	1,50
255	secondary_shower_reductionfactor	secondary_system_reduction_factor_heat_recovery_shower_hot_tap_water	certain	symmetrical	0,85	1,15
256	secondary_solarboiler_cost	secondary_system_costs_solar_boiler_none	very uncertain	symmetrical	0,50	1,50
257	secondary_solarboiler_maintenance	secondary_system_maintenance_solar_boiler	very uncertain	symmetrical	0,50	1,50
258	secondary_solarboiler_reductionfactor	secondary_system_reduction_factor_solar_boiler_hot_tap_water	certain	symmetrical	0,85	1,15
259	secondary_solarpanel_cost	secondary_system_costs_solar_panel_none	very uncertain	symmetrical	0,50	1,50
260	secondary_solarpanel_maintenance	secondary_system_maintenance_solar_panel	very uncertain	symmetrical	0,50	1,50
261	secondary_solarpanel_reductionfactor	secondary_system_reduction_factor_solar_panel_electricity	certain	symmetrical	0,85	1,15
262	secondary_waterheater_cost	secondary_system_costs_electric_water_heater_none	very uncertain	symmetrical	0,50	1,50
263	secondary_waterheater_efficiency	secondary_system_efficiency_electric_water_heater_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
264	secondary_waterheater_fraction	secondary_system_fraction_electric_water_heater_hot_tap_water_electricity	certain	symmetrical	0,85	1,15
265	secondary_waterheater_maintenance	secondary_system_maintenance_electric_water_heater	very uncertain	symmetrical	0,50	1,50

Variables, groups, assessments, skews and multipliers used for the Method of Morris

No.	Group name	CEGOIA name	Assessment	Skew	Lower multiplier	Upper multiplier
1	agefactor_infra	age_factor_1900_infrastructure	certain	symmetrical	0,85	1,15
		age_factor_1900_1945_infrastructure	certain	symmetrical	0,85	1,15
2	agefactor_insulres	age_factor_1900_insulation_residential	certain	symmetrical	0,85	1,15
3	chs_cost_geothermal	collective_heat_sources_costs_geothermal_energy_geothermal_investment	very uncertain	positive	0,85	1,50
		collective_heat_sources_costs_geothermal_energy_mt_geothermal_investment	very uncertain	positive	0,85	1,50
4	chs_cost_wasteheat	collective_heat_sources_costs_waste_heat_industry_none	very uncertain	positive	0,85	1,50
5	chs_cost_wastetoplant	collective_heat_sources_costs_waste_to_energy_plant_none	very uncertain	positive	0,85	1,50
6	chs_eff_geothermal	collective_heat_sources_efficiency_geothermal_energy	certain	symmetrical	0,85	1,15
		collective_heat_sources_efficiency_geothermal_energy_mt	certain	symmetrical	0,85	1,15
7	chs_eff_waste	collective_heat_sources_efficiency_waste_heat_industry	certain	symmetrical	0,85	1,15
8	chs_eff_wasteheat	collective_heat_sources_efficiency_waste_to_energy_plant	certain	symmetrical	0,85	1,15
9	chs_heatloss_geothermal	collective_heat_sources_heat_loss_factor_geothermal_energy	certain	symmetrical	0,85	1,15
		collective_heat_sources_heat_loss_factor_geothermal_energy_mt	certain	symmetrical	0,85	1,15
10	chs_heatloss_waste	collective_heat_sources_heat_loss_factor_waste_heat_industry	certain	symmetrical	0,85	1,15
		collective_heat_sources_heat_loss_factor_waste_to_energy_plant	certain	symmetrical	0,85	1,15
11	chs_maint_geothermal	collective_heat_sources_maintenance_geothermal_energy	uncertain	symmetrical	0,75	1,25
		collective_heat_sources_maintenance_geothermal_energy_mt	uncertain	symmetrical	0,75	1,25
12	chs_maint_wasteheat	collective_heat_sources_maintenance_waste_to_energy_plant	uncertain	symmetrical	0,75	1,25
		collective_heat_sources_maintenance_waste_heat_industry	uncertain	symmetrical	0,75	1,25
13	chs_prodcost	collective_heat_sources_production_costs_waste_to_energy_plant_none	very uncertain	positive	0,85	1,50
		collective_heat_sources_production_costs_biomass_plant_none	very uncertain	positive	0,85	1,50
		collective_heat_sources_production_costs_combined_cycle_plant_none	very uncertain	positive	0,85	1,50
		costs_biomass	costs_biomass_none	very uncertain	positive	0,85
14	curve_COP_heatexchanger_2050	COP_heat_exchanger_with_heatpump_2050	very uncertain	symmetrical	0,5	1,5
15	curve_COP_heatpump_2050	COP_heatpump_2050	very uncertain	symmetrical	0,5	1,5
16	curve_price_electricity_2050	electricity_price_2050	very uncertain	positive	0,85	1,5
17	curve_price_gas_2050	natural_gas_price_2050	very uncertain	positive	0,85	1,5
		green_gas_price_2050	very uncertain	positive	0,85	1,5
		gas_price_2050	very uncertain	positive	0,85	1,5
		energy_demand_residential_cooling	energy_demand_residential_space_cooling_3	very uncertain	symmetrical	0,500
		energy_demand_residential_space_cooling_2	very uncertain	symmetrical	0,500	1,500
		energy_demand_residential_space_cooling_1	very uncertain	symmetrical	0,500	1,500
		energy_demand_residential_space_cooling_0	very uncertain	symmetrical	0,500	1,500
20	demand_residential_heat_stacked	heat_demand_residential_stacked_before_1900	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_stacked_1900_1945	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_stacked_1946_1991	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_stacked_1992_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_stacked_after_2005	very uncertain	symmetrical	0,5	1,5
21	demand_residential_heat_unstacked	heat_demand_residential_detached_before_1900	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_semi_detached_before_1900	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_end_of_terrace_before_1900	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_mid_terrace_before_1900	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_detached_1900_1945	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_semi_detached_1900_1945	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_end_of_terrace_1900_1945	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_mid_terrace_1900_1945	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_detached_1946_1991	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_semi_detached_1946_1991	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_end_of_terrace_1946_1991	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_mid_terrace_1946_1991	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_detached_1992_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_semi_detached_1992_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_end_of_terrace_1992_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_mid_terrace_1992_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_detached_after_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_semi_detached_after_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_end_of_terrace_after_2005	very uncertain	symmetrical	0,5	1,5
		heat_demand_residential_mid_terrace_after_2005	very uncertain	symmetrical	0,5	1,5
22	demand_residential_tapwater	energy_demand_residential_hot_tap_water	uncertain	symmetrical	0,750	1,250
23	demand_residential_ventilation	energy_demand_residential_ventilation_3	uncertain	symmetrical	0,750	1,250
		energy_demand_residential_ventilation_2	uncertain	symmetrical	0,750	1,250
24	demand_utility_appliances	energy_demand_utility_electrical_appliances_meeting	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_electrical_appliances_healthcare	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_electrical_appliances_offices	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_electrical_appliances_lodging	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_electrical_appliances_education	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_electrical_appliances_sports	uncertain	symmetrical	0,750	1,250

		space_heating_utility_retail_1920_1974_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_1975_1989_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_1990_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_retail_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_1920_1974_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_1975_1989_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_1990_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_healthcare_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_1920_1974_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_1975_1989_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_1990_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_lodging_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_1920_1974_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_1975_1989_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_1990_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_education_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_1920_1974_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_1975_1989_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_1990_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_meeting_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_before_1920_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_1920_1974_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_1975_1989_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_1990_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
		space_heating_utility_sports_after_1994_2_space_heating	uncertain	symmetrical	0,75	1,25
29	demand_utility_tapwater	energy_demand_utility_hot_tap_water_meeting	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_hot_tap_water_healthcare	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_hot_tap_water_offices	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_hot_tap_water_lodging	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_hot_tap_water_education	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_hot_tap_water_sports	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_hot_tap_water_retail	uncertain	symmetrical	0,750	1,250
30	demand_utility_ventilation	energy_demand_utility_ventilation_meeting	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_ventilation_healthcare	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_ventilation_offices	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_ventilation_lodging	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_ventilation_education	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_ventilation_sports	uncertain	symmetrical	0,750	1,250
		energy_demand_utility_ventilation_retail	uncertain	symmetrical	0,750	1,250
31	depreciate_buildinginstall	depreciation_period_building_installations	very uncertain	positive	0,85	1,50
32	depreciate_buildingmod	depreciation_period_building_modification	very uncertain	positive	0,85	1,50
33	depreciate_collectiveinstall	depreciation_period_collective_installations	very uncertain	positive	0,85	1,50
34	depreciate_infra_electricity	depreciation_period_infrastructure_electricity	very uncertain	positive	0,85	1,50
35	depreciate_infra_gas	depreciation_period_infrastructure_gas	very uncertain	positive	0,85	1,50
36	depreciate_infra_waterHT	depreciation_period_infrastructure_water_ht	very uncertain	positive	0,85	1,50
37	depreciate_infra_waterLT	depreciation_period_infrastructure_water_lt	very uncertain	positive	0,85	1,50
38	depreciate_infra_waterMT	depreciation_period_infrastructure_water_mt	very uncertain	positive	0,85	1,50
39	discount_infra_electricity	discount_rate_infrastructure_electricity	uncertain	symmetrical	0,75	1,25
40	discount_infra_gas	discount_rate_infrastructure_gas	uncertain	symmetrical	0,75	1,25
41	discount_infra_waterHT	discount_rate_infrastructure_water_ht	uncertain	symmetrical	0,75	1,25
42	discount_infra_waterLT	discount_rate_infrastructure_water_lt	uncertain	symmetrical	0,75	1,25
43	discount_infra_waterMT	discount_rate_infrastructure_water_mt	uncertain	symmetrical	0,75	1,25
44	discount_residential	discount_rate_residential	uncertain	symmetrical	0,75	1,25
45	discount_utility	discount_rate_utility	uncertain	symmetrical	0,75	1,25
46	distribsystem_cost_radiatorHT	distribution_system_costs_ht_radiator_none	very uncertain	symmetrical	0,50	1,50
47	distribsystem_cost_radiatorLT	distribution_system_costs_lt_radiator_none	very uncertain	symmetrical	0,50	1,50
48	heatnet_capacity_peak	heat_net_peak_capacity	uncertain	symmetrical	0,75	1,25
49	heatnet_capacity_peakprovision	heat_net_heat_net_capacity_peak_provision	uncertain	symmetrical	0,75	1,25
50	heatnet_capacityloss_peak	heat_net_peak_capacity_loss	uncertain	symmetrical	0,75	1,25
51	heatnet_connection_stacked	heat_net_connection_unstacked	very uncertain	symmetrical	0,5	1,5
52	heatnet_connection_stacked_blockavailable	heat_net_connection_stacked_block_heating_available	very uncertain	symmetrical	0,5	1,5
53	heatnet_connection_unstacked	heat_net_connection_stacked	very uncertain	symmetrical	0,5	1,5
54	heatnet_connection_utility	heat_net_connection_utility	very uncertain	symmetrical	0,5	1,5
55	heatnet_discount	heat_net_discount	uncertain	symmetrical	0,75	1,25
56	heatnet_efficiency_cofiring	heat_net_co_firing_efficiency	uncertain	symmetrical	0,75	1,25
57	heatnet_investment	heat_net_substation_investment	uncertain	symmetrical	0,75	1,25
		heat_net_heat_transfer_station_investment	uncertain	symmetrical	0,75	1,25
		heat_net_heat_transfer_station_investment_without_peakinstallation	uncertain	symmetrical	0,75	1,25
58	heatnet_investment_collective_heatpump	heat_net_collective_heat_pump_investment	very uncertain	symmetrical	0,5	1,5

59	heatnet_maintenance	heat_net_substation_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_transport_pipe_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_main_pipe_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_side_pipe_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_heat_transfer_station_maintenance	uncertain	symmetrical	0,75	1,25
		heat_net_connection_maintenance	uncertain	symmetrical	0,75	1,25
60	heatnet_overcapacity	heat_net_overcapacity	uncertain	symmetrical	0,75	1,25
61	heatnet_peakfactor_residential	heat_net_peak_gas_factor_3	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_0	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_3	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_0	uncertain	symmetrical	0,75	1,25
62	heatnet_peakfactor_utility	heat_net_peak_gas_factor_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_0	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_2	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_1	uncertain	symmetrical	0,75	1,25
		heat_net_peak_gas_factor_geothermal_0	uncertain	symmetrical	0,75	1,25
63	heatnet_simultaneity	heat_net_simultaneity	uncertain	symmetrical	0,75	1,25
64	infra_electricity_capex	infrastructure_electricity_costs_per_meter_capex	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_costs_per_object_capex	very uncertain	symmetrical	0,5	1,5
65	infra_electricity_opex	infrastructure_electricity_costs_per_meter_opex	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_costs_per_object_opex	very uncertain	symmetrical	0,5	1,5
66	infra_electricity_utility	infrastructure_electricity_meeting	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_healthcare	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_offices	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_lodging	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_education	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_sports	very uncertain	symmetrical	0,5	1,5
		infrastructure_electricity_retail	very uncertain	symmetrical	0,5	1,5
67	infra_gas_capex	infrastructure_gas_costs_per_meter_capex	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_costs_per_object_capex	very uncertain	symmetrical	0,5	1,5
68	infra_gas_capex_removal	infrastructure_gas_removal_costs_per_meter_capex	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_removal_costs_per_object_capex	very uncertain	symmetrical	0,5	1,5
69	infra_gas_opex	infrastructure_gas_costs_per_meter_opex	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_costs_per_object_opex	very uncertain	symmetrical	0,5	1,5
70	infra_gas_utility	infrastructure_gas_meeting	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_healthcare	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_offices	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_lodging	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_education	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_sports	very uncertain	symmetrical	0,5	1,5
		infrastructure_gas_retail	very uncertain	symmetrical	0,5	1,5
71	infra_investment_collective_heatpump	infrastructure_water_mt_collective_heat_pump_investment	very uncertain	symmetrical	0,5	1,5
		infrastructure_water_lt_collective_heat_pump_investment	very uncertain	symmetrical	0,5	1,5
72	infra_maintenance_collective_heatpump	infrastructure_water_mt_collective_heat_pump_maintenance	uncertain	symmetrical	0,75	1,25
		infrastructure_water_lt_collective_heat_pump_maintenance	uncertain	symmetrical	0,75	1,25
73	infra_substationpower	infrastructure_water_ht_substation_power	certain	symmetrical	0,85	1,15
		infrastructure_water_mt_substation_power	certain	symmetrical	0,85	1,15
		infrastructure_water_lt_substation_power	certain	symmetrical	0,85	1,15
		infrastructure_water_vlt_substation_power	certain	symmetrical	0,85	1,15
		infrastructure_water_wko_substation_power	certain	symmetrical	0,85	1,15
74	insulation_cost_stacked_lv1	costs_insulation_1_stacked_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_stacked_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_stacked_1946_1991	very uncertain	symmetrical	0,5	1,5
75	insulation_cost_stacked_lv2	costs_insulation_2_stacked_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_stacked_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_stacked_1946_1991	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_stacked_1992_2005	very uncertain	symmetrical	0,5	1,5
76	insulation_cost_stacked_lv3	costs_insulation_3_stacked_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_3_stacked_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_3_stacked_1946_1991	very uncertain	symmetrical	0,5	1,5
		costs_insulation_3_stacked_1992_2005	very uncertain	symmetrical	0,5	1,5
		costs_insulation_3_stacked_after_2005	very uncertain	symmetrical	0,5	1,5
77	insulation_cost_unstacked_lv1	costs_insulation_1_detached_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_semi_detached_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_end_of_terrace_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_mid_terrace_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_detached_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_semi_detached_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_end_of_terrace_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_mid_terrace_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_detached_1946_1991	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_semi_detached_1946_1991	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_end_of_terrace_1946_1991	very uncertain	symmetrical	0,5	1,5
		costs_insulation_1_mid_terrace_1946_1991	very uncertain	symmetrical	0,5	1,5
78	insulation_cost_unstacked_lv2	costs_insulation_2_detached_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_semi_detached_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_end_of_terrace_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_mid_terrace_before_1900	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_detached_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_semi_detached_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_end_of_terrace_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_mid_terrace_1900_1945	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_detached_1946_1991	very uncertain	symmetrical	0,5	1,5
		costs_insulation_2_semi_detached_1946_1991	very uncertain	symmetrical	0,5	1,5

		insulation_costs_utility_sports_1975_1989_2	very uncertain	symmetrical	0,5	1,5
		insulation_costs_utility_sports_1990_1994_2	very uncertain	symmetrical	0,5	1,5
		insulation_costs_utility_sports_after_1994_2	very uncertain	symmetrical	0,5	1,5
82	load_residential_stacked	load_stacked_dwellings	uncertain	symmetrical	0,75	1,25
83	load_residential_unstacked	load_unstacked_dwellings	uncertain	symmetrical	0,75	1,25
84	load_utility	load_utility	uncertain	symmetrical	0,75	1,25
85	primary_airwaterHP_cost	primary_system_costs_heatpump_air_water_none	very uncertain	symmetrical	0,5	1,5
86	primary_airwaterHP_efficiency	primary_system_efficiency_heatpump_air_water_space_heating_3_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_air_water_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_air_water_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_air_water_space_heating_1_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_air_water_space_cooling_electricity_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_air_water_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
87	primary_airwaterHP_maintenance	primary_system_maintenance_heatpump_air_water	very uncertain	symmetrical	0,5	1,5
88	primary_condensationboiler_cost	primary_system_costs_condensation_boiler_none	very uncertain	symmetrical	0,5	1,5
89	primary_condensationboiler_efficiency	primary_system_efficiency_condensation_boiler_space_heating_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_condensation_boiler_hot_tap_water_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_condensation_boiler_space_heating_electricity_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_condensation_boiler_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
90	primary_condensationboiler_maintenance	primary_system_maintenance_condensation_boiler	very uncertain	symmetrical	0,5	1,5
91	primary_exchangerHT_cost	primary_system_costs_heat_exchanger_ht_none	very uncertain	symmetrical	0,5	1,5
92	primary_exchangerHT_efficiency	primary_system_efficiency_heat_exchanger_ht_space_heating_water_heatnet_ht_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_ht_hot_tap_water_water_heatnet_ht_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_ht_space_heating_electricity_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_ht_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
93	primary_exchangerHT_maintenance	primary_system_maintenance_heat_exchanger_ht	very uncertain	symmetrical	0,5	1,5
94	primary_exchangerLT_cost	primary_system_costs_heat_exchanger_lt_none	very uncertain	symmetrical	0,5	1,5
95	primary_exchangerLT_efficiency	primary_system_efficiency_heat_exchanger_lt_space_heating_water_heatnet_lt_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_lt_space_heating_electricity_none	certain	symmetrical	0,85	1,15
96	primary_exchangerLT_maintenance	primary_system_maintenance_heat_exchanger_lt	very uncertain	symmetrical	0,5	1,5
97	primary_exchangerMT_cost	primary_system_costs_heat_exchanger_mt_none	very uncertain	symmetrical	0,5	1,5
98	primary_exchangerMT_efficiency	primary_system_efficiency_heat_exchanger_mt_space_heating_water_heatnet_mt_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_mt_hot_tap_water_water_heatnet_mt_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_mt_space_heating_electricity_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heat_exchanger_mt_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
99	primary_exchangerMT_maintenance	primary_system_maintenance_heat_exchanger_mt	very uncertain	symmetrical	0,5	1,5
100	primary_hybridairHP_cost	primary_system_costs_hybrid_air_heatpump_none	very uncertain	symmetrical	0,5	1,5
101	primary_hybridairHP_efficiency	primary_system_efficiency_hybrid_air_heatpump_space_heating_3_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_3_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_2_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_2_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_1_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_1_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_1_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_1_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_0_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_0_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_0_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_space_heating_0_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_hot_tap_water_gas_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_hybrid_air_heatpump_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15

102	primary_hybridairHP_fraction	primary_system_fraction_hybrid_air_heatpump_space_heating_3_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_space_heating_2_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_space_heating_2_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_space_heating_1_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_space_heating_1_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_space_heating_0_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_space_heating_0_gas	certain	symmetrical	0,85	1,15
		primary_system_fraction_hybrid_air_heatpump_hot_tap_water_gas	certain	symmetrical	0,85	1,15
103	primary_hybridairHP_maintenance	primary_system_maintenance_hybrid_air_heatpump	very uncertain	symmetrical	0,5	1,5
104	primary_pelletboiler_cost	primary_system_costs_pellet_boiler_none	very uncertain	symmetrical	0,5	1,5
105	primary_pelletboiler_efficiency	primary_system_efficiency_pellet_boiler_space_heating_biomass_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_pellet_boiler_hot_tap_water_biomass_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_pellet_boiler_space_heating_electricity_none	certain	symmetrical	0,85	1,15
106	primary_pelletboiler_maintenance	primary_system_maintenance_pellet_boiler	very uncertain	symmetrical	0,5	1,5
107	primary_waterHP_cost	primary_system_costs_heatpump_water_water_none	very uncertain	symmetrical	0,5	1,5
108	primary_waterHP_efficiency	primary_system_efficiency_heatpump_water_water_space_heating_3_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_heating_2_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_heating_1_electricity_COP_heatpump	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_space_cooling_electricity_none	certain	symmetrical	0,85	1,15
		primary_system_efficiency_heatpump_water_water_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
109	primary_waterHP_maintenance	primary_system_maintenance_heatpump_water_water	very uncertain	symmetrical	0,5	1,5
110	reinforcement_cost_residential	grid_reinforcement_costs_residential	very uncertain	symmetrical	0,5	1,5
111	secondary_airco_cost	secondary_system_costs_split_system_air_conditioner_none	very uncertain	symmetrical	0,5	1,5
112	secondary_airco_efficiency	secondary_system_efficiency_split_system_air_conditioner_space_cooling_electricity_none	certain	symmetrical	0,85	1,15
113	secondary_airco_maintenance	secondary_system_maintenance_split_system_air_conditioner	very uncertain	symmetrical	0,5	1,5
114	secondary_mechanical_cost	secondary_system_costs_mechanical_ventilation_none	very uncertain	symmetrical	0,5	1,5
115	secondary_mechanical_efficiency	secondary_system_efficiency_mechanical_ventilation_ventilation_electricity_none	certain	symmetrical	0,85	1,15
116	secondary_mechanical_maintenance	secondary_system_maintenance_mechanical_ventilation	very uncertain	symmetrical	0,5	1,5
117	secondary_waterheater_cost	secondary_system_costs_electric_water_heater_none	very uncertain	symmetrical	0,5	1,5
118	secondary_waterheater_efficiency	secondary_system_efficiency_electric_water_heater_hot_tap_water_electricity_none	certain	symmetrical	0,85	1,15
119	secondary_waterheater_maintenance	secondary_system_maintenance_electric_water_heater	very uncertain	symmetrical	0,5	1,5

Variables, groups, assessments, skews and multipliers used for the Sobol method

No.	Group name	CEGOIA name	Assessment	Skew	Lower multiplier	Upper multiplier		
1	electricity_infrastructure_costs	infrastructure_electricity_costs_per_meter_capex	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_costs_per_object_capex	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_costs_per_meter_opex	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_costs_per_object_opex	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_meeting	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_healthcare	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_offices	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_lodging	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_education	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_sports	very uncertain	symmetrical	0,5	1,5		
		infrastructure_electricity_retail	very uncertain	symmetrical	0,5	1,5		
		electricity_price_2050	very uncertain	positive	0,85	1,5		
		2	gas_infrastructure_costs	infrastructure_gas_costs_per_meter_capex	very uncertain	symmetrical	0,5	1,5
infrastructure_gas_costs_per_object_capex	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_costs_per_meter_opex	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_costs_per_object_opex	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_meeting	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_healthcare	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_offices	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_lodging	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_education	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_sports	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_retail	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_removal_costs_per_meter_capex	very uncertain			symmetrical	0,5	1,5		
infrastructure_gas_removal_costs_per_object_capex	very uncertain			symmetrical	0,5	1,5		
4	gas_price	natural_gas_price_2050	very uncertain	positive	0,85	1,5		
		green_gas_price_2050	very uncertain	positive	0,85	1,5		
		gas_price_2050	very uncertain	positive	0,85	1,5		
5	heat_net_infrastructure_costs	heat_net_simultaneity	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_capacity_loss	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_capacity	very uncertain	symmetrical	0,5	1,5		
		heat_net_connection_unstacked	very uncertain	symmetrical	0,5	1,5		
		heat_net_connection_stacked	very uncertain	symmetrical	0,5	1,5		
		heat_net_connection_stacked_block_heating_available	very uncertain	symmetrical	0,5	1,5		
		heat_net_connection_utility	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_3	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_2	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_1	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_0	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_2	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_1	very uncertain	symmetrical	0,5	1,5		
		heat_net_peak_gas_factor_0	very uncertain	symmetrical	0,5	1,5		
		heat_net_heat_net_capacity_peak_provision	very uncertain	symmetrical	0,5	1,5		
		heat_net_collective_heat_pump_investment	very uncertain	symmetrical	0,5	1,5		
		heat_net_overcapacity	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_ht_substation_power	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_mt_substation_power	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_lt_substation_power	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_vlt_substation_power	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_wko_substation_power	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_mt_collective_heat_pump_investment	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_lt_collective_heat_pump_investment	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_mt_collective_heat_pump_maintenance	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_lt_collective_heat_pump_maintenance	very uncertain	symmetrical	0,5	1,5		
		infrastructure_water_wko_collective_heat_pump_maintenance	very uncertain	symmetrical	0,5	1,5		
		6	heating_system_costs	primary_system_costs_heatpump_air_water_none	very uncertain	symmetrical	0,5	1,5
				primary_system_maintenance_heatpump_air_water	very uncertain	symmetrical	0,5	1,5
				primary_system_costs_heatpump_water_water_none	very uncertain	symmetrical	0,5	1,5
				primary_system_maintenance_heatpump_water_water	very uncertain	symmetrical	0,5	1,5
				primary_system_costs_condensation_boiler_none	very uncertain	symmetrical	0,5	1,5
				primary_system_maintenance_condensation_boiler	very uncertain	symmetrical	0,5	1,5
primary_system_costs_hybrid_ventilation_heatpump_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_hybrid_ventilation_heatpump	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_hybrid_air_heatpump_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_hybrid_air_heatpump	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_pellet_boiler_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_pellet_boiler	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_heat_exchanger_ht_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_heat_exchanger_ht	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_heat_exchanger_mt_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_heat_exchanger_mt	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_heat_exchanger_lt_with_individual_heatpump_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_heat_exchanger_lt_with_individual_heatpump	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_heat_exchanger_vlt_with_individual_heatpump_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_heat_exchanger_vlt_with_individual_heatpump	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_heat_exchanger_lt_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_heat_exchanger_lt	very uncertain			symmetrical	0,5	1,5		
primary_system_costs_heat_exchanger_wko_none	very uncertain			symmetrical	0,5	1,5		
primary_system_maintenance_heat_exchanger_wko	very uncertain			symmetrical	0,5	1,5		
secondary_system_costs_mechanical_ventilation_none	very uncertain			symmetrical	0,5	1,5		
secondary_system_maintenance_mechanical_ventilation	very uncertain			symmetrical	0,5	1,5		
secondary_system_costs_split_system_air_conditioner_none	very uncertain			symmetrical	0,5	1,5		
secondary_system_maintenance_split_system_air_conditioner	very uncertain			symmetrical	0,5	1,5		

