BASE
Case Studies

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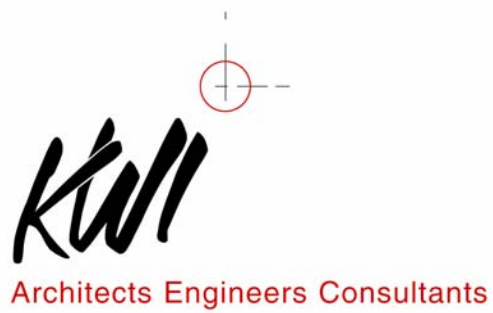

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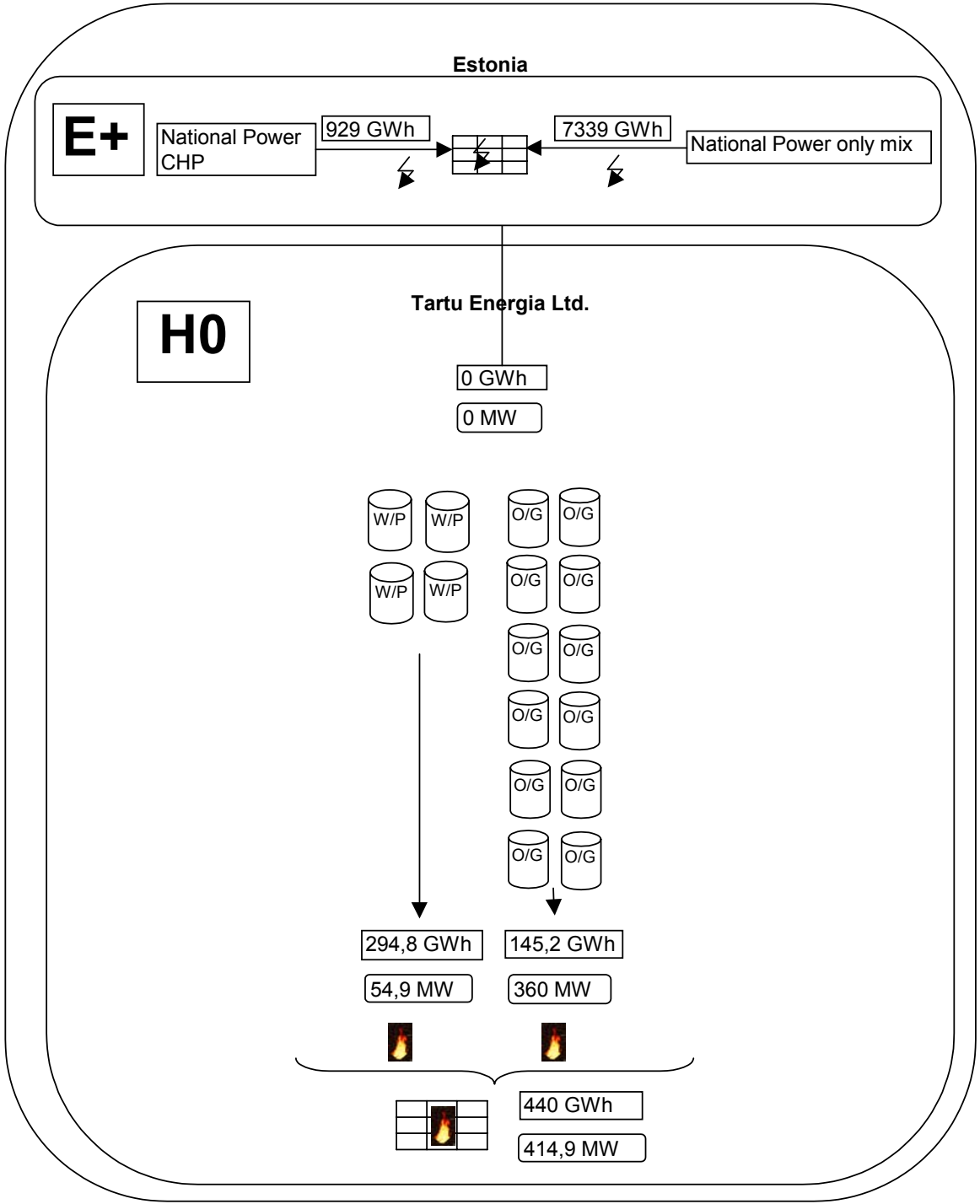
Case study: ESTONIA

- **E+** (0->360 TJ/a), **H0** (1.580 TJ/a), 163 kt/a CO_2 : Estonia, town of Tartu
- Installation of a new Biomass CHP
- Reduction in operation of existing oil/gas district heating boilers
- Reduction in operation of existing wood/peat district heating boilers
- Electricity fed to the national grid

Case study: ESTONIA Status Quo



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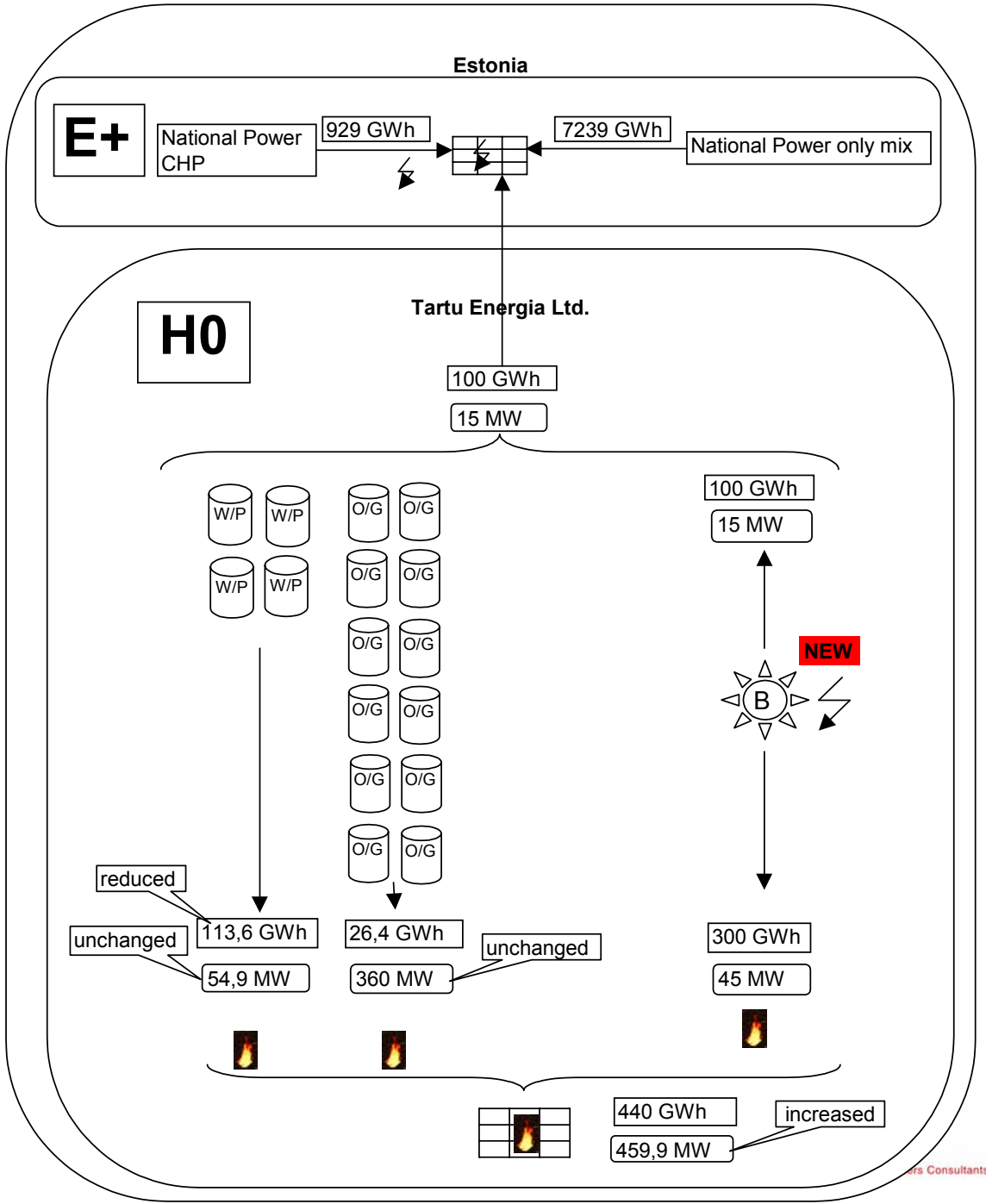
Case study: ESTONIA After Implementation



Case study: ESTONIA

- *H(0) DH Production*
- Approach:
  Investment Analysis
- Baseline:
  Business as Usual

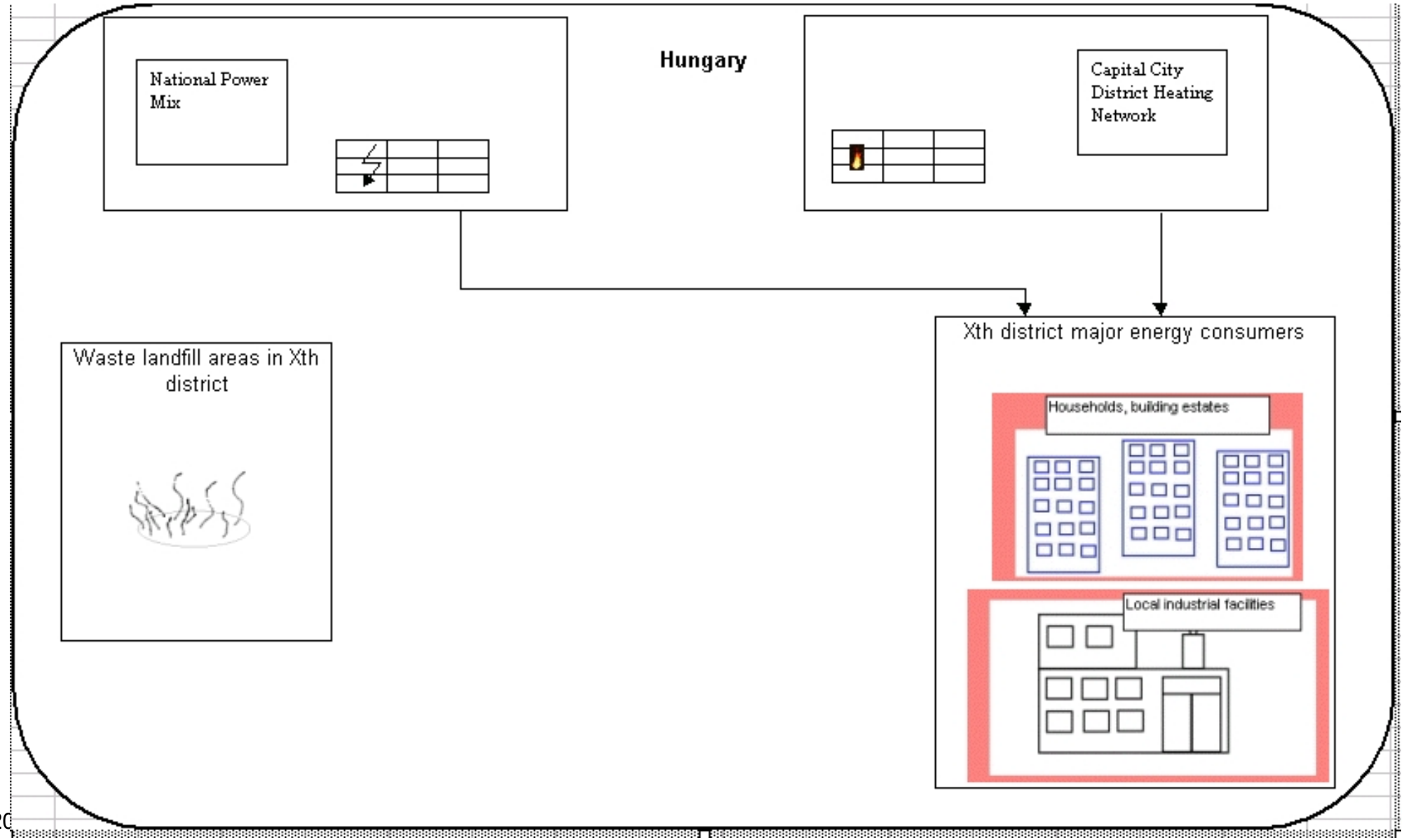
Case study: ESTONIA

- E(+): *Electricity in the grid*
- Approach:
  Scenario Analysis
- Baseline:
  The operation of the Balti Power Plant (1350 kg CO_2/MWh)

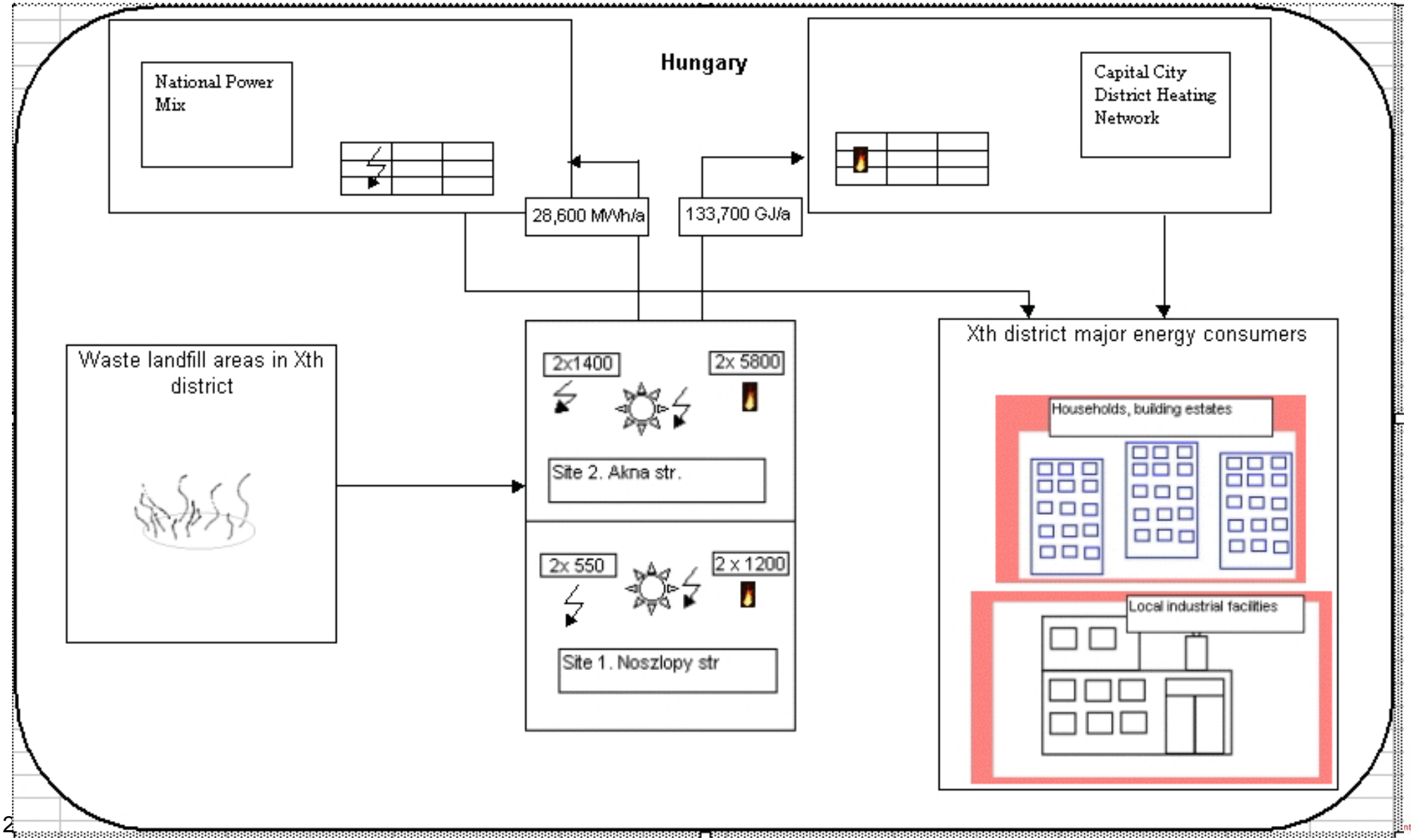
Case study: HUNGARY

- **E+** (0->100TJ/a), **H+** (0->130 TJ/a), 86 kt/a CO_2: Hungary, Budapest, district of Kobanya.
- Capture and recovery of Landfill-gas
- Combustion of gas in gas motors
- Heat fed into district heating network
- Electricity fed to the national grid

Case study: HUNGARY Status Quo



Case study: HUNGARY After Implementation



Case study: HUNGARY

- *M(-) Component (Landfill)*
- Approach:
  Investment Analysis
- Baseline:
  No gas capturing at the site. Methane escapes to the atmosphere.

Case study: HUNGARY

- *H(+) Substituted DH boilers*
- Approach:
  Scenario Analysis
- Baseline:
  Gas firing of DH boilers

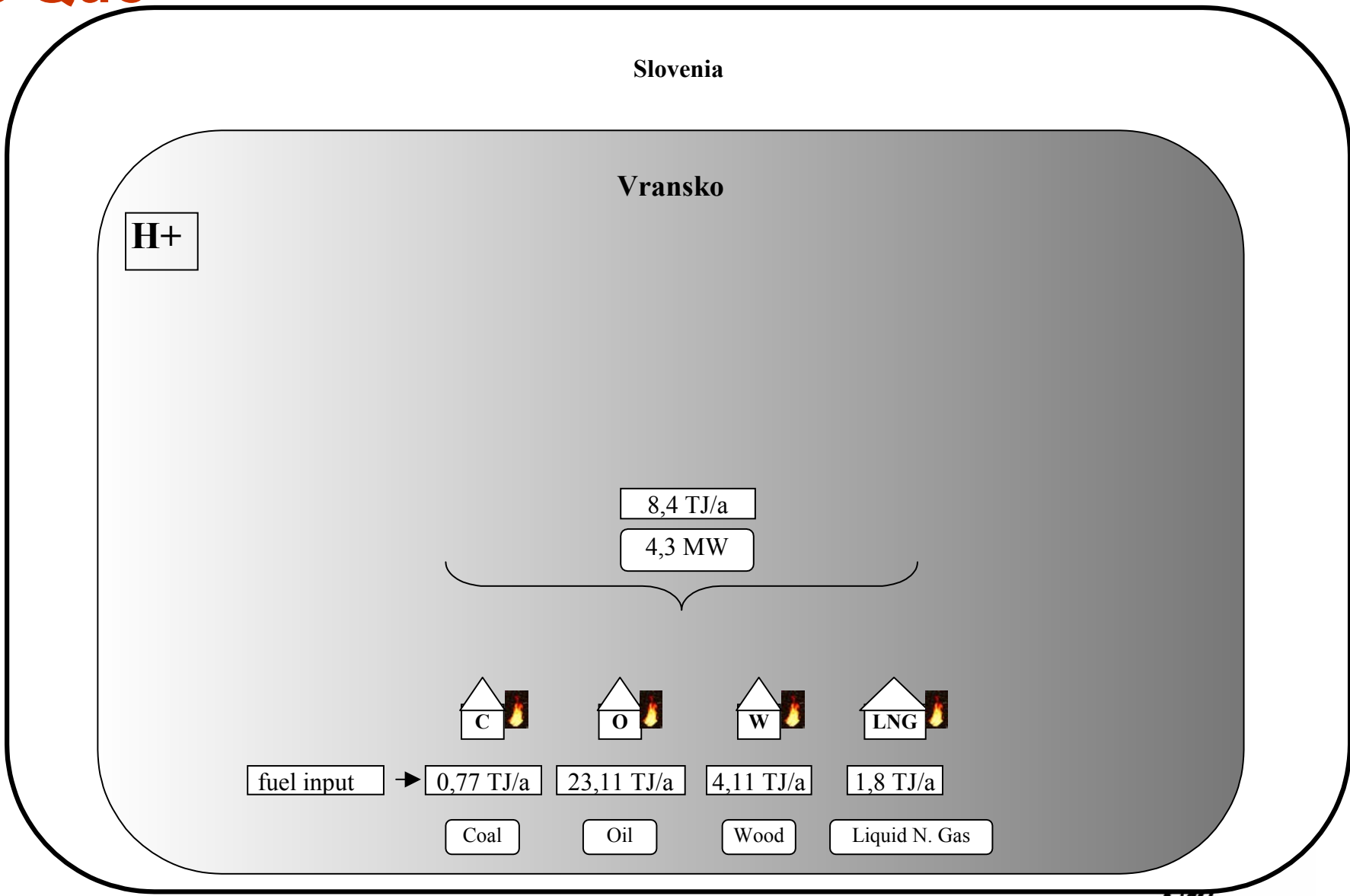
Case study: HUNGARY

- *E(+) Electricity in the grid*
- Approach:
  Multi-Project Baseline
- Baseline:
  Average emission factor (1090 kg CO_2/MWh)

Case study: SLOVENIA

- **H+** (8->17 TJ/a), 2 kt/a CO_2 :
  Slovenia, town of Vransko
- Greenfield project:
  DH-biomass boilers (total: 4MW) plus DH network
- Project has pilot character for Slovenia

Case study: SLOVENIA
Status Quo



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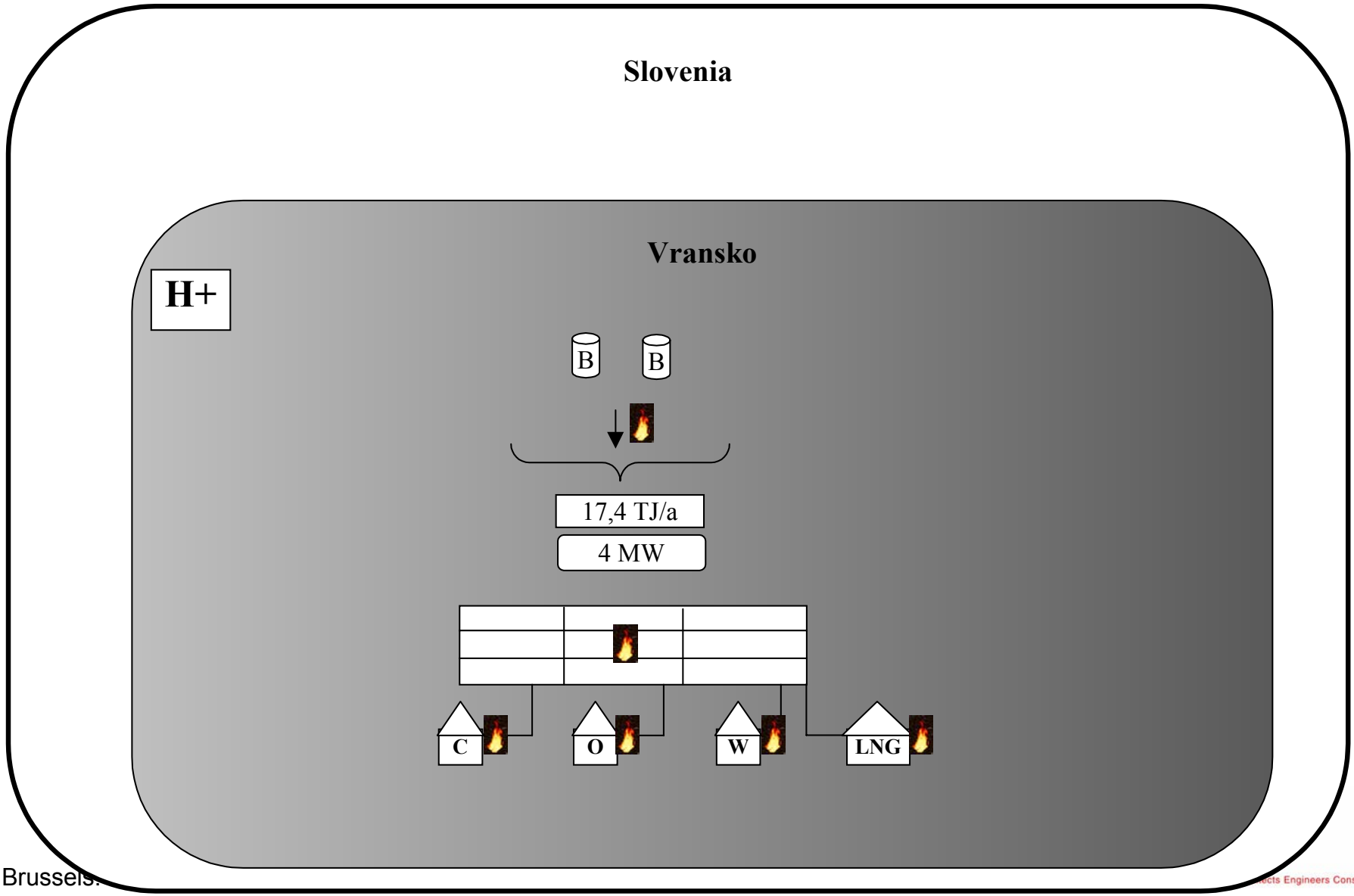
Case study: SLOVENIA
After Implementation



Case study: SLOVENIA

- *H(+) Substituted Individual boilers*
- Approach:
  Investment Analysis (Scenario Analysis)
- Baseline:
  Continuation of the Status Quo (individual household stoves and individual boilers)

Case study: CZECH REPUBLIC

- **H+** (0->? TJ/a), ? kt/a CO_2 :
  Czech Republic, towns to define („1000 units“- projects)
  Solar panels, biomass boilers, therm. insulation
  Representative project town Brloh with 1019 inhabitants
- Project has been indentified in the context of the *South Bohemian Region Energy Concept*

Case study: CZECH REPUBLIC

- *H(+) Substituted heat from individual boilers*
- Approach:
  Control group
- Baseline:
  Control group, Town of Jilovice, 856 inhabitants
  Baseline assessed „ex post“.

Case study: CZECH REPUBLIC Project group

Brloh	Municipality Brloh with 6 satelits
Nb. Of habitants	1019
Nb. Of houses	293
Non family houses	15
mix:flats and service	0
services	6
family houses	272
Nb. of flats	**383**

Type of fuel		Brown c.	Black c.	Coke	Wood	Propan	Electr.	Solar	Total
heating	Nb. Of flats	161	37	21	118,7	5	40	0,3	383
hot water preparation	Nb. Of flats	58	5	3	39	3	274	1	383
Consumption									
heating	MWh	2971,57	682,91	387,60	2190,84	73,83	590,62	4,43	6901,79
hot water preparation	MWh	128,46	11,07	6,64	86,38	6,64	606,86	2,21	848,28
Total	MWh	3100,03	693,98	394,24	2277,22	80,47	1197,49	6,64	7750,07

Case study: CZECH REPUBLIC Control group

Jilovice — Municipality Jilovice with 7 satelits

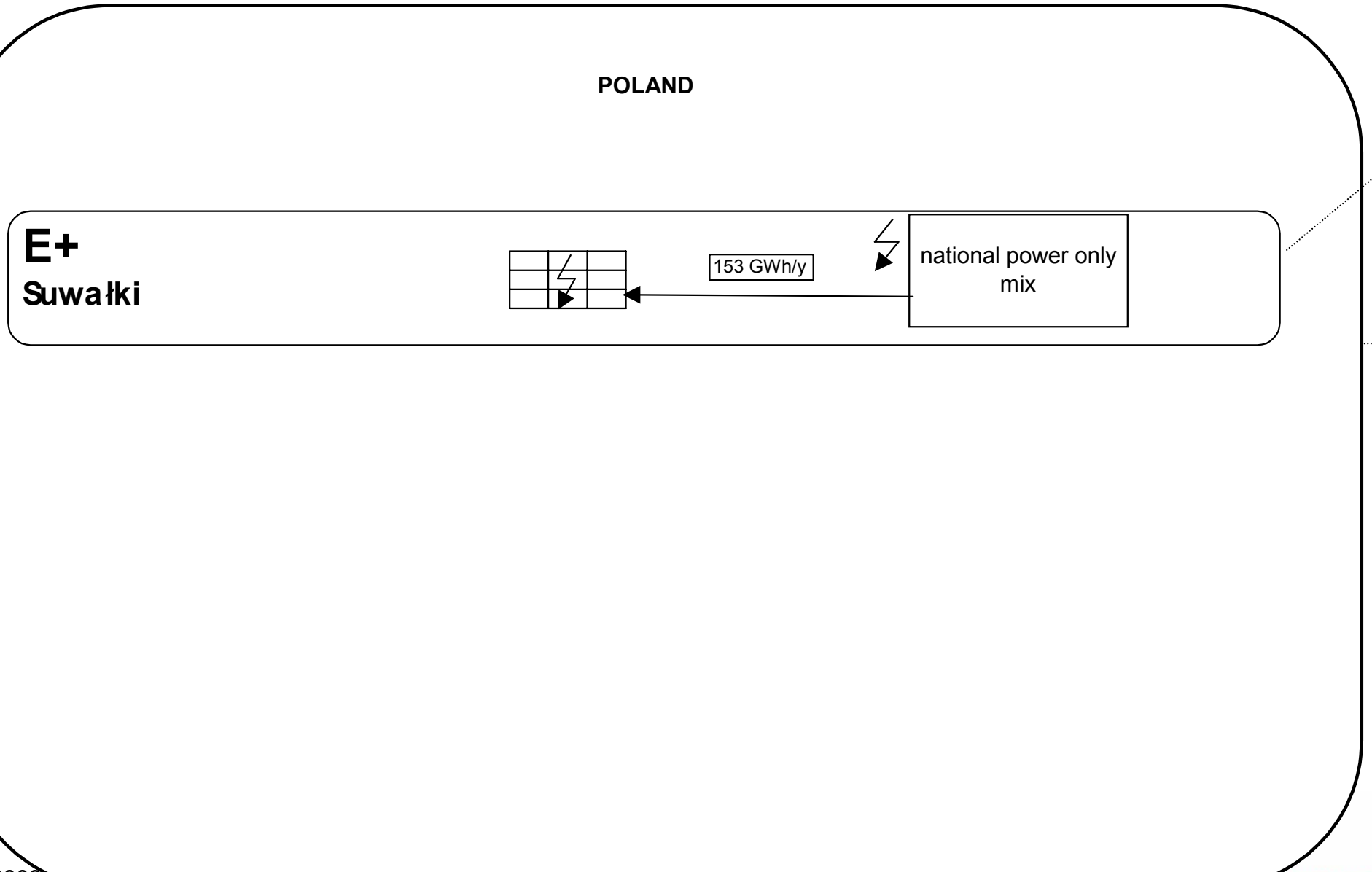
	permanent	tempor.
Nb of habitants	856	860
	buildings	flats
Total	492	616
family houses	466	559
appartment houses	8	46
mix - flats and service	6	11
services	12	

Type of fuel	Nb of flats	Brown c.	Black c.	Coke	Wood	Propan	Electric.	Total
for heating	%	41,07%	8,93%	6,17%	29,71%	1,30%	12,82%	100,00%
for hot water prearation	%	14,12%	3,08%	2,11%	10,23%	0,49%	69,97%	100,00%
heating	Nb of flats	253	55	38	183	8	79	616
Hot water	počet bytů	87	19	13	63	3	431	616
Heat consumption		Brown c.	Black c.	Coke	Wood	Propan	Electric.	Celkem
for heating	MWh	4884	1062	734	3533	124	1220	11556
for hot water	MWh	202	44	30	146	7	998	1427
total	MWh	5086	1106	764	3679	131	2219	12983
heat consumptio/m2	kWh/m2	193	193	193	193	154	154	188
hot water cons./m2	kWh/m2	23	23	23	23	23	23	23

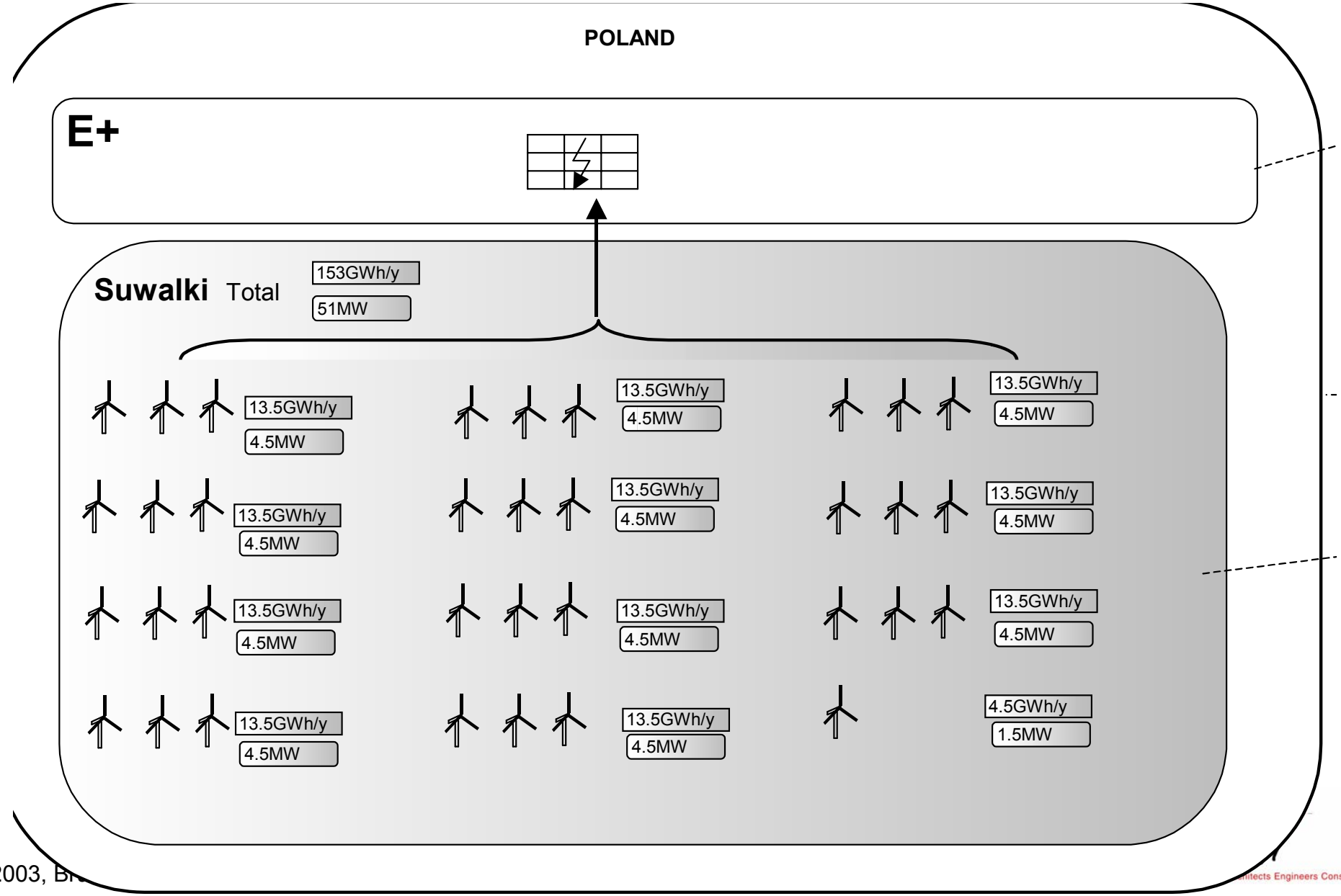
Case study: POLAND

- **E+** (0->540 TJ/a), 100 kt/a CO_2 :
  Poland, town of Suwalki,
- Installation of a windpark of 51 MW
- Electricity fed to the national grid

Case study: POLAND Status Quo



Case study: POLAND After Implementation



Case study: POLAND

- *E(+) Electricity in the grid*
- Approach:
  Multi-Project Baseline
- Baseline:
  Average emission factor (650 kg CO_2/MWh)

Electricity - Data availability

- Necessary baseline data is available for all countries but ...
- ... data is scattered across national institutions, databases, yearbooks etc.
- with the exception of Hungary (ENPEP-Model)
- Feed-Back across all countries (except HUN): *„Someone needs to combine all that data“*.

Electricity - Average Grid Emission Factors

- Use of an Average Grid Emission Factor:
  No definite commitments from CEE governments
- No CEE country (except HUN) has a single institution in charge of calculating an Average Emission Factor.
- ERUPT Average Emission Factors:
  No definite commitments from CEE governments (except HUN).

Electricity

- **Political (EU accession) and legal changes will influence on the baselines (RES-Dir, CHP-Dir, Large Combustion Plant - Dir, Finnish-Estonian Bilateral Treaty, etc.).**
- **Databases are in use: *HUN:* ENPEP, *CZ:* REZZO, *PL:* ARE & GUS,**
- **National dispatch models: Not yet available (except HUN)**

Heat

- Some elements would be apt for standardisation:
- Fuel prices
- Cost of heating/electricity units (invest, operating)
- Energy, environmental, action, tax plans, laws, policies