Interreg CENTRAL EUROPE
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REEF 2W

INCREASED RENEWABLE ENERGY AND ENERGY EFFICIENCY BY INTEGRATING, COMBINING URBAN WASTEWATER AND WASTE MANAGEMENT SYSTEM

TAKING COOPERATION FORWARD

REEF 2W Final Conference

Case Study Berlin

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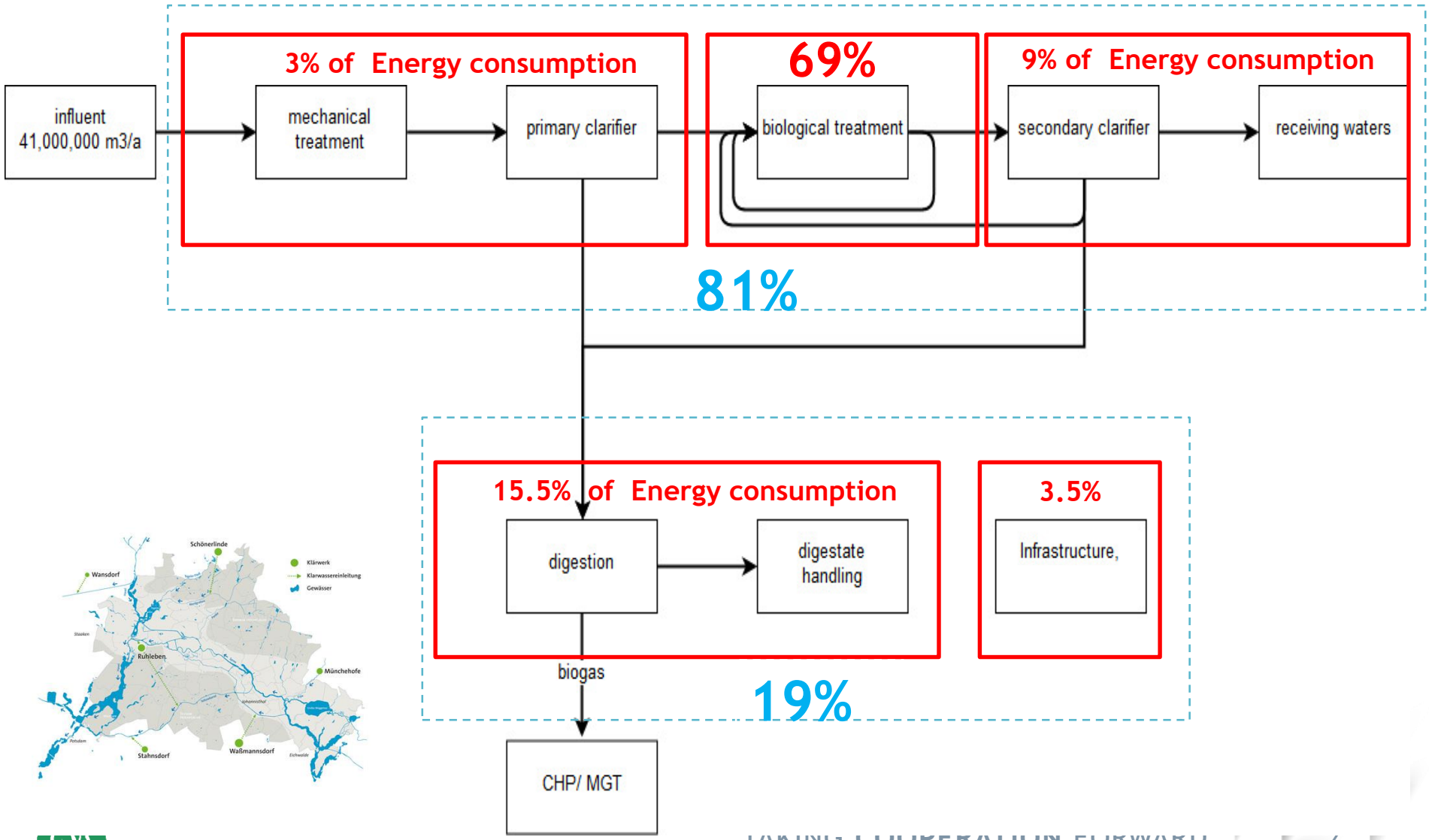
KOMPETENZZENTRUM Wasser Berlin

Pilot Site in Berlin
Energy performance



Pilot Site in Berlin
Energy performance

Table 2: Electric energy efficiency of the selected WWTP

Electric energy consumption		*Standard range*	
WWTP total [kWh/PE120/a]	23,27	***20,00***	***50,00***
1) inflow pumping station and mechanical pre-treatment [kWh/PE120/a]	1,05	***2,50***	***5,50***
2) mechanical-biological treatment [kWh/PE120/a]	17,60	***14,50***	***33,00***
3) sludge treatment [kWh/PE120/a]	3,50	***2,00***	***7,00***
4) infrastructure [kWh/PE120/a]	1,12	***1,00***	***4,50***

Table 3: Thermal energy efficiency of the selected WWTP

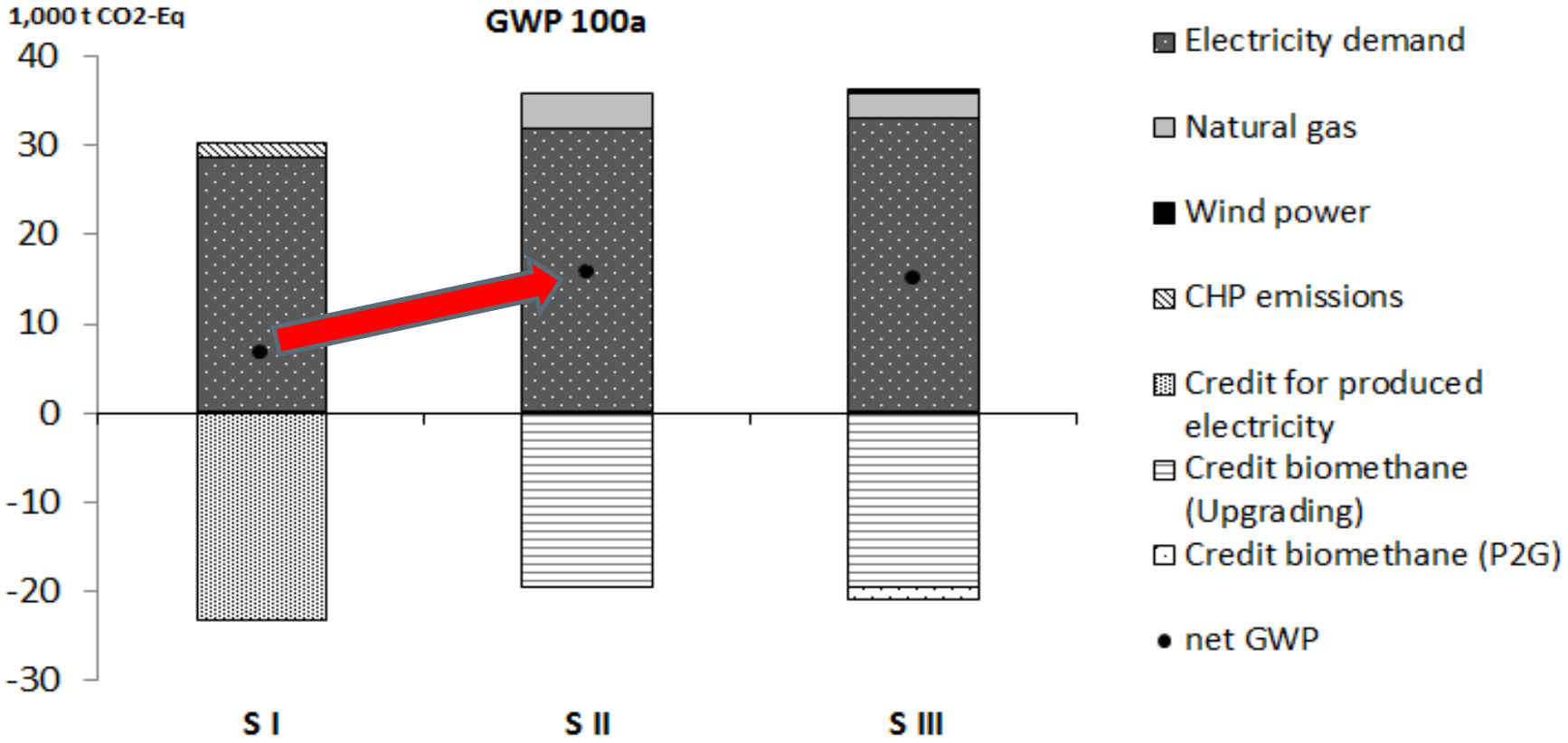
Thermal energy comsumption		*Standard range*	
WWTP total [kWh/PE120/a]	13,15	***0,00***	***30,00***
sludge heating [kWh/PE120/a]	10,42	***8,00***	***12,00***
transmission loss, digester tower heating [kWh/PE120/a]	0,54	***0,00***	***4,00***
generation, storage and distrivution loss [kWh/PE120/a]	1,10	***0,00***	***2,00***
heat for buildings [kWh/PE120/a]	1,09	***0,00***	***2,00***

Pilot Site in Berlin
Scenarios

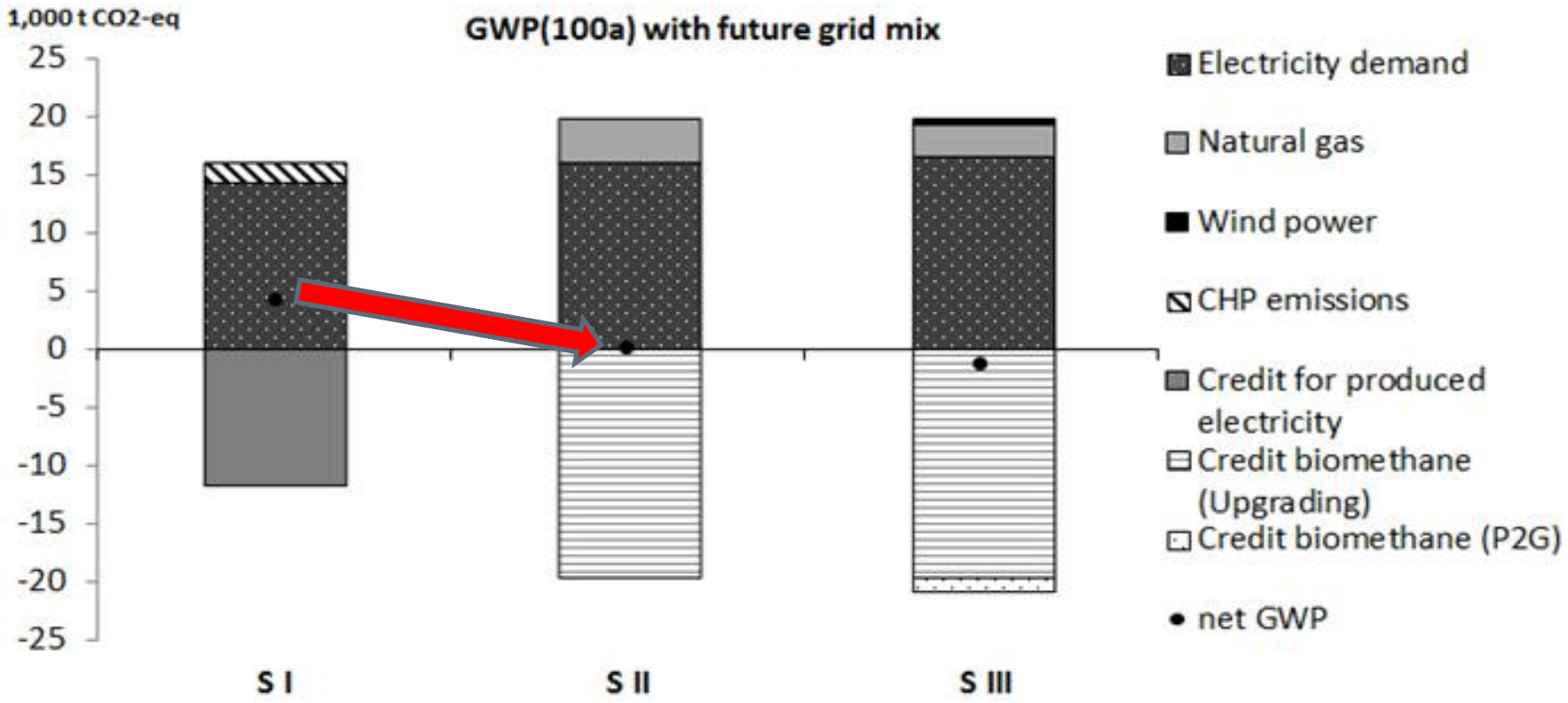
Scenario	CHP	Biogas upgrading system	Electrolyser for PtG
Status quo (I)	6 MW	0 m^3/h biogas	0 MW
Scenario II	0 MW	1800 m^3/h biogas	0 MW
Scenario III	0 MW	1800 m^3/h biogas	7.8 MW

Results of Environmental Assessment for Berlin case study

Assessment of the Global Warming Potential with electricity mix of 2014



Assessment of the Global Warming Potential with electricity mix of 2030



Take Home Message:

Biogas upgrading and injection in the gas grid :

- At the moment: no reduction of GWP, better to produce electricity with CHP and substitute current power mix with high GWP
- In the future: it can decrease the GWP if green electricity is in the grid

Power to Gas:

- It can decrease the GWP (if PtG uses excess renewable electricity available in the grid)

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