SF 66: Active management of the water-energy-nexus (technological progress, strategic topic)

Fr	B	C	NY	S	T	Total
6	6	6	6	9	8	41

Beispiel:
Berlin: Efficient wastewater disposal has long been an important issue and has, therefore, already been implemented accordingly.

Copenhagen: Copenhagen recently started operating a plant for sludge combustion; energy efficiency plays a major role at the two central wastewater treatment plants. Meanwhile, a lot has already been implemented, so that the topic does not harbour quite so much potential here.

NYC: It is acknowledged as an important issue and more account will be taken of it in the future.

Singapore: Increasing energy efficiency is an important issue due to the scarcity of water and energy in Singapore; currently, there is a pilot project in the field of energy-efficient desalination.

Tokyo: Several wastewater initiatives, e.g. optical fibre cables for sewerage system management, hybrid pumping station.

1. Differentiated description of the key field

Water supply and disposal account for a significant proportion of total municipal energy demands. At the same time, both the area of water supply as well as that of wastewater disposal offer considerable energy-saving and recovery potential.

Energy savings in the water supply, for example, can be achieved by optimising the water level and pressure in the water distribution network and using energy efficient pumps. By making use of height differences in the distribution network, part of the potential energy contained in this might be unlocked. In the field of wastewater treatment, besides using energy-efficient pumps and treatment plants, anaerobic technology (the conversion of organic matter into biogas) and waste heat recovery from wastewater offer large energy recovery potentials.

2. Reference to sustainability:

As regards moving towards more sustainability in cities, there is great potential, particularly in the energy industry. This results in both economic and environmental benefits (lower energy consumption, energy production).

3. Relevance to industrial sectors?

Mobility:	None
Energy:	High
Production & logistics:	Medium
Security:	Low
ICT:	High
Water infrastructure:	High
Buildings:	Medium
Governance:	Medium

Brief description of the high level of importance:
• Direct impacts on a city's energy industry arise through energy efficiency and energy recovery in the field of water supply and wastewater disposal
• ICT is necessary to optimise energy efficiency and efficient recovery.

4. Impact (positive & negative)

Positive:
- Reduction in urban energy consumption
Negative:
- Investment measures required

5. Implementation measures:

• Recognition of the local potential
• Designation of possible technological and organisational measures to exploit the potential.
• Inclusion in the strategic planning for sustainable urban development
• Creation of incentives; if necessary, changing of the rules
• Initiation of implementation measures
• Regular review of the implementation status

6. Actors: Who can shape things?

• Private individuals, citizens: Individual implementation measures (as yet very limited) at the household and possibly building level (e.g. greywater treatment with heat recovery inside the building, heat recovery integrated into the shower).
• Planners, contractors, construction companies: Development and implementation of policies to increase energy efficiency in the fields of water supply and wastewater disposal and in the field of energy recovery measures (water turbines, anaerobic wastewater/sludge treatment, heat recovery from the sewer).
• City council/public utilities: Definition of possible solutions, inclusion in the strategic planning for sustainable urban development, development and implementation of energy efficient of water supply and wastewater treatment

technology.

7. Prerequisites:

8. Obstacles/barriers:

- Querying of the relevance of the topic in strategic urban planning (strategic plan, etc.).
- Energy consumption with regard to water treatment per m³ of drinking water (including energy recovery)
- Energy consumption with regard to wastewater treatment per m³ of wastewater (including energy recovery)

9. Indicators:

- Querying of the relevance of the topic in strategic urban planning (strategic plan, etc.).
- Amount of the total expense at the city level of the damage caused by extreme weather-induced flooding.

10. Special features/remarks: