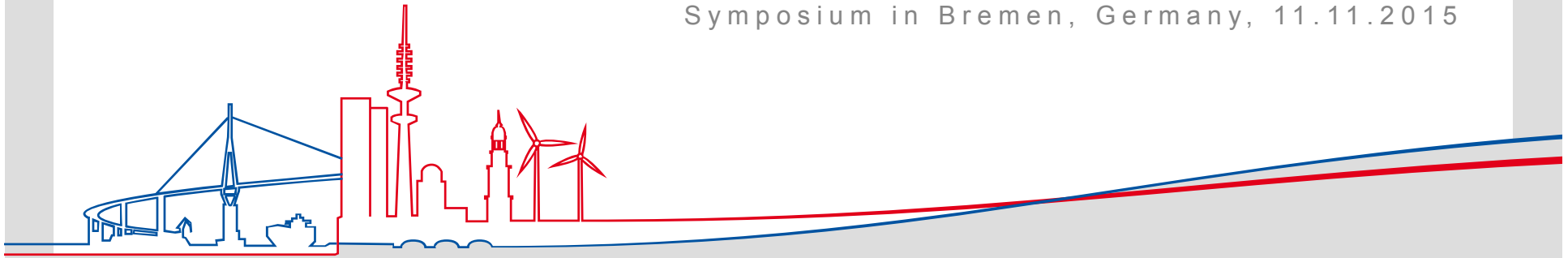
HAMBURG WASSER

Water | Waste Water | Energy

HAMBURG WASSER

Key elements for establishing economically reliable operation models – a utility perspective

Integrated management of used-water and sanitation
Symposium in Bremen, Germany, 11.11.2015



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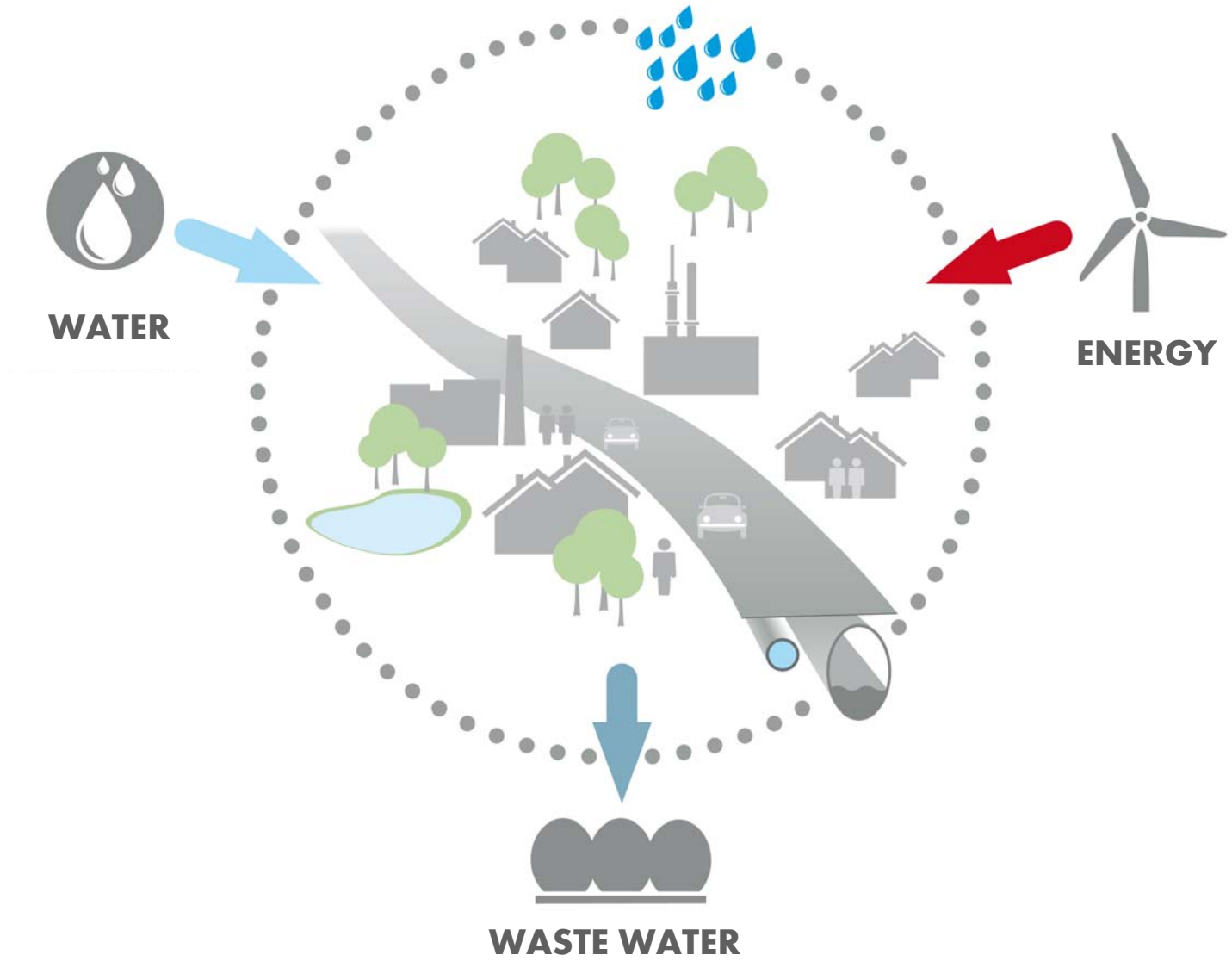
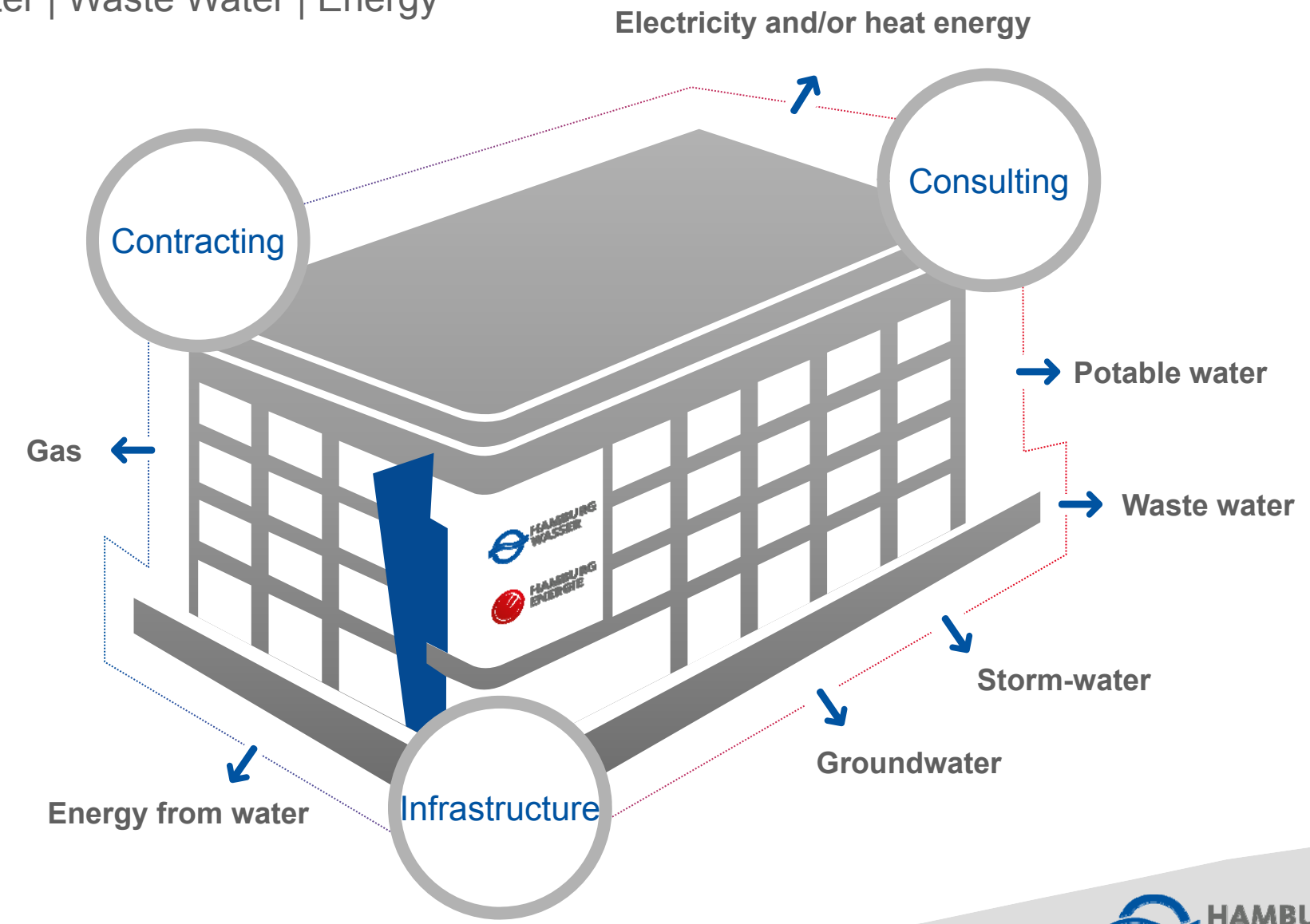
WHO WE ARE – PRESENT STATUS



WHO WE ARE

Water | Waste Water | Energy



ABOUT HAMBURG WASSER

- HAMBURG WASSER **supplies 2 million people daily in Hamburg and the metropolitan area** with drinking water and disposes the waste water
- Approximately **673,000 client contracts**
- Ensuring highest quality of drinking water at all times (i.t.o. **amount, quality and pressure**)
- Water supply and disposal **around the clock, 365 days a year**
- **Drinking water supply in Hamburg and more than 20 cities and surrounding communities**
- **Waste water disposal in Hamburg and more than 30 cities and surrounding communities** (long-term contracts with technical and commercial services)

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ABOUT HAMBURG WASSER

- **HAMBURG WASSER** was created on January 1, 2006, through the unification of Hamburg Water Works, **HWW** and Hamburg Public Sewage Company, **HSE**
- HAMBURG WASSER is **one of Germany‘s largest public owned water supply and wastewater disposal companies**
- Business acquisition basis for Northern Germany and selected international markets
- Unification through:
  - both companies represented by the same general management
  - same corporate and division structures
  - same division / department managers (medium term)

FACTS AND FIGURES HAMBURG WASSER

Business data

Turnover	m €	539
Essets	m €	3.720
Equity	m €	1.613
Total	m €	3.837
Investments	m €	124
Annual surplus	m €	50.5
Cashflow	m €	188
Staff	number	2.133
Apprentices	number	69

Consolidated results

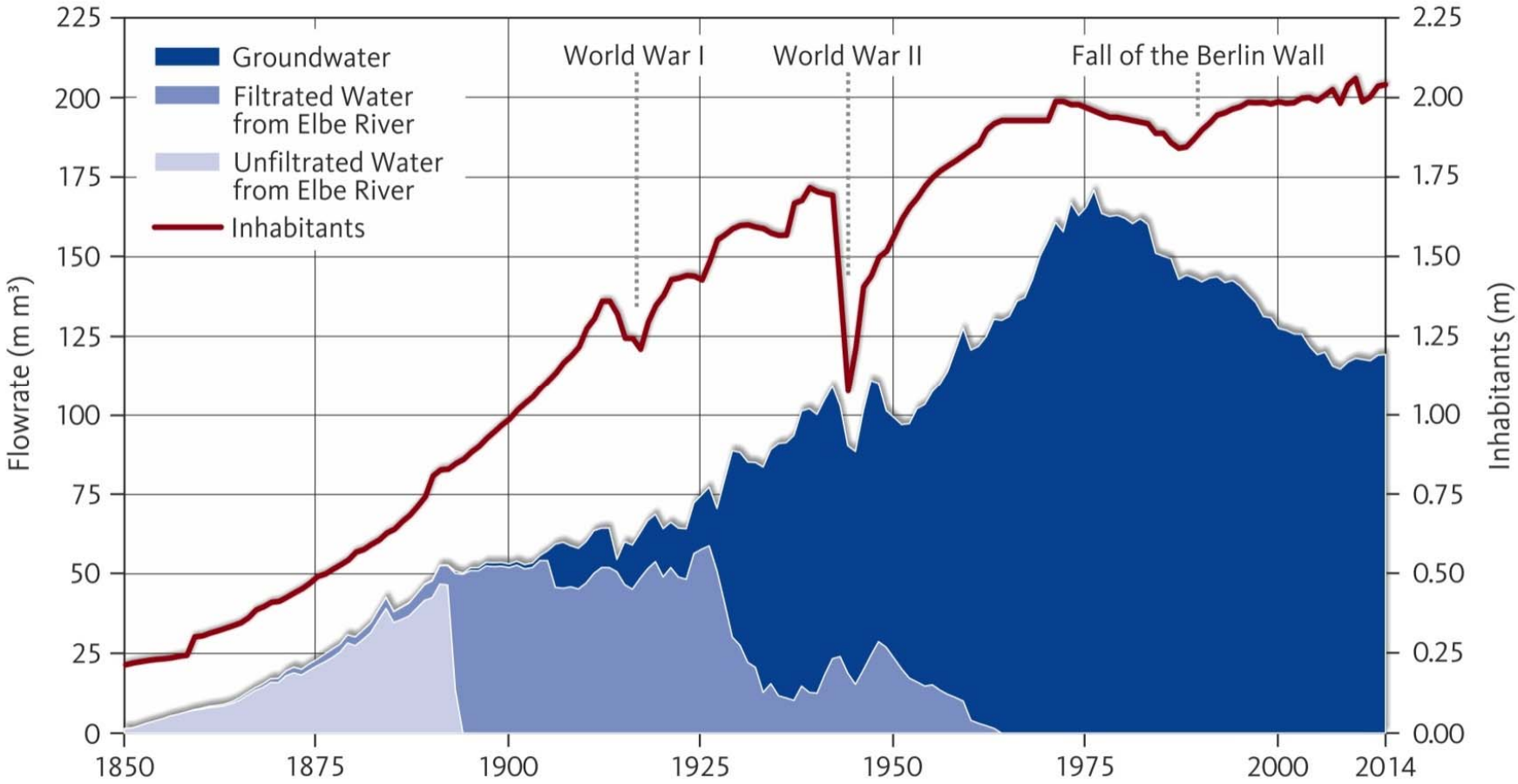
Technical data

Water works	number	16
Sewage treatment plants	number	4
Water production	m m^3	110
Treated waste water	m m^3	139
Length water network	km	5.336
Length sewer network	km	5.907
Connected households	number	673.069
Water meter	number	1.115.570
House service connection	number	217.502

Figures as end of 2014

WATER DEMAND DEVELOPMENT IN HAMBURG 1850 – 2015

- ECOLOGICAL SUCCESS VS. ECONOMICAL CHALLENGE -



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CHALLENGES FOR MUNICIPAL WASTE WATER MANAGEMENT

Costs for operation and maintenance of central waste water infrastructure tend to exceed possibilities of municipalities!

- Demographic change → decreasing consumption
- Increasing consumption of pharmaceuticals → new treatment processes necessary
- Sealing and climate change: new and stronger floods and heavy rain events → storm water management
- Growing cities and increased sealing of land meets historically designed waste water infrastructure
- Fundamental system's changes are difficult due to e.g. very long depreciation rates of very expensive facilities (sewers, pipes or machinery)

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EXPECTATIONS AND CONFLICTING GOALS FOR MUNICIPAL WATER AND WASTE WATER SERVICE DELIVERY

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"2nd rent"

Sustainable infrastructure

Affordable services for the population

Public service provider

Economical performance (profit expectation)

Adaptation of the service portfolio to needs of clients and changing external conditions

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MUNICIPAL SERVICE PROVISION IN THE CONTEXT OF THE SDGs

Ensure availability and sustainable management of water and sanitation for all.

Make cities and human settlements inclusive, safe, resilient and sustainable.

Take urgent action to combat climate change and its impacts.

These SDGs are only achievable if municipalities, local government authorities and their communal actors are enforced!

THE ‚GERMAN MODEL‘

Strong municipal/ public infrastructure operators (often public owned):

- focus on common welfare
- have a high interest in safe, long-lasting and sustainable operation of municipal infrastructure
- allow for integration of different infrastructure sectors (potable water, energy, waste water, telecommunications, solid waste, public transport …).

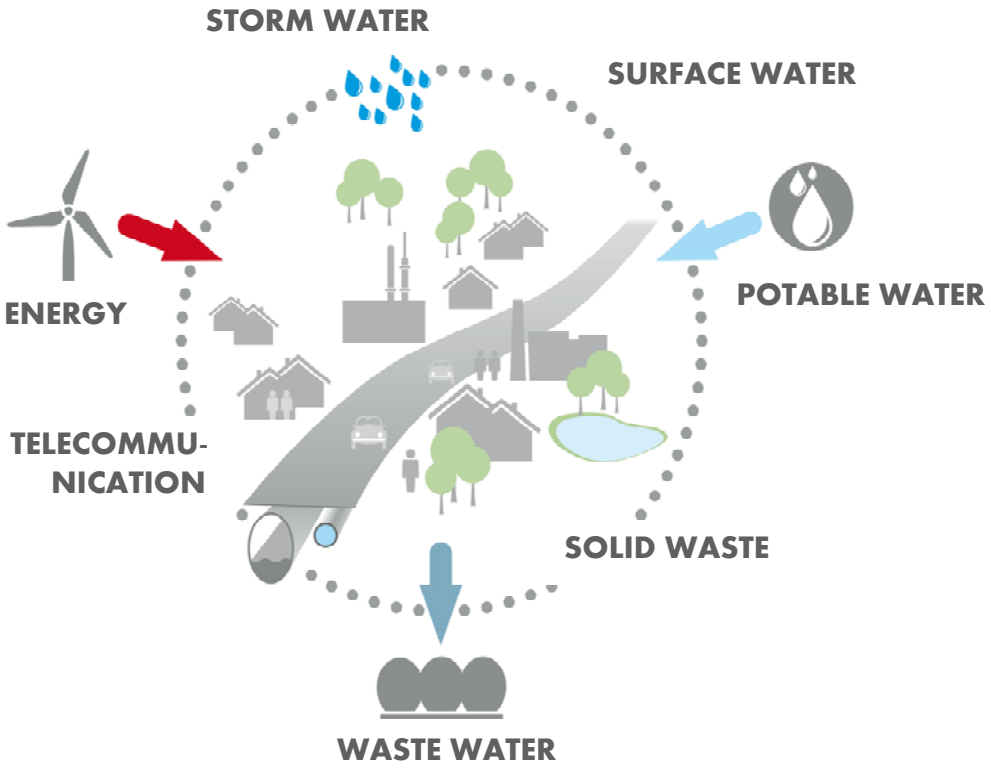
→ Therefore they **may serve as a vehicle towards realization of the SDGs.**

FUTURE: THINKING IN SYSTEMS

Not only: Optimization of the existing technologies

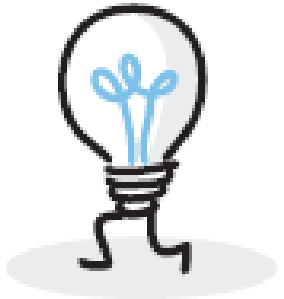
but also:

Development and implementation of NEW systems (if the circumstances require it)



Thinking in systems

→ Several steps necessary



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STEPS TOWARDS A CHANGE TO THINKING IN SYSTEMS

1. Managing the municipal water infrastructure with an **integral & holistic perspective**
   - Move away from a solely technology-related perspective
   - Institutional manifestation of integrative approaches & inclusion of ALL stakeholders
   - 'Thinking out of the box' and creation of new synergies
2. Regarding **full life cycles of municipal water infrastructure**
3. Making use of technological progress
4. Considering the **use of different water streams for different user types**
   - E.g. grey water usage for roadside trees; rainwater usage for industry
5. Regarding **'waste water' as a resource**
   - Separations of partial streams; decentralized usage of distinct waste water components, use of heat form sewage, biogas from WWTP's
6. Providing **enabling legal framework**
7. Shifting the paradigm that waste and storm water are a burden: they are **indeed economically usable resources**
8. Integrating other municipal service providers and **creating new business alliances and models for the water sector**

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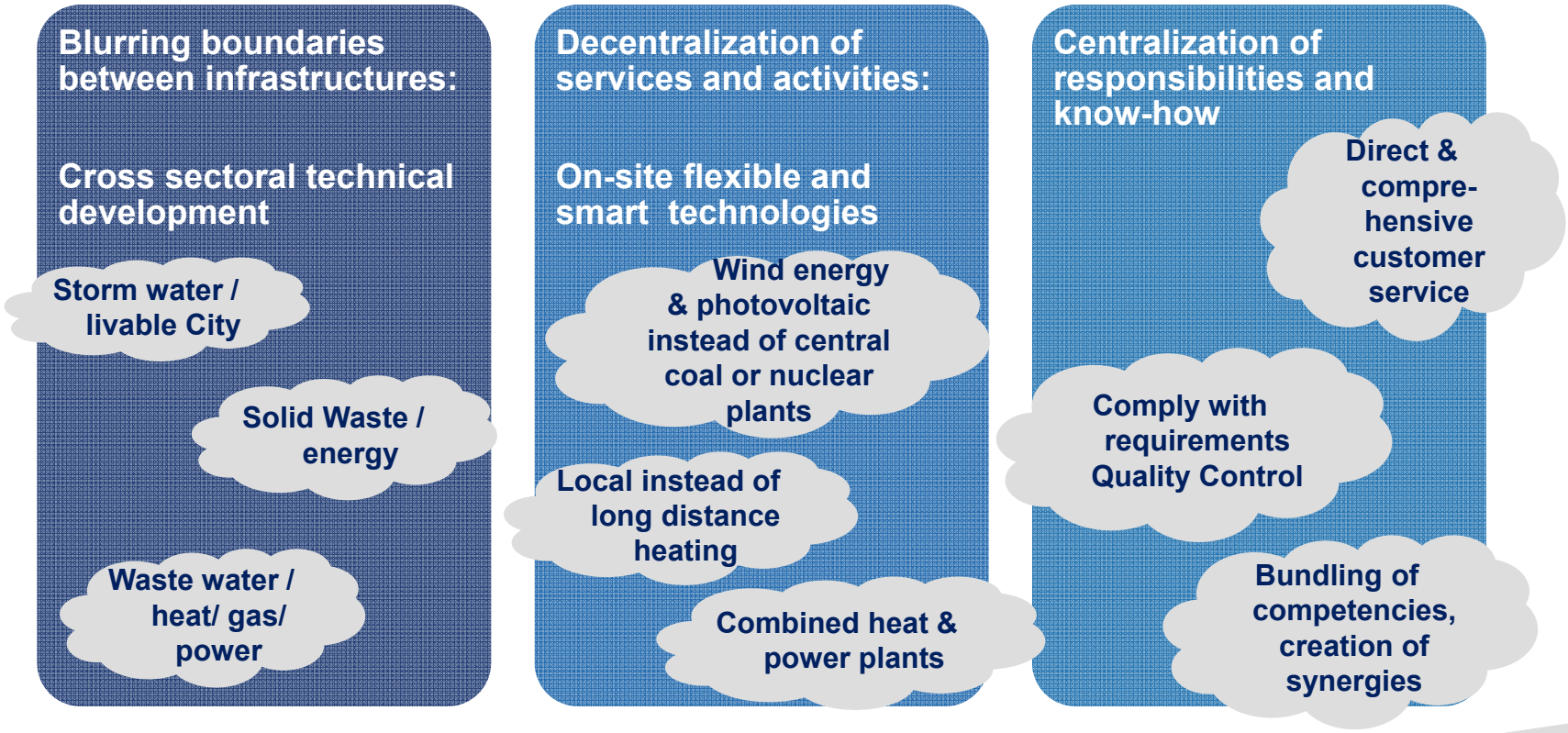
THE HAMBURG WASSER

Demand-orientation
Flexible adaptation and incorporation of changing circumstances

Sustainable business model for integrated services



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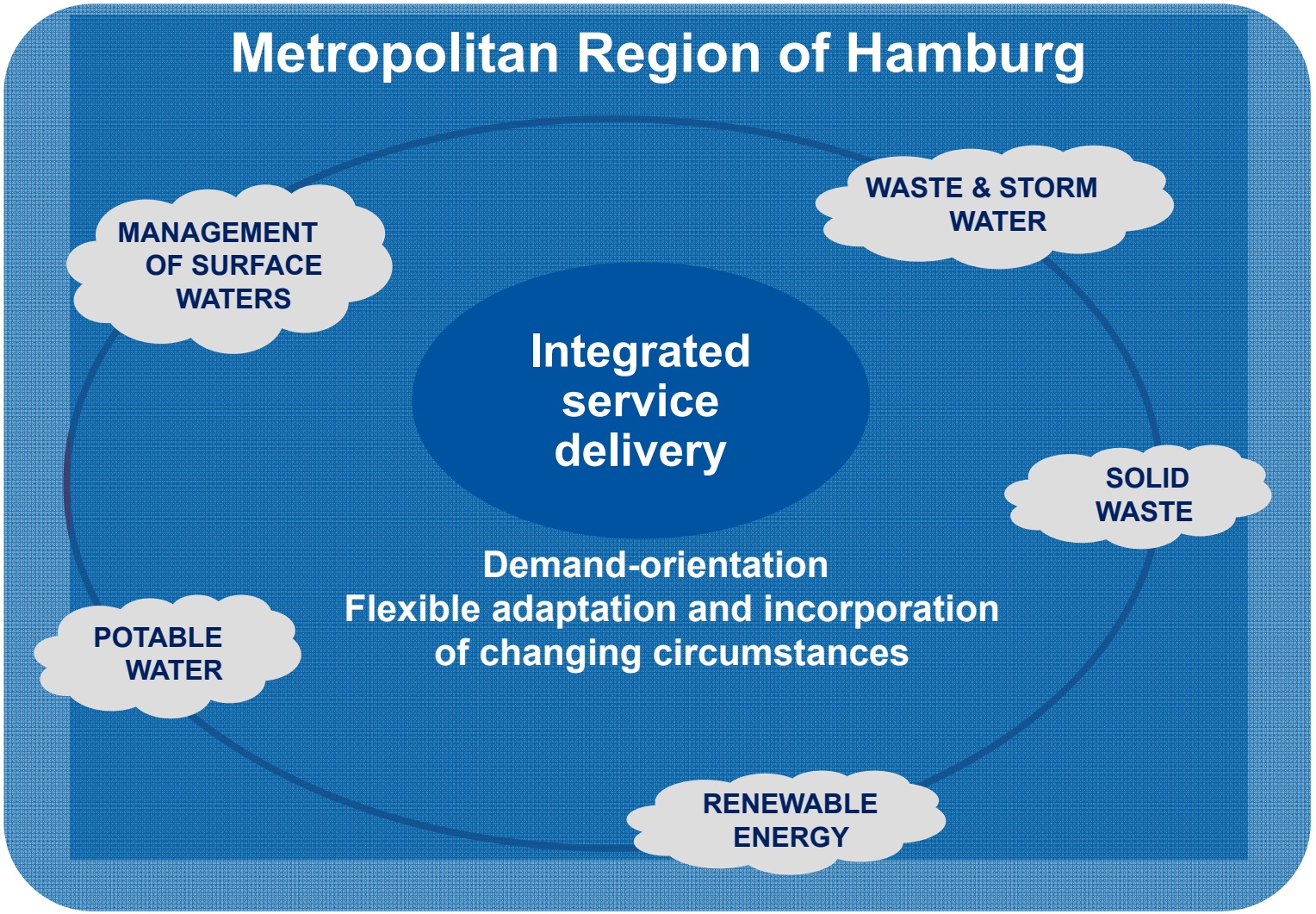
BUSINESS MODEL: ON THE WAY TO INTEGRATED SERVICE DELIVERY



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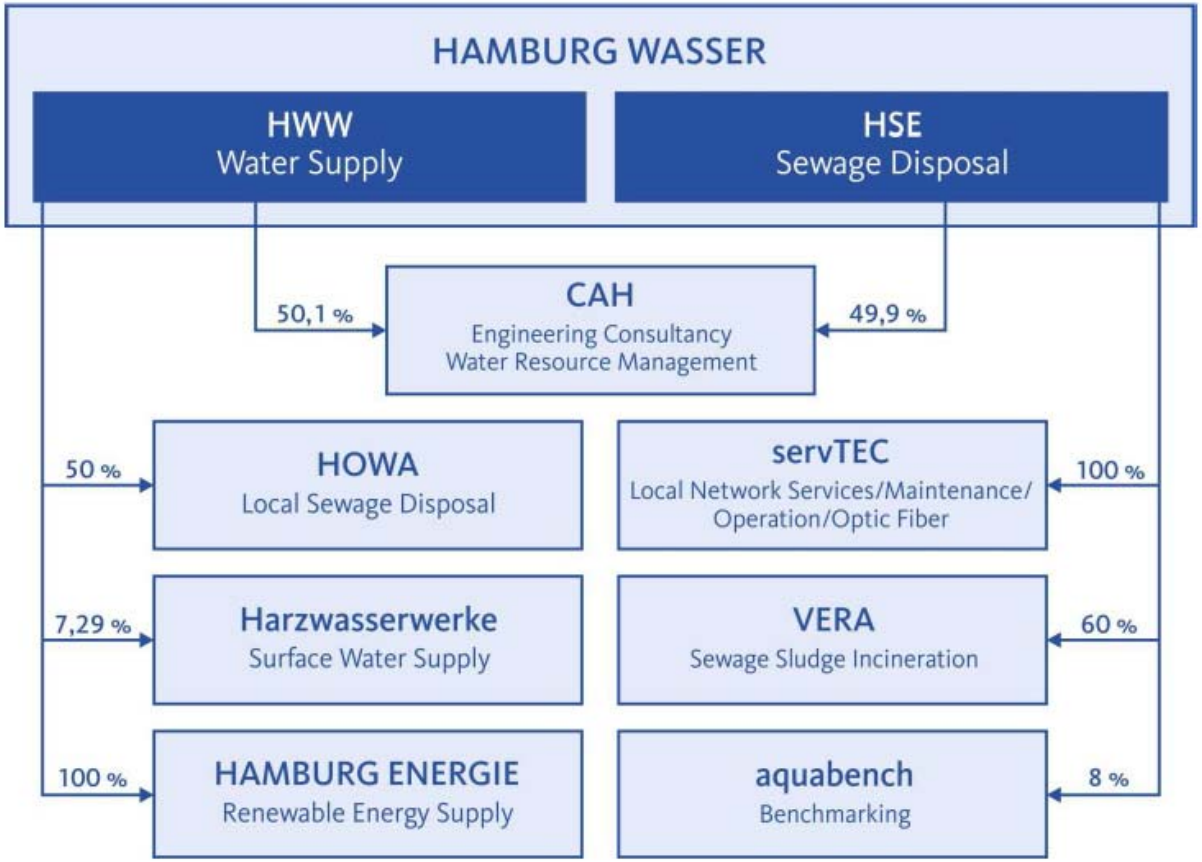
EXAMPLE HAMBURG WASSER: INTEGRATIVE MUNICIPAL GROUP OF COMPANIES FOR WATER AND ENERGY SERVICES

HAMBURG WASSER =
Hamburg Water Works (Ltd.) + Hamburg Public Sewage Company + 7 subsidiaries



- ✓ Fully public owned
- ✓ Centralization of responsibilities and know-how
- ✓ Decentralized action

EXAMPLE HAMBURG WASSER: FORMATION OF SUBSIDIARY FOR RENEWABLE ENERGY SUPPLY

– In 2009 **subsidiary HAMBURG ENERGY** was formed, today it **delivers CO_2 neutral energy to >100.000 customers** (citizens and businesses)
http://www.hamburgenergie.de/privatkunden/

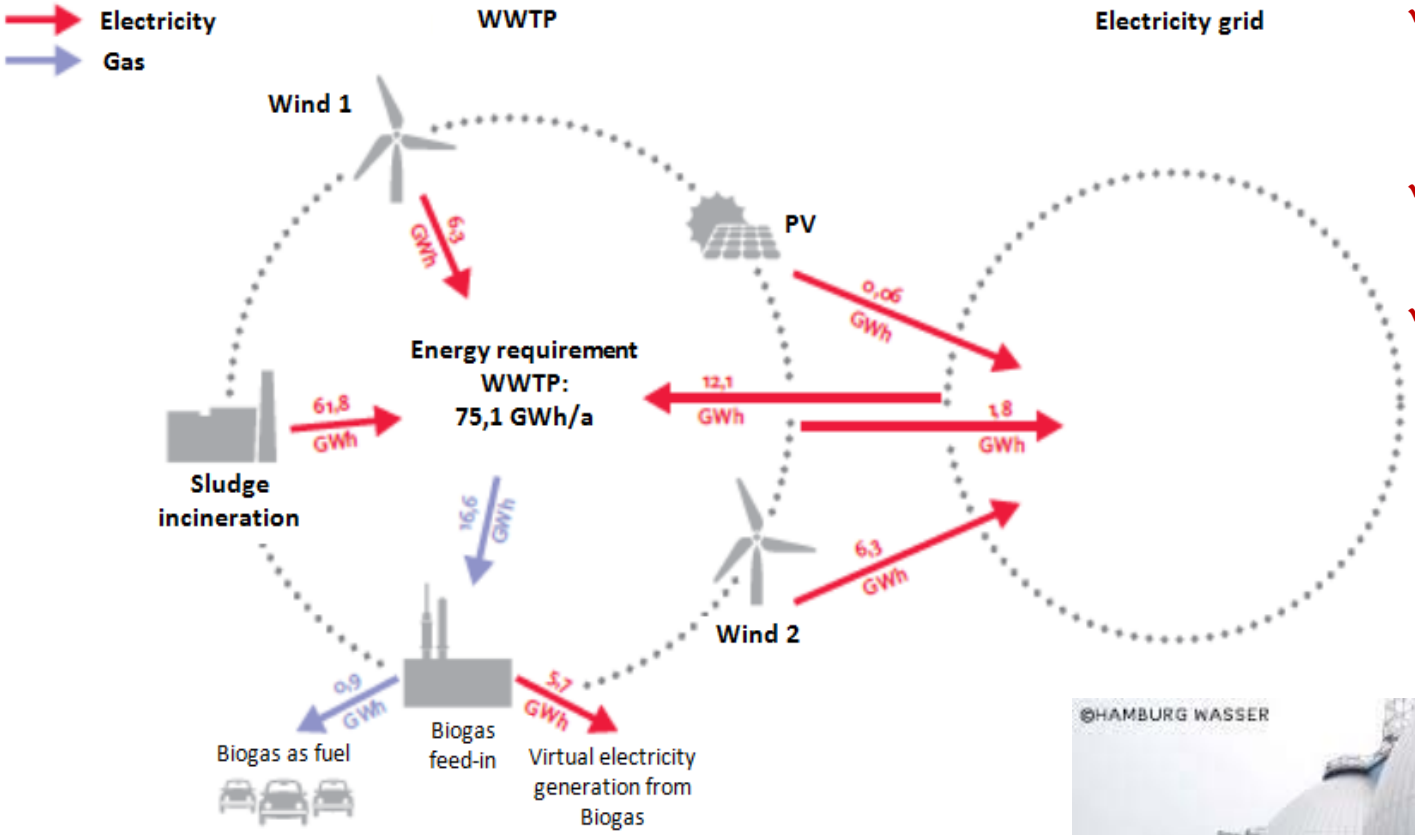
HAMBURG ENERGIE

- ✓ Blurring boundaries between infrastructures
- ✓ On-site flexible and smart technologies

Wind turbine of HAMBURG ENERGY, installed on the biological waste water treatment plant of HAMBURG WASSER in the port region

HAMBURG WASSER

EXAMPLE HAMBURG WASSER: WASTE WATER TREATMENT IN HH: A SURPLUS ENERGY PROCESS



- ✓ Blurring boundaries between infrastructures
- ✓ On-site flexible and smart technologies
- ✓ Integrative approach

Cars running with the digester gas

EXAMPLE HAMBURG WASSER: CROSS SECTORAL TECHNICAL DEVELOPMENT

– Development of new technologies, work processes and services

– **Orientation along changing demands and circumstances** to **be prepared for current and future challenges**

Examples:

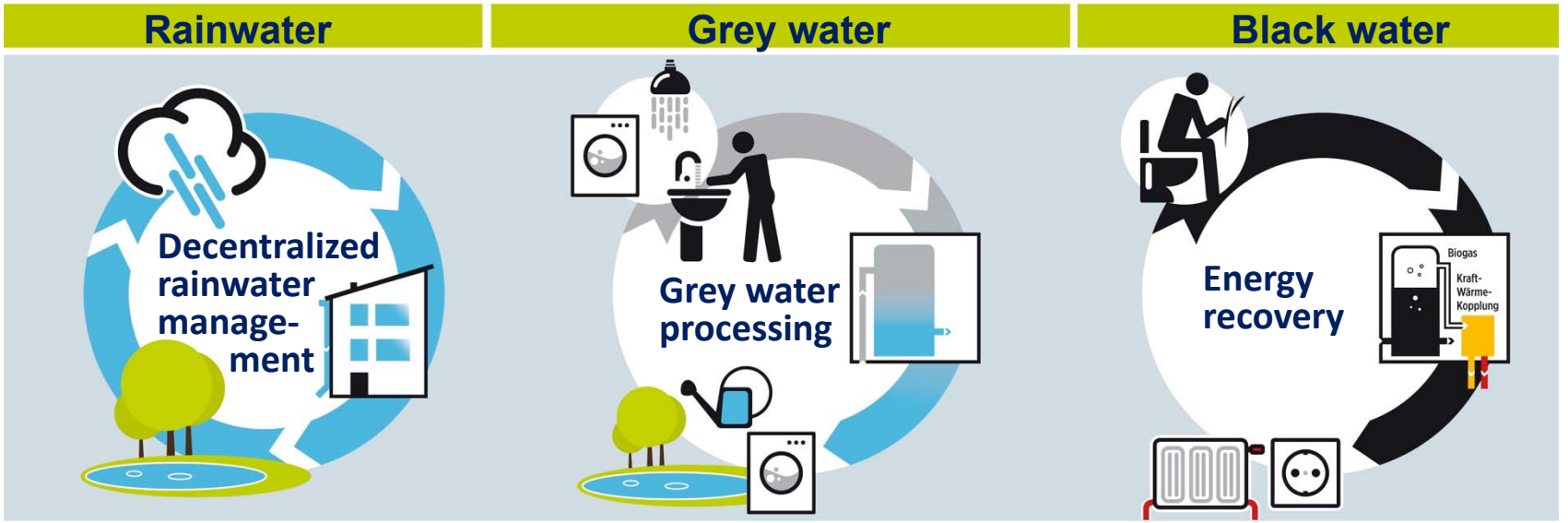
Project RISA – **Rain InfraStructure Adaptation**: Research on risks, opportunities and solutions in dealing with changing storm water conditions (due to strong sealing and climate change) http://www.risa-hamburg.de/

Eco-estate Karlshöhe: Information and **environmental education** centre Hamburg (energy from black water)
http://www.gut-karlshoehe.de/startseite/

EXAMPLE HAMBURG WASSER: CROSS SECTORAL TECHNICAL DEVELOPMENT

The **HAMBURG WATER CYCLE ®**: heat and power from a settlements own sewage

http://www.hamburgwatercycle.de/index.php/english.html

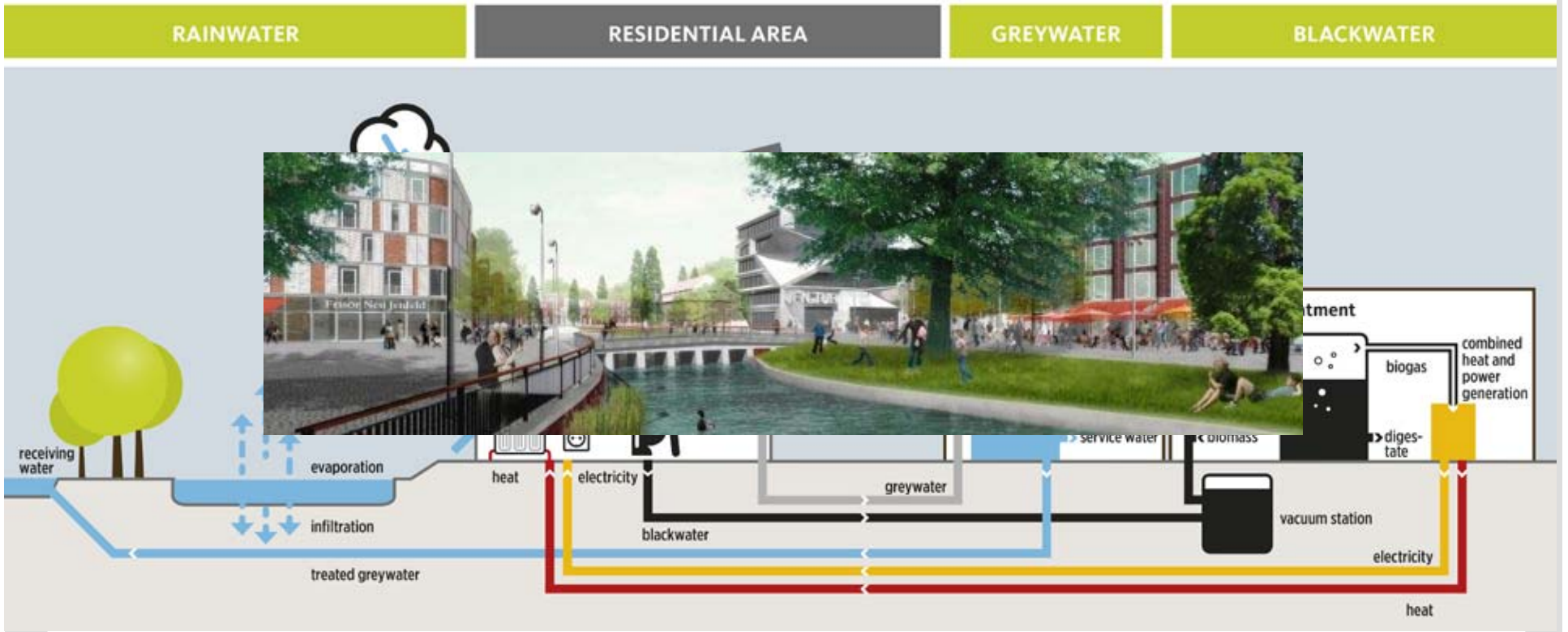


- ✓ Cross sectoral technical development
- ✓ 'Waste water' is the resource for energy generation (economical value)
- ✓ Separation of partial streams and decentralized usage
- ✓ Utilization of different waste water streams for different purposes
- ✓ Creation of new business alliances and models

EXAMPLE HAMBURG WASSER:
CROSS SECTORAL TECHNICAL DEVELOPMENT

The **HAMBURG WATER CYCLE ®**: heat and power from a settlements own sewage.

The residential area JENFELDER AU in Hamburg



COMING BACK TO THE CONTEXT OF THE SDGs

Ensure availability and sustainable management of water and sanitation for all.

Make cities and human settlements inclusive, safe, resilient and sustainable.

Take urgent action to combat climate change and its impacts.

We need **new alliances** in order to enforce the municipalities/ public companies:

OPERATOR PARTNERSHIPS between public utilities

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DEVELOPMENT COOPERATION RELOADED

New approaches necessary – Start thinking differently!

- Germany has more than 13.000 municipal utilities in the water sector
- High diversity, large variety
- Long experience in all types of settings
- Vast ‘knowledge store’ and experience values

German Water Partnership

Solutions you can trust.

→ Great opportunity to **make use of this potential in development cooperation projects**

- The German Water Partnership is currently **fostering the twinning of public water utilities**
- New financial models of long-lasting development cooperation are necessary
- Stakeholders need to be involved (public utility representatives from South and North; donor agencies; representatives from the German ministry)

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PUBLIC OPERATOR PARTNERSHIPS

- **Long-lasting collaboration (!!)** between public utilities South – North
- **Peer-to-peer coaching** approach (CD for people)
- **Institutional accompaniment** (CD for organisations)

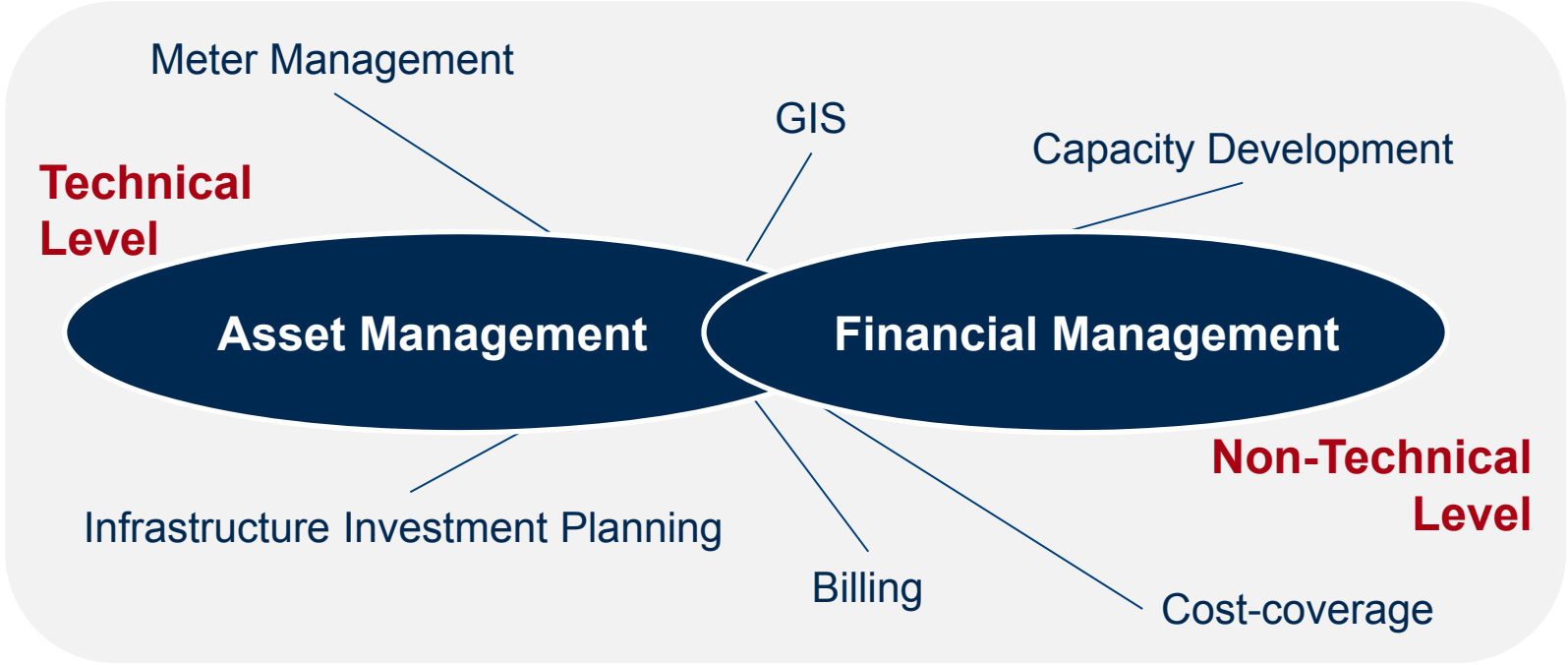
Sustainable quality improvement in operation and maintenance of the water and waste water infrastructure

- **Twinning of teams** from utility experts (long lasting)
- **Making the existing expertise of all hierarchical levels available**
- HAMBURG WASSER: >160 years expertise
- Process-oriented approach
- Understanding of the water utility as a system
- Aiming for **coherency between different donor strategies**

Photos from the water operator partnership between Dar es Salaam and Hamburg, 2012-2015

INTEGRATED APPROACH FOR WATER UTILITY MANAGEMENT

Linking technical and non-technical spheres



OPERATION AND MAINTENANCE –

SUPPORTIVE STRUCTURE AND ORGANISATION

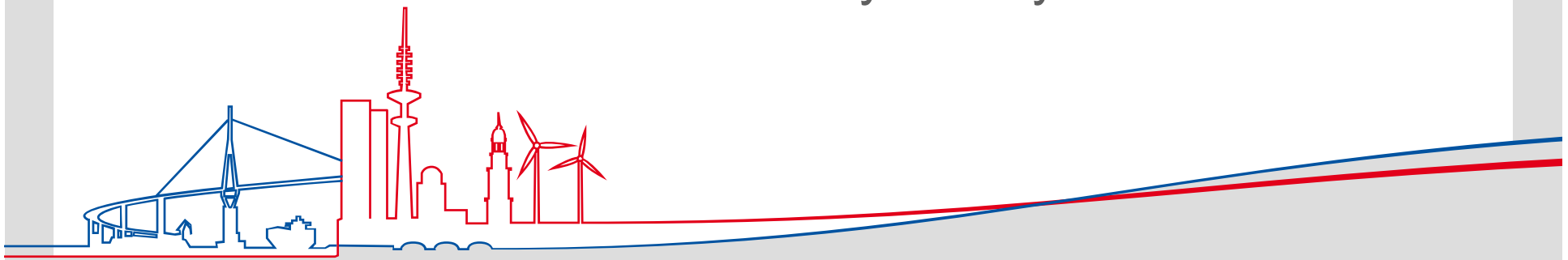
(e.g. standard procedures facilitating monitoring and evaluation)

KEY ELEMENTS FOR ESTABLISHING ECONOMICALLY RELIABLE OPERATION MODELS – A UTILITY PERSPECTIVE

Investments in water infrastructures without responsible operator is like a car without driver or a fish without water ➡

no investment without capacity building (of humans and organisations)!

Thank you for your kind attention!



CONSULAQUA Hamburg
Ein Unternehmen von HAMBURG WASSER

HAMBURG WASSER

HAMBURG ENERGIE

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