CEWP BUSINESS AND INNOVATION PROGRAM

CHINA MARKET OUTLOOK @SINGAPORE, DECEMBER 15TH, 2022

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China Europe Water Platform

- Established in 2012 as a co-operation structure between China and European countries with 3 pillars: governance, research, business
- Objective of Business Program: to promote state-of-the-art solutions as cost-efficient and adequate solutions to current water challenges and to promote business co-operation and market access
- Activities 2018-2022: 25 events, 180 company presentations, more than 1.800 attendees – including special events with EU SME Centre reg barriers and business strategies
- Outputs: event reports, background reports and market reports, available at www.cewp.eu/business-cooperation
- Results – policy recommendations, based on the exchanges and supported by questionnaires, will be presented to High-level Meeting

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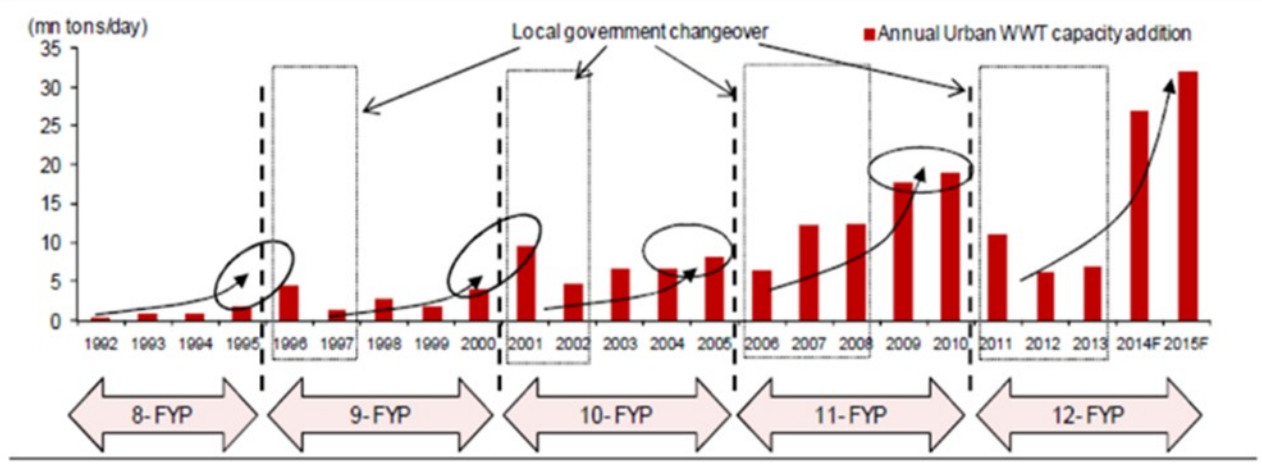
Agenda

- China Water Policy Drivers; 5 Year Plans; Ecological Civilization
- Market and Technology Outlook
- Barriers to the enter the market
- Enablers eg Digitalization and
- Circular Economy
- Waternomics – framework conditions for key water Operators
- Policy Recommendations



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CHINA Major Policy Drivers – The Policy Framework

- **Ecological Civilisation** – The overarching framework
- **State decrees and state level environmental Laws** – Provide legal framework
- **Five Year Plans** – provide priorities for investments and cross-sector planning
- **Action Plans** – provide sector specific programmes with investment levels
- **Ministerial Reorganisation** – 2018 reorganisation of Ministry for Ecology & Environment (MEE) and Ministry for Natural Resources (MNR)
- **PPP Finance and Regulation**
- **Party Cadre Performance assessments**

13th 5 Year plan

Main water sector targets of the 13th 5-Year Plan, covering 2015-2020 :

- Upgrade of municipal wastewater treatment
- New wastewater capacity
- Sludge management
- Wastewater reuse
- Installation of centralized wastewater treatment plants in all industrial parks
- All industries must meet the discharge standards in the 13th plan
- Cities to meet "Sponge Cities" Standards

Major Policy Drivers – 14th Five Year Plan

- Out of 8 binding targets, 5 are green – 0 are economic
- Increasing focus on reuse of wastewater, water quality
- Further investments in wastewater, huge market growth
- Water Security Targets:

- Further promote industrial water saving and emission reduction
- Increase the utilization of unconventional water sources
- Promote comprehensive control of groundwater overexploitation: The overexploitation of groundwater in key areas such as Beijing-Tianjin-Hebei and Northeast China has been effectively curbed.
- Digitalization: Strengthen the construction of water safety monitoring system:

Market Expectations – World's largest market

Mordor Intelligence

Qianzhan Industry Research Institute:

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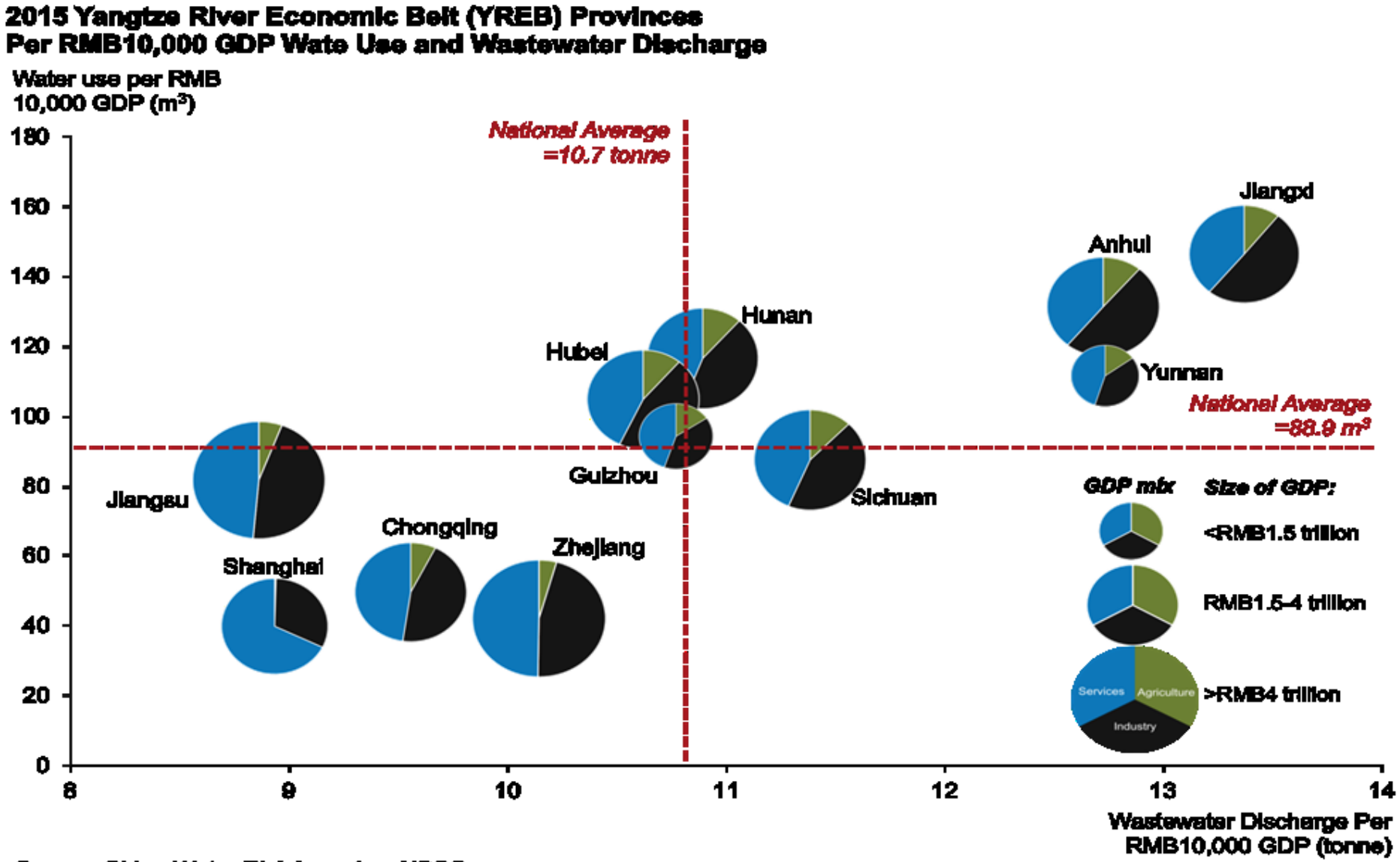
Regional differences



Source: China Water Risk based on NBSC

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Water Policy Measures of 14th 5-Year Plan: Carbon Focus

1. CHINA WATER POLICIES AND MARKET POTENTIAL

- With 14 Five Year Plan 2021 in reality first year in Chinas carbon- neutrality policy (which is now influencing all sectors)
- 2020-30: China invests 4.9 trillion USD in Carbon Neutrality (EU will invest 1.2 trillion USD in Europe)
- "Double Carbon Policy" – peak 2030 and neutral before 2060
- "Top Down Supervision System" secures targets
- New conditions will favourize energy– and resourceefficiency

Water Policy Measures of 14th 5-Year Plan: Water

2. ON WATER

- Special Water sector 14. FYP´s made by "Water" ministries: MWR, MEE and MoHURD

- Stressing the necessity to save water (16%) and improve WWT quality

Water Policy Measures of 14th 5-Year Plan: Market Size

3. ON WATER – THE MARKET SIZE

- Wastewater – 2020-25: 1100 billion DKK to 2500 billion DKK – hereoff technology expected to be 750 billion DKK

- Technologies delivering low CO2, low CH4 and N20

Overall Technology Opportunities in the Chinese market

- **Water Treatment:** rising standards, investment via PPP, mature market
- **Industrial Water:** Efficiency gains, discharge reductions
- **Networks:** leakage detection, water quality monitoring, modelling
- **Desalination:** municipal market static, limited growth in last 5 years.
- **Wastewater Treatment:** rising standards, massive investment via PPP, mature market – integration to green infrastructure and ecology
- **Sludge Treatment:** Growing investment, developing regulatory framework, at take-off – integration to energy systems and solid waste management
- **Sponge Cities:** 16+14, moving beyond just pilots, the integration of Green infrastructure into urban planning and design was pioneered in Europe and is now being implemented on a massive scale in China

Market Expectations – Treatment - Mordor Intelligence

- The **oil/water separation equipment** is widely used in the oil and gas industry to separate oil and water, followed by the processing of oil to produce downstream products. Oil and water treatment industries are the largest segments that require the usage of gravity separators and hydro cyclones.
- **Suspended solids' removal** is a primary treatment process for wastewater treatment, where suspended solids and floating materials are effectively removed. Effluent is passed through various stages, to remove materials, such as wood pieces, plastic, paper, floating debris, metals, sand, clay, slit, ash, and other organic matter.
- Total dissolved solids (TDS) are the compounds left in the water after normal treatment and filtration. Drinking water contains hazardous chemicals from different water treatment plants. In such a situation, it is essential to use the **proper filtration processes** to remove the contaminants and make water safe for consumption.
- **Biological treatment** is an integral part of the wastewater treatment process. It treats the industry and municipality wastewater, which contains soluble organic impurities. This treatment technology uses organisms to breakdown the organic substances in wastewater, which includes the usage of nematodes, bacteria, and other small organisms.
- The high concentration of metals in water can affect plants, animals, and human beings, increasing the risk of skin and lung cancer, and possible effects on the nervous system. Thus, **the elimination of these dissolved metals in industrial process water** is imperative, before it is released or reused.
- *Other sources for an analysis of the key market players are Global Water Intelligence and Absolute Reports, all behind payment walls.*

Market Constraints

Challenges	Barriers	Risks	Opportunities
Language	Tender System	IP Fraud	Market Niches
Reference Cases	Water-Economics	Covid-19	Relation-building
Ressource-demanding	SOE Competition	Wrong decisions	Ambitious targets

Strategies to Overcome Barriers

- Understand the market and the procurement processes.
- Match to the needs and expectations of the clients.
- Map the revenue streams of the clients and the supply chain.
- Best chances of successful entry are in niche, emerging **or high-risk areas**.
- Keep the product simple. Express yourself in simple terms.
- Comply with local standards and market prices.
- Define a premium product that still offers good value.
- Have strategies to protect your IPR.
- Acquire knowledge of the financing options.
- Understand the reforms to the procurement regulations and the actions now available.
- Invest in building relationships with technical, business and financial partners and exercise due diligence.

Case: Siveco – a succesfull European company in China

Siveco China & Bluebee Technologies

Helps Environmental infrastructures to optimize assets lifecycle, control technical risks and ensure regulatory compliance by implementing "Smart O&M" solutions in line with the ISO 55000 standard.

1986	Founded in France
2004	Launch of Siveco China (www.sivecochina.com)
2010	Bluebee Lab (R&D) in Shanghai (www.bluebeecloud.com)
2011-2022	Expansion in Greater China, Asia and "from Asia"
Jan. 2023	Bluebee Tech Singapore

1,000+ clients in China and Asia

Recent project:
Hong Kong Integrated Waste Management Facilities (IWMF)

Asset Management Consulting | Maintenance 4.0 & Risk Prevention solutions | Mobility 'for the worker of tomorrow' | BIM for O&M

Scan for movie case studies

A well-functioning water sector Market may be characterizised by

A Well-functioning Market which:

- Ensures maximum value creation for society
- Favour long-term economic and environmental solutions
- Ensure technology transfer to contribute to adressing to the water challenges
- Facilitate entry of SMEs, as these often are the carriers of new, innovative solutions
- Reduce the carbon footprint of the water sector
- Reduce water loss and inefficient use of water resources
- Function without Market Barriers and Risks for companies

The Value Chain
Creating additional Value for Society via Procurement

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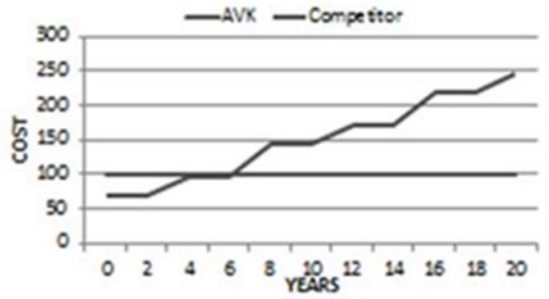
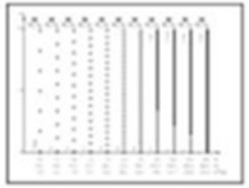
OPEX vs CAPEX - TOTEX

A low investment price may not be result in the lowest total cost over the lifetime of the technology

Cost of ownership



Activity	AVK	Competitor
Gate valve	100	75
Problem	0	500
Detection	0	500
Excavating	0	2000
New valve	0	75
Restore	0	2000
	100	5150



Expect... AVK

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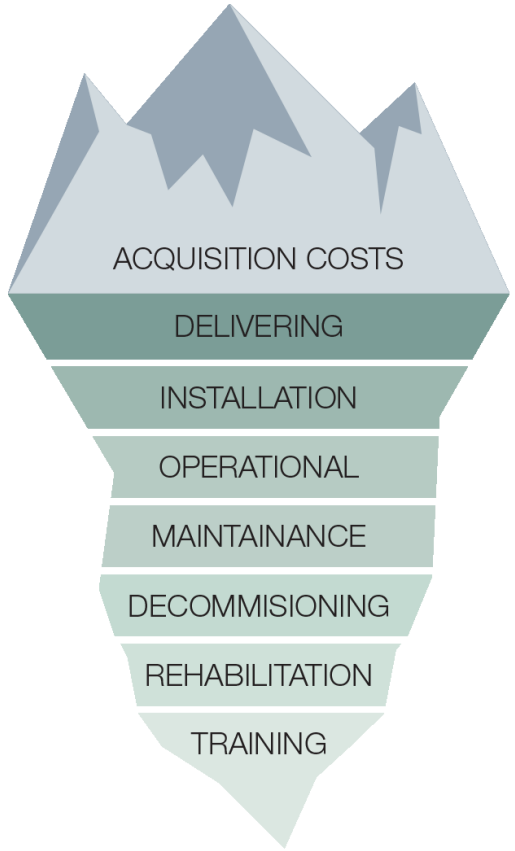
Report: Getting Investments Right

Operational conditions for utilities:

- Tariffs cover both CAPEX and OPEX
- Ring-fenced economy
- Board of Directors: willingness to invest
- Long-term perspective gives best NPV



Recommendation #1
Applying Best Available

It is suggested to examine to which extent Public Tenders on Water System Infrastructure facilitate the use of Best Available Technologies regarding a.o.:

- Reduction of Water Leakage by applying Pressure Zone Management, District Meter Areas, and state-of-the-art technologies regarding pipes, valves, fittings and meters
- Contribution to Climate Neutrality in the Water Sector by applying Energy Efficiency in Wastewater Treatment Plants and addressing all Greenhouse Gas Emissions
- Increase Impact and Efficiency of Water Infrastructure by ensuring uptake of the possibilities for increased efficiency and impact stemming from Digitalization

Recommendation #2
Ensuring geographical coherence and promoting

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It is suggested to examine

- to which extent Public Tenders on Water Supply Infrastructure facilitate the use of Best Available Technology at the same level in all Provinces, Cities and Countries across China and Europe
- how Customized Solutions (Instead of standardized solutions to all use cases) applicable to specific, local circumstances can be promoted

Recommendation #3
Framework Conditions

It is suggested to examine to which extent Utilities operating the Water Infrastructure are working according to framework conditions, which ensures a focus on long-term economic and environmental sustainability including Best Available Practice within Asset Management

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Conclusions

- ***State-of-the-art Technologies exists, which can match the main water challenges***
- China´s 28 regions and 4 city regions all have their own charcteristics, water challenges and regulation
- **”No one size fits all”: solutions have to be adapted to regional and local conditions**
- The Chinese and European water sectors share many of the same water challenges: scarcity, financing of investments, treatment costs, water quality and climate change issues
- Five-Year plans are very important regulatory drivers for the Chinese water sector
- Digital solutions (sensors, models and management systems) are gradually entering the Chinese water sector
- Requirements to adress climate change impacts are increasingly entering water sector tenders- flooding is prominent- water-energy links less prominent
- Circular economy is adressed at the strategy/policy level in broader terms than in Europe
- **Companies with adequate strategy and sufficient resources may be able to find market niche**
- **Companies established at Chinese Market before covid report good business results**
- **SMEs considering to enter the Chinese face serious constraints and are increasingly reluctant**

Presentations and summary reports of each seminar/webinar available at https://www.cewp.eu/business-cooperation

Thanks for your attention

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