

Sustainable Water Treatment Technologies in the 2020 Global Water Market

Investor Briefing: Water- An attractive investor opportunity
Tuesday, 15 May 2012

By

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Agenda



About Frost & Sullivan and the Global Water Market Practice



Headline date of the Global Water Market – Key Drivers and Segments



Global Water Design. Build and Operate (DBO) Market



Global Water and Wastewater Treatment Equipment Market



Prospects by Regions and Hot-Spot Verticals and Tech Segments



Smart Water Grid Market



Global Ballast Water Treatment Systems Market



Last Word – 3 Big Predictions for Global Water Markets in 2020

The Frost & Sullivan Story



Pioneered Emerging Market & Technology Research

- Global Footprint Begins
- Country Economic Research
- Market & Technical Research
- Best Practice Career Training
- MindXChange Events

Partnership Relationship with Clients

- Growth Partnership Services
- GIL Global Events
- GIL University
- Growth Team Membership™
- Growth Consulting

Visionary Innovation

- Mega Trends Research
- CEO 360 Visionary Perspective
- GIL Think Tanks
- GIL Global Community
- Communities of Practice

Our Industry Coverage – Industrial Convergence



Aerospace & Defense



**Measurement &
Instrumentation**



**Consumer
Technologies**



**Information &
Communication Technologies**



**Automotive
Transportation & Logistics**



**Energy & Power
Systems**



**Environment & Building
Technologies**



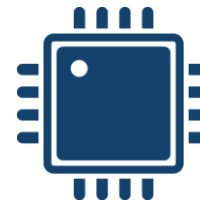
Healthcare



Minerals & Mining



**Chemicals, Materials
& Food**



**Electronics &
Security**



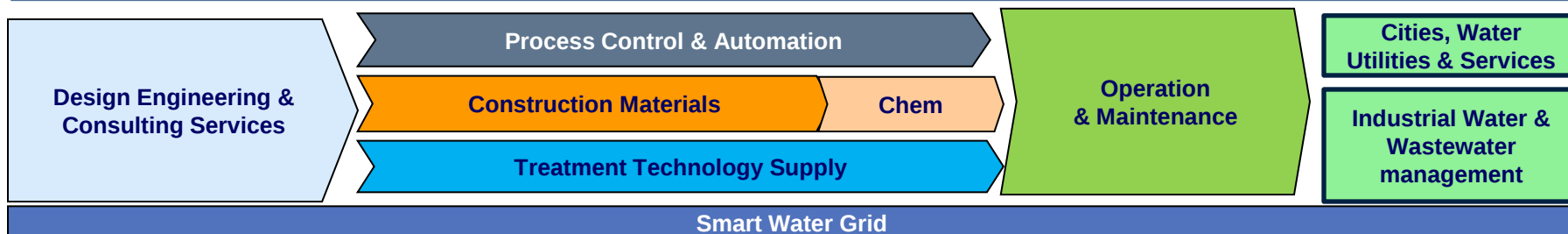
**Industrial Automation
& Process Control**

F&S Coverage along the Value Chain of the Water Industry

F&S Research Business Units and Domain Expertise

 Environment(Water) & Building Technologies	Cities, Municipalities, Water Utilities & Services, Smart Water Grid/Metering and Indl. Water & Wastewater Management
	Operation & Maintenance
	Water & Wastewater Treatment Technologies
	Design Engineering and Consulting Services
 Chemicals, Materials & Food	Chemicals used in Water and Wastewater Treatment – Municipal & Industrial Chemicals used in Sludge Treatment
	Materials used in Water Infrastructure and Piping Materials used in Building and Construction
 Industrial Automation & Process Control	Pumps, Motors, Drives, Valves, Controllers, SCADA, Machine Control
	Distributed Control Systems, PLCs, Controls, Advanced Process Control, MES, MRP, etc
 Information & Communication Technologies	Communications Infrastructure Systems & Software
	Communication Services, Contact Centers, Digital Media, Enterprise Communication, IT Services and Applications, Mobile and Wireless Communications, Network Security, Space and Communications

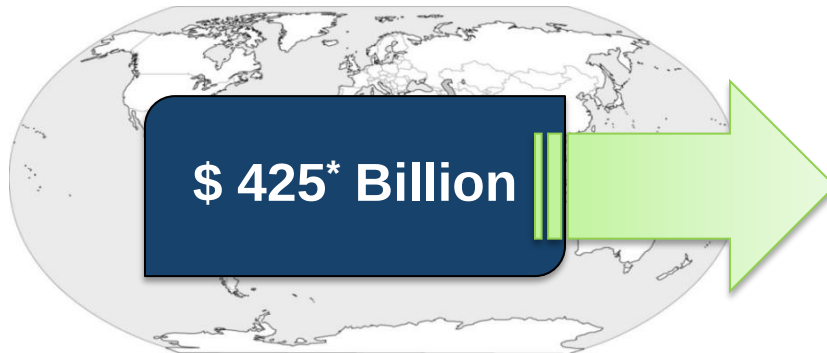
Frost & Sullivan Expertise and Coverage Along the Value Chain of the Water Industry and Market Segments



Global Water Market

□ Headline Data and Drivers

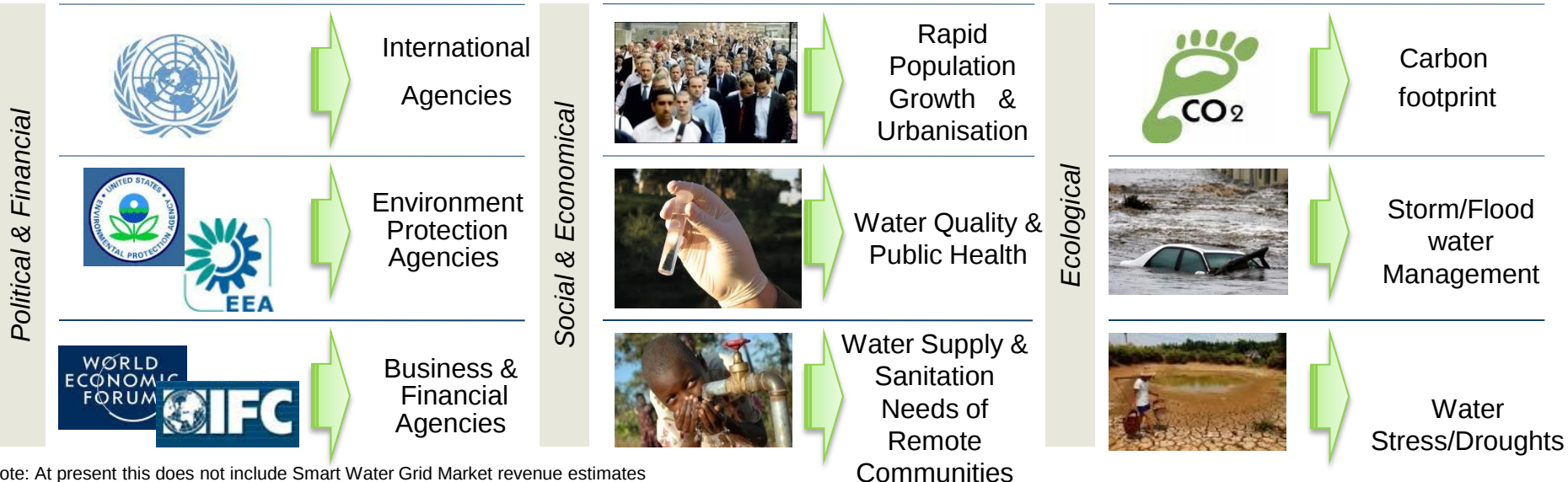
Total Global Water Market Value



Construction
Technical engineering & design
Operations & maintenance
Chemicals supply
Technology/equipment supply
R & D and piloting
Water management

Key activities
across the value
chain

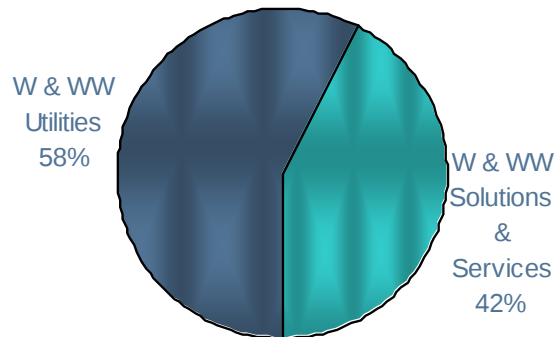
Key Global Water Growth Drivers



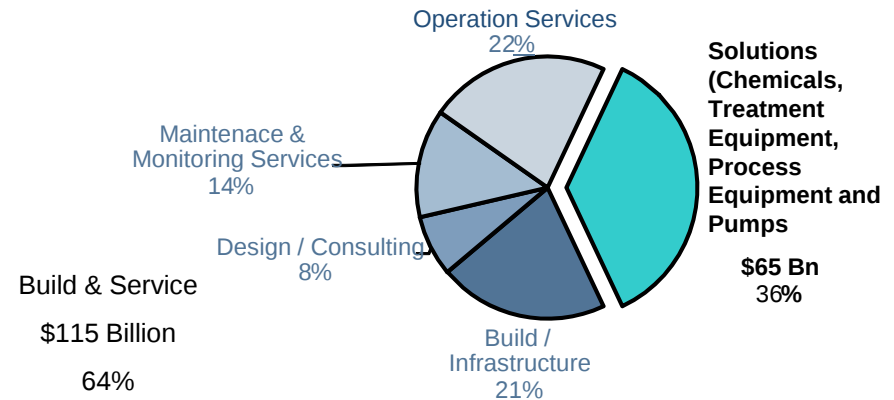
Note: At present this does not include Smart Water Grid Market revenue estimates

Global Water Market by Utilities, Services, Technology Solutions and Chemicals

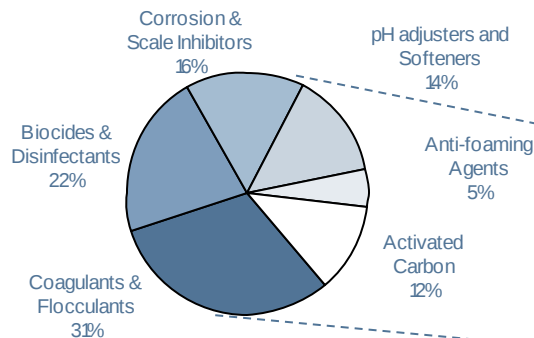
Global Water Market \$425 Billion



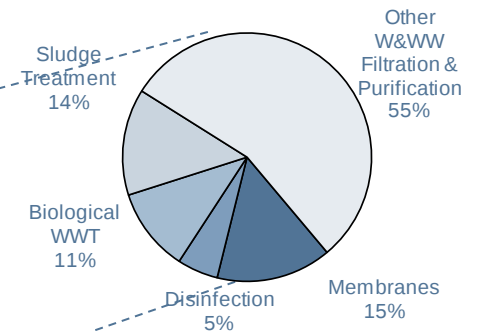
Water & Wastewater Solutions and Services \$180 Billion



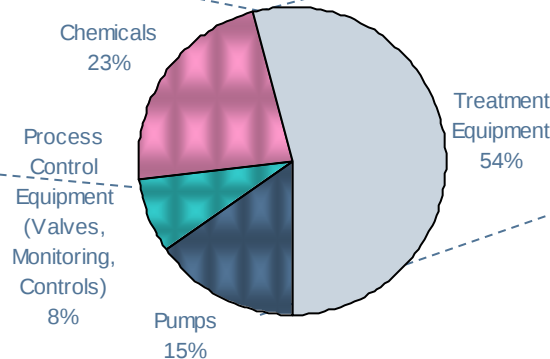
Chemicals \$15.00 Billion



Treatment Equipment \$34.59 Billion

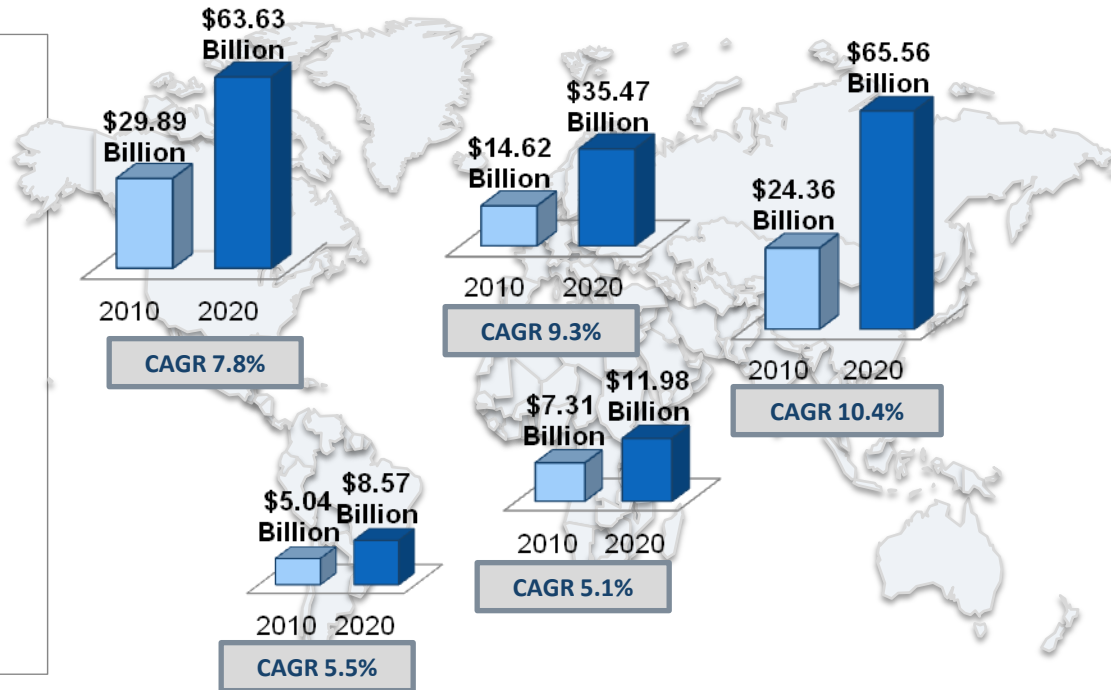
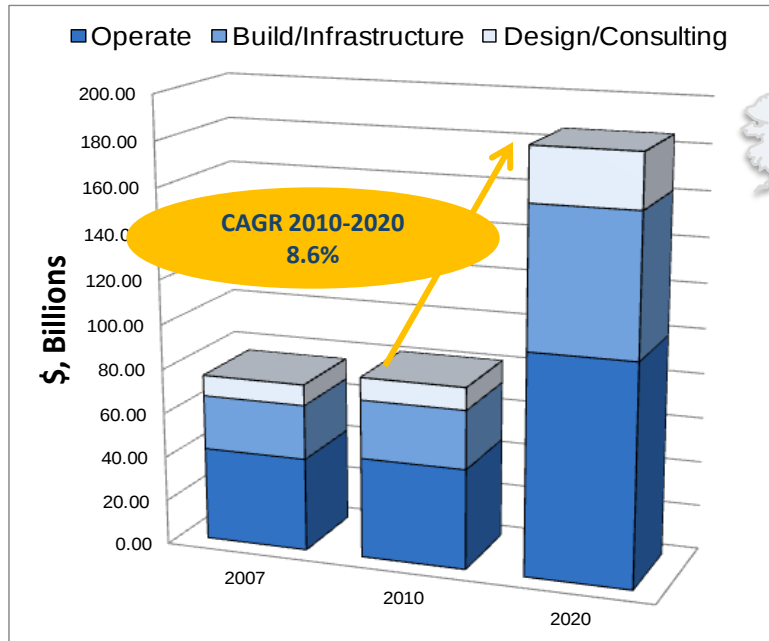


Process Equipment & Pumps \$15.00 Billion



Source: Frost & Sullivan

Global Water Design, Build & Operate (DBO) Market

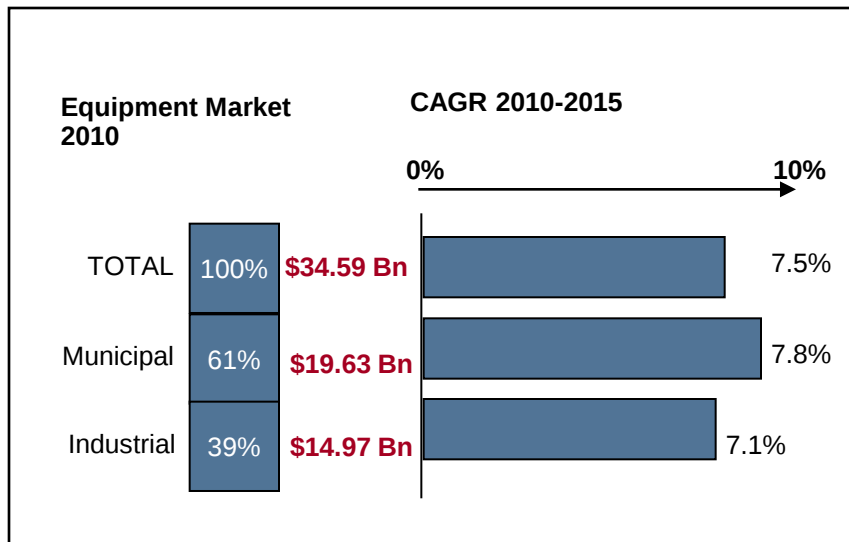


Top DBO Companies	North America	Latin America	Middle East & Africa	Europe	Asia Pacific
	TETRA TECH INC.	SUEZ ENVIRONMENT	SUEZ ENVIRONMENT	SUEZ ENVIRONMENT	CH2M HILL
	VEOLIA WATER	VEOLIA WATER	VEOLIA WATER	VEOLIA WATER	SUEZ ENVIRONMENT
	SUEZ ENVIRONMENT	CH2M HILL	AECOM	ATKINS	VEOLIA WATER
	CH2M HILL	BLACK & VEATCH	MOTT MACDONALD	AECOM	AECOM
	AECOM	LOUIS BERGER	ATKINS	REMONDIS AQUA	REMONDIS AQUA

Source: Frost & Sullivan

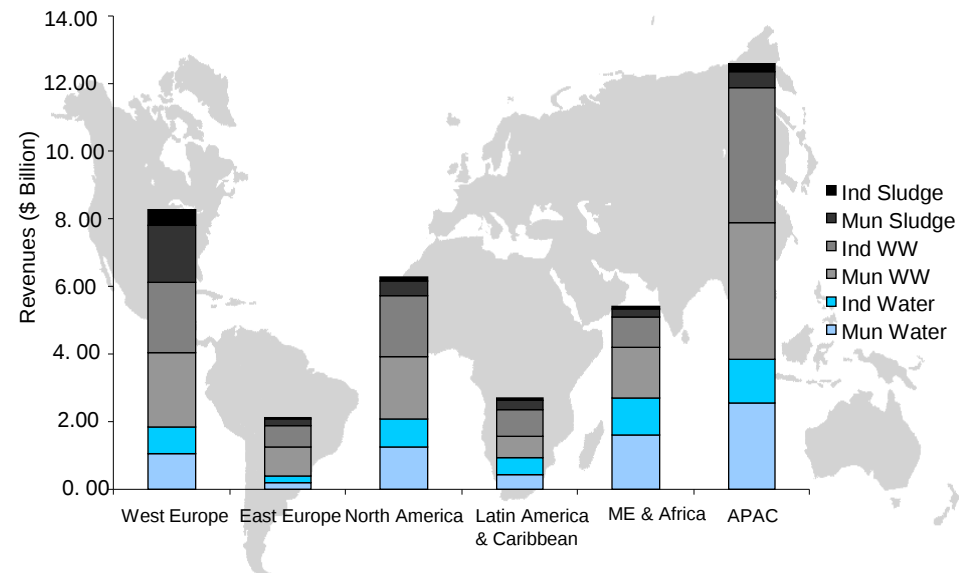
Global Water & Wastewater Treatment Equipment Market, 2010 to 2015

Water & Wastewater Treatment Equipment Market: Growth Forecasts for Total Market, Municipal and Industrial Segments (World) 2010-2015



Note: All figures are rounded . Source: Frost & Sullivan

Water & Wastewater Treatment Equipment Market: Revenue Trend by Technology Segments by Regions (World), 2010



Source: Frost & Sullivan

- Rapid increase in populations both in developing countries as well as major urban centres
- Lack of freshwater resources is less of a region specific issue and fast becoming global
- Ageing water & wastewater infrastructure of the developed regions coupled by increasing stringent legislation

2020 Mega Trend: Sustainable Water Treatment Solutions

Technology Roadmap



Water & Wastewater Treatment

Water Management

Water Re-Use & Recycling

Sustainable/Low-Carbon Solutions & Services

The market message and response...sample of companies equipped with a sustainable solution and/or service

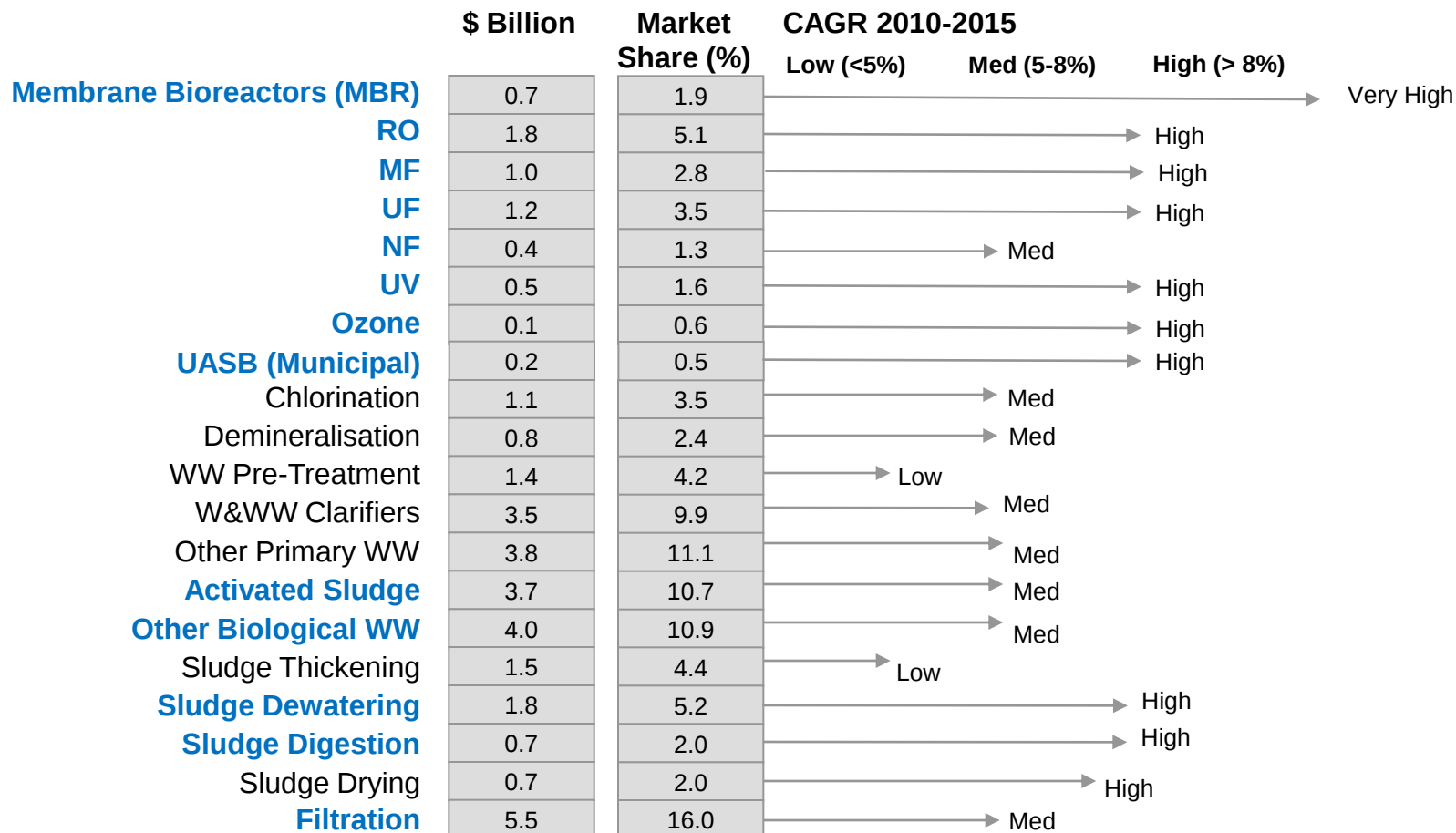


2020 Mega Trend: Membranes Fuels Growth Momentum

□ Revenue Forecasts by Key Technologies

Water & Wastewater Treatment Equipment Market: Revenue Forecasts by Key Technologies (World), 2010-2015

Total Market Segmented by Technology (Total Global Market Size in 2010 = **\$34.59 billion**)

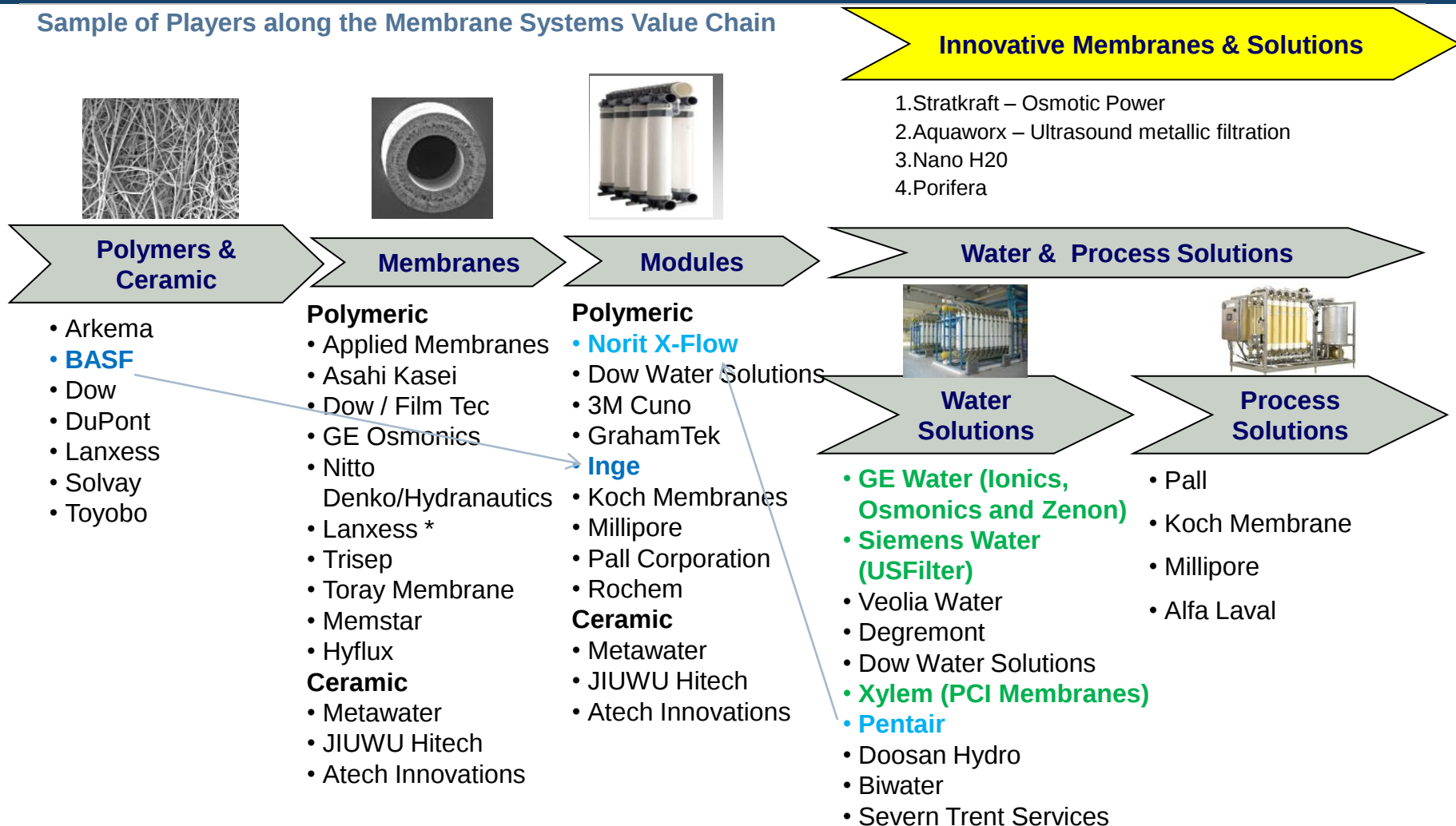


Source: Frost & Sullivan

2020 Mega Trend: Integration Opps. Along Value Chain

□ Opportunities of Integration in \$6 bn Membrane Industry

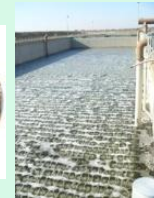
Sample of Players along the Membrane Systems Value Chain



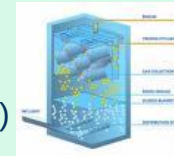
2020 Mega Trend: Sustainable Water Treatment Solutions

❑ Few of the Technologies in Select Growth Markets

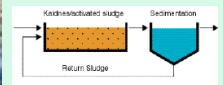
Energy Efficiency Improvements with Advanced Aeration Systems
Diffused Aeration Systems



Biogas Generation from Wastewater Treatment
(Anaerobic Digesters such as Up flow Anaerobic Sludge Blanket Systems)



Water Reuse & Recycling Systems Market
(Membrane Bioreactor Systems)
Nutrient Removal & Wastewater Treatment Solutions
for Rapidly Growing Cities
(Moving Bed Bioreactor Systems)



Chemical Free Water & Wastewater Treatment
(UV & Ozone)



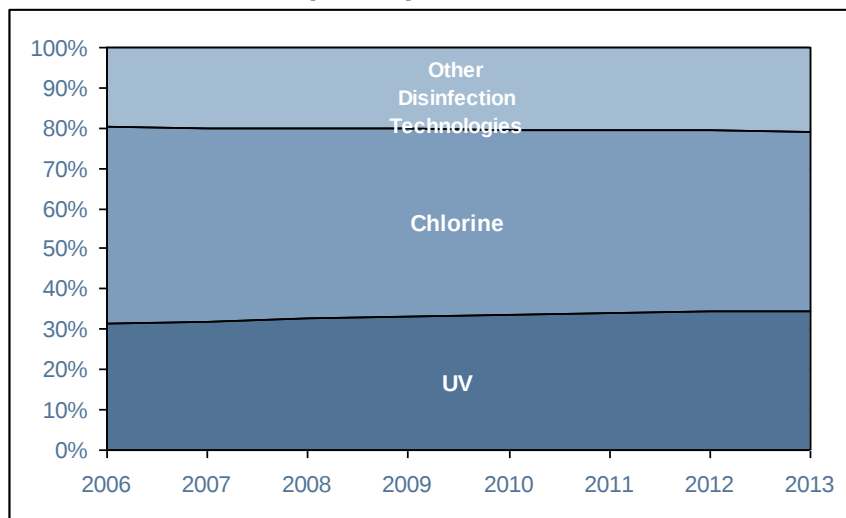
Smart Water Solutions to Improve Efficiencies and
Decarbonise Water Services
(Smart Water Grid and Smart Water Metering Market)



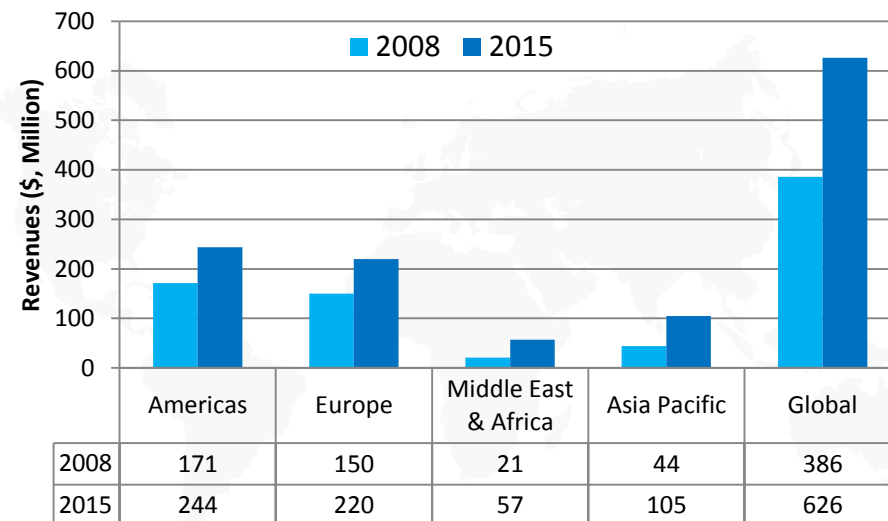
Approx. \$ 400 Mn UV Market

□ Consolidating Position as Chemical Free Disinfectant

Water and Wastewater Disinfection Systems Market: Revenue Share by Chemical, UV and other Technologies (World), 2006 and 2013



UV Disinfection Systems Market: Revenue Forecasts by Region & Global (World), 2008 and 2015



Recent & Exciting Market Developments

Environmentally Friendly

the first UV technology to reduce power requirements and mercury by up to 90%

The Most Reliable

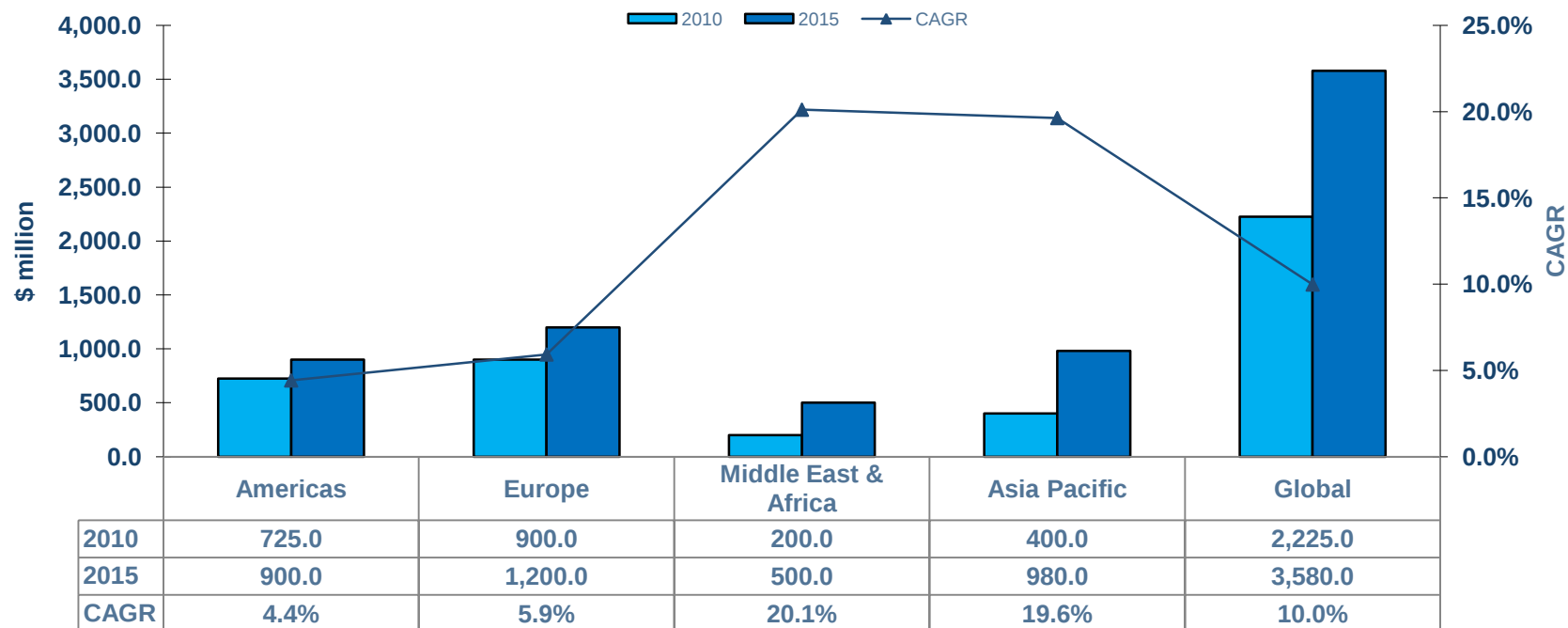
only NeoTech offers 100% Dosage Assurance™ for full time protection from pathogens, bacteria and viruses



\$2 Bn Diffused Aeration Systems Market – CAGR 10%

□ Unmet Needs Present Opp. To Membrane Companies

Diffused Aerators Market: Revenue Forecast (Global), 2010-2015



Note: Above figures are top level estimates from secondary research and analysis

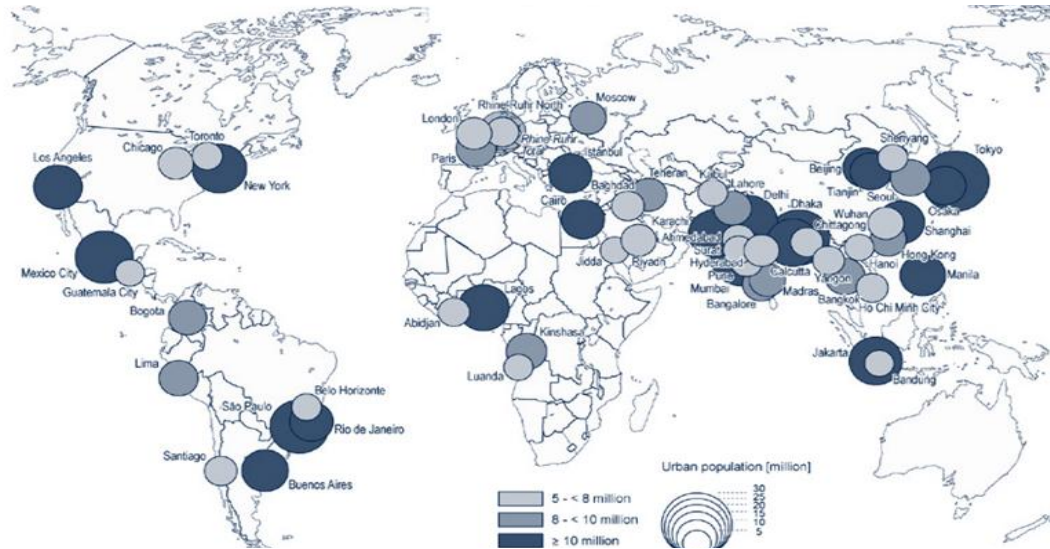
Unmet Needs....

- Reduction in the energy needs of aeration systems
- **Preventing fouling of membrane surface**
- Customising diffused aeration systems to specific wastewater effluents
- **Reducing life cycle and maintenance costs of diffused aeration to affordable levels**

\$ 700 Mn Global MBR Market – CAGR >15%

□ Urbanisation-Increasing Water Stress & Legislation Driven

Projected Concentration of Urban Population (Global), 2015



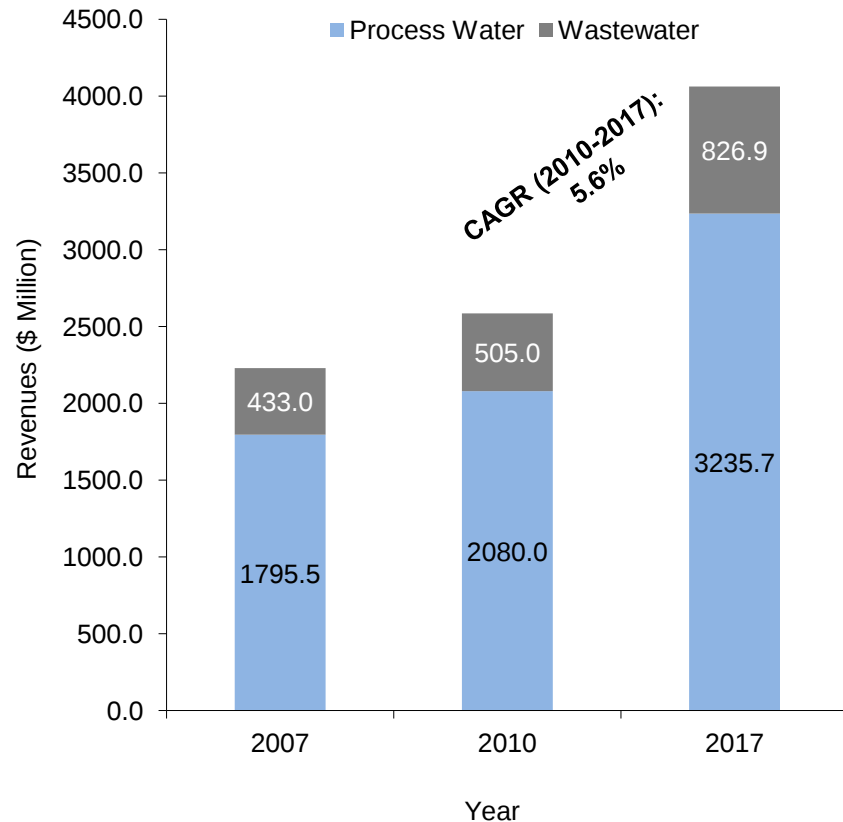
Increase of Water Stress (Global), 1995 and 2025



Opportunities in Water Intensive Industrial Sectors

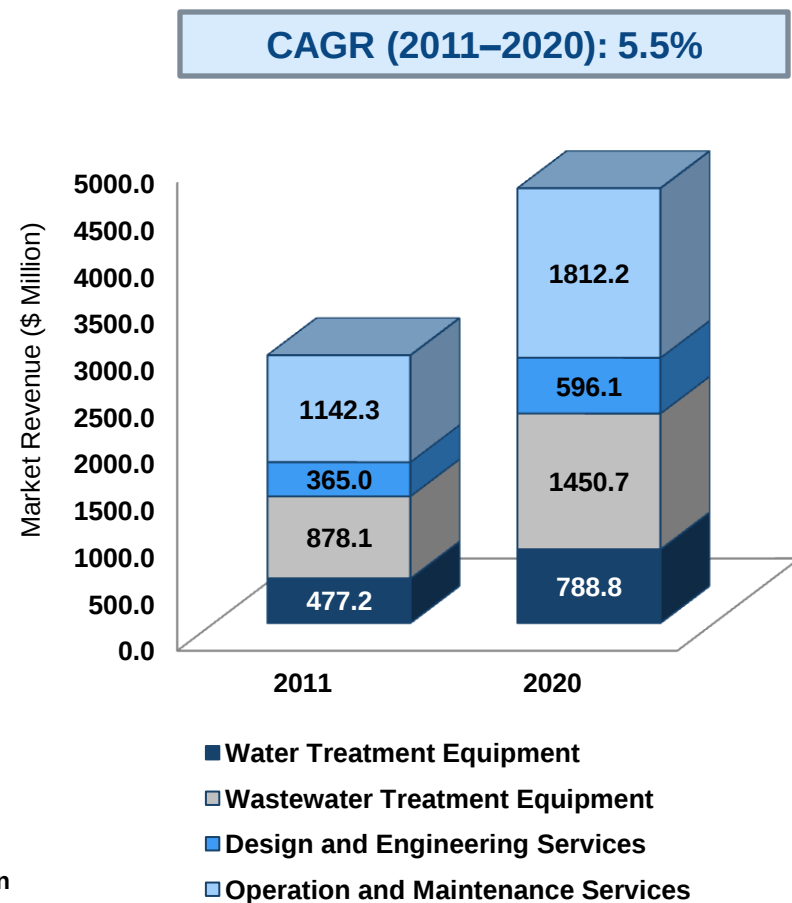
❑ Power Generation and Food & Beverage

Power Generation Water and Wastewater Market Revenue Forecast, Global, 2007 and 2017



Note: All figures are rounded; the base year is 2010. Source: Frost & Sullivan

Food and Beverage Water and Wastewater Market Revenue Forecast, Global, 2011 and 2020



Urban Regions are Leading Smart Urban Planning Initiatives

❑ Emergence of Smart Water Grid and Related Solutions



Source: Google Images

Global Smart Water Grid Market

❑ Water Utilities Leveraging ICT to Improve Efficiencies

Traditional Manual Water Grid



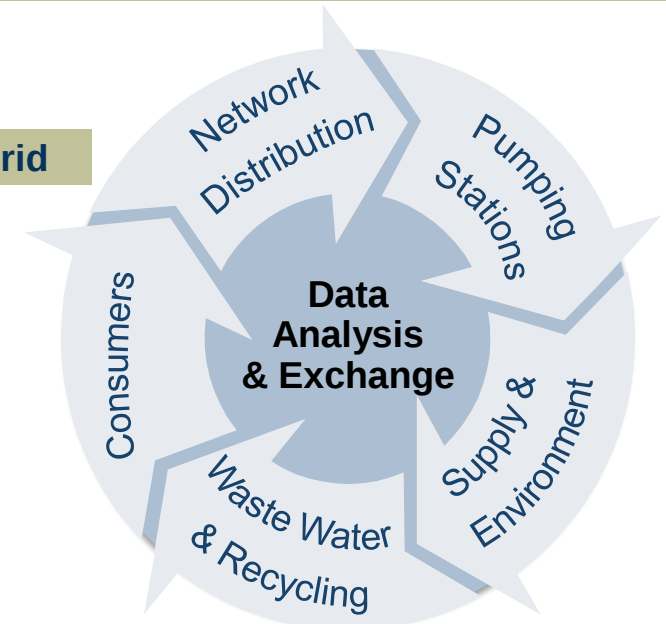
1970s Automatic Meter Reading

ONE WAY ONLY

2010s AMI Smart Water Grid



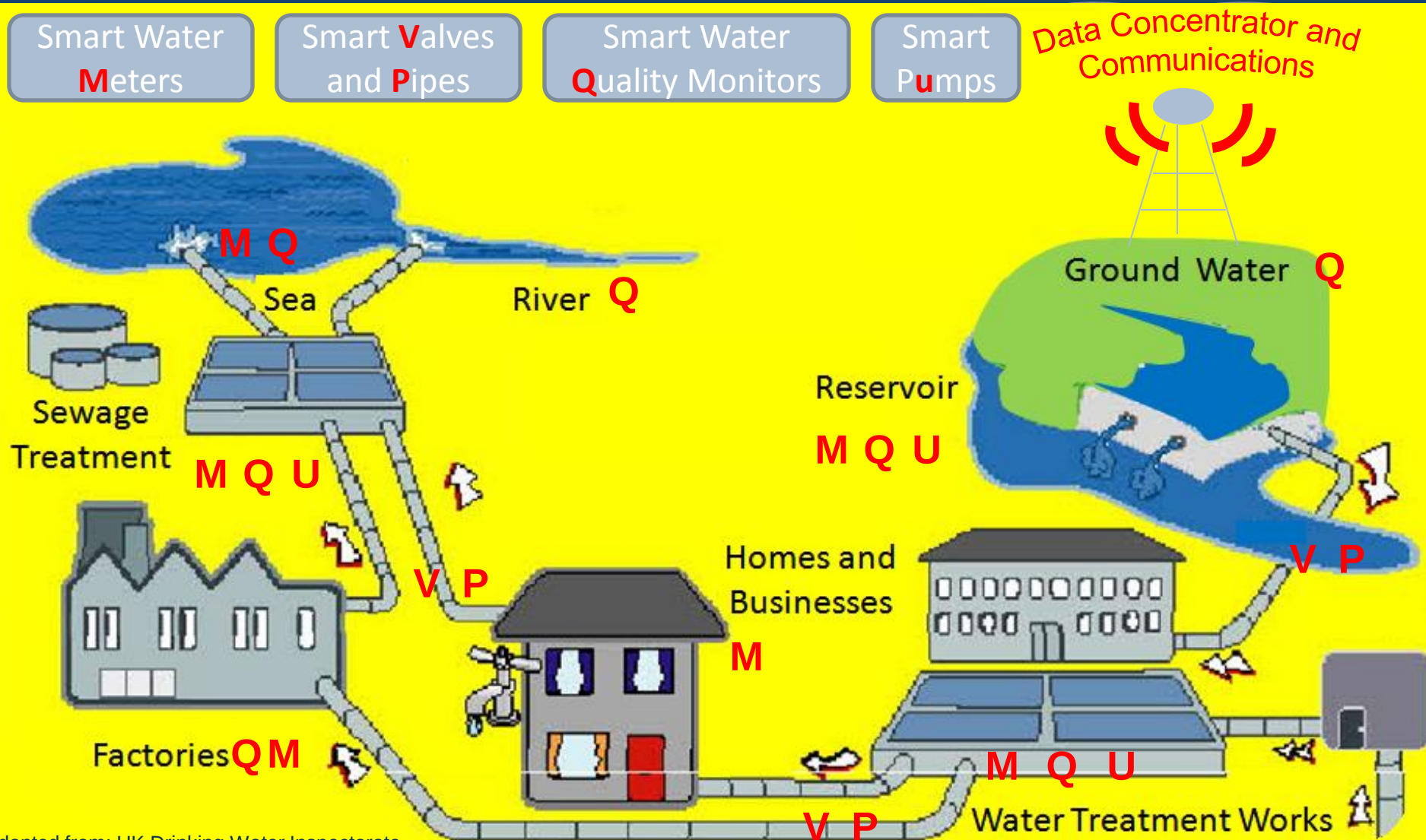
2020 : Smart Water Grid



Revolutionizing the Water Industry

Global Smart Water Grid Market

□ Technology Applications Along the Water Cycle

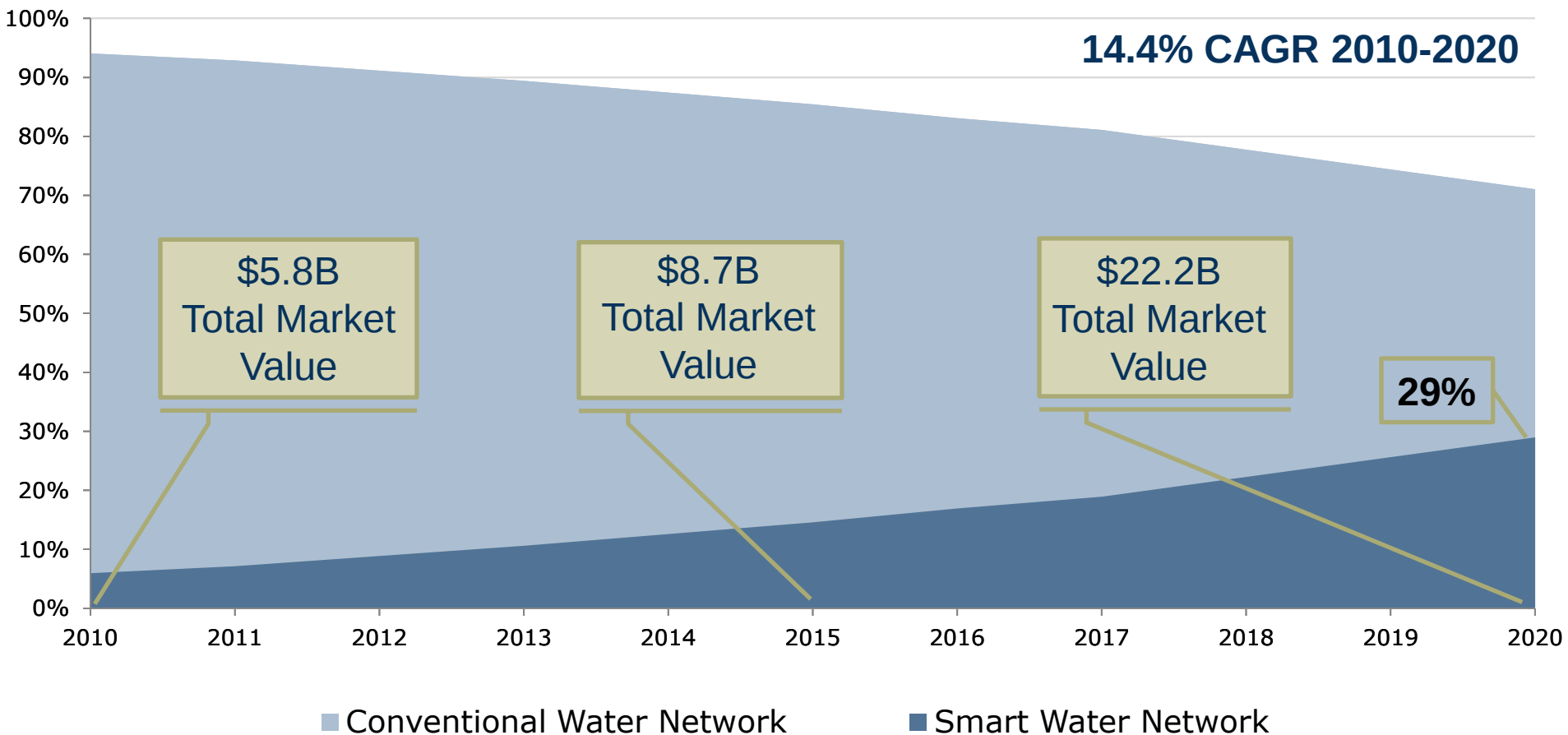


Adapted from: UK Drinking Water Inspectorate

Global Smart Water Grid Market

□ Strong Growth, Especially from 2015 Onwards

Smart and Conventional Water Grid Penetration, Global, 2010-2020

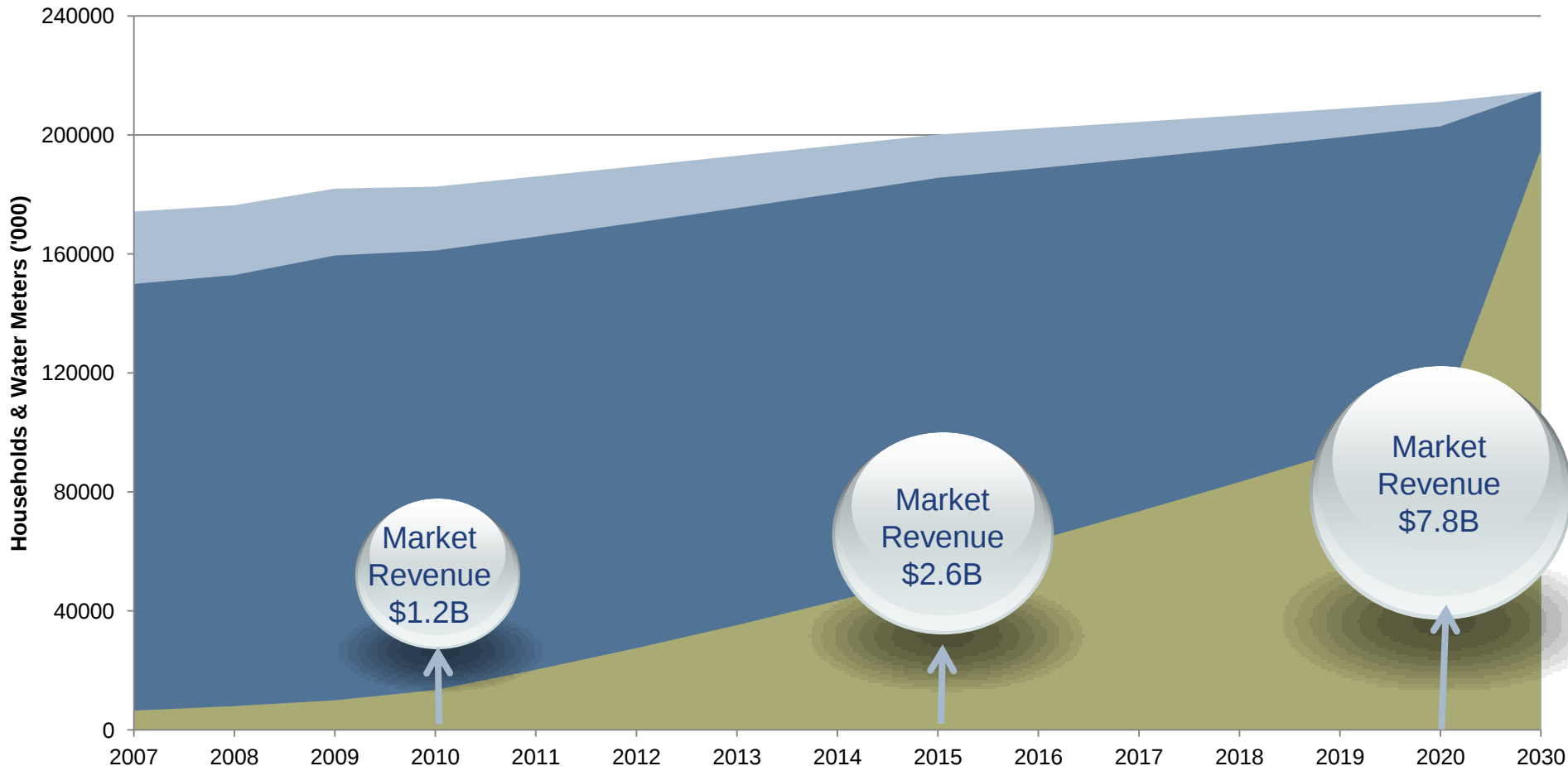


European Smart Water Metering Market

Smart Water Meters in 50 % EU Households by 2020

Smart Water Meter Market Penetration, 2007 - 2020, 2030 (Europe)

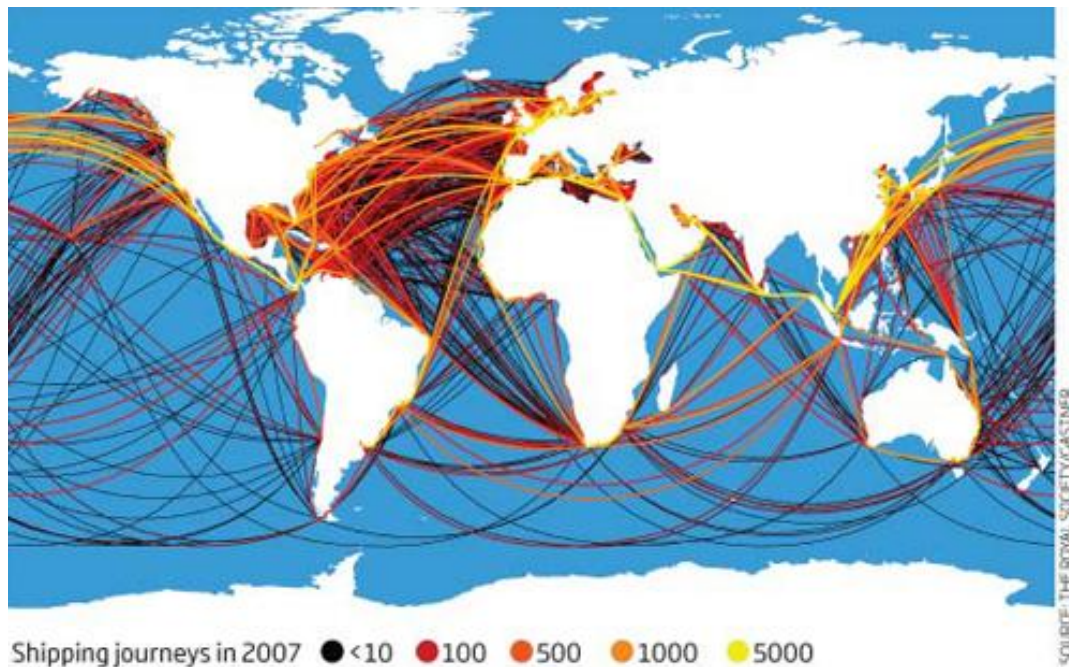
Households ('000) Water Meters ('000) Smart Water Meters ('000)



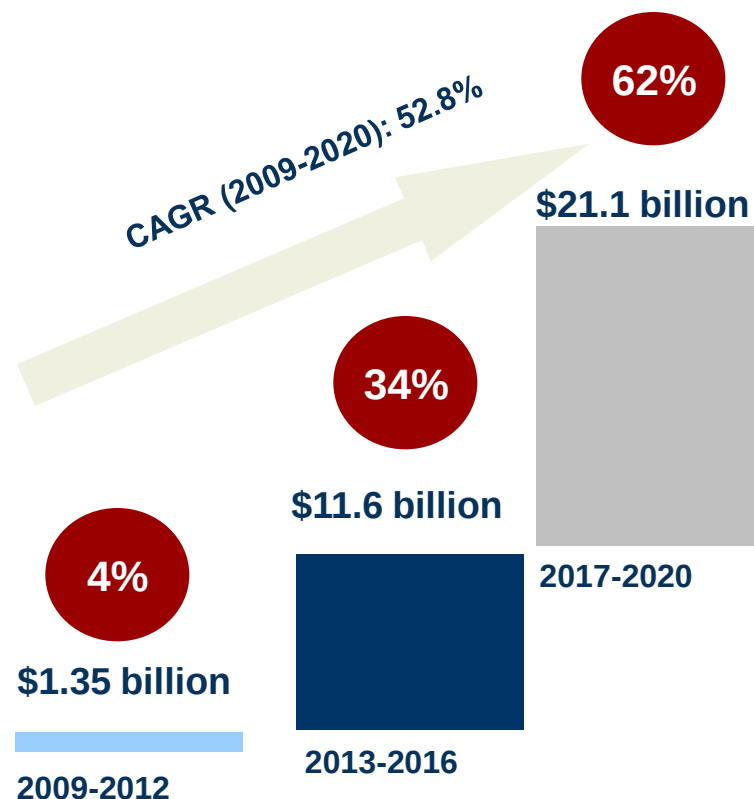
Ballast Water Treatment Market

□ Shipping Traffic and Market Revenue Forecasts

The main shipping routes, 2007



Source: www.newscientist.com after the Royal Society/Gastner

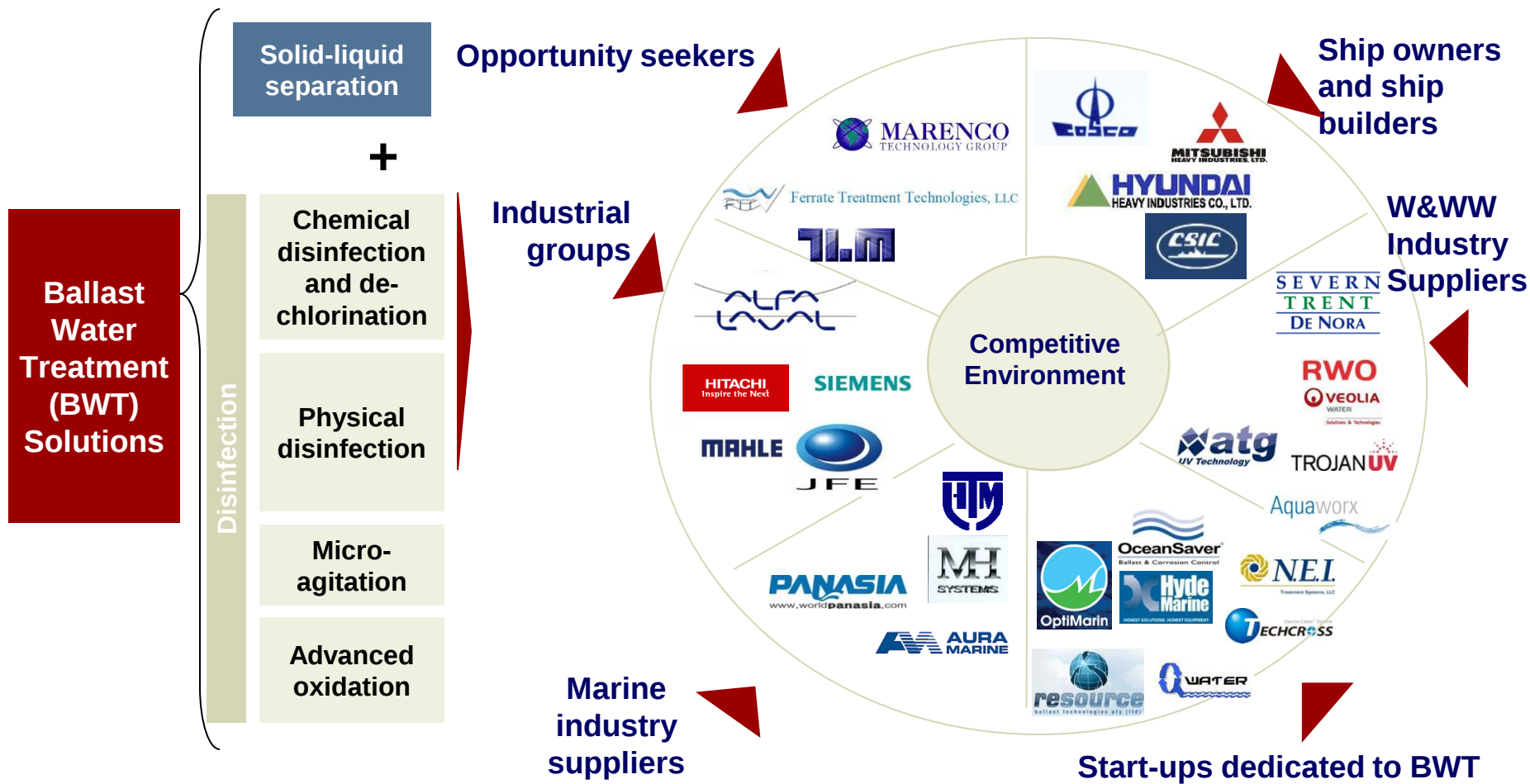


Note: All figures are rounded; the base year is 2009.
Source: Frost & Sullivan

Ballast Water Treatment Market

□ Types of Ballast Water Treatment (BWT) Technologies

Total Ballast Water Treatment Systems Market: Overview of BWT Technologies and Competitive Environment



Global Water Market 2020

□ 3 Big Predictions

1

Water FACTORY – Producing valuable commodity of water at REAL VALUE and recovering resources and producing renewable energy

2

Water Risk and Trading – Both Water Utilities and Water Intensive/Critical Industries to Invest, Insure and Trade Water

3

Smart Water Grid, Decarbonisation and Water Footprint To Establish as Key Differentiators.

“Vision for future water management in which the water sector is RESILIENT, water companies are more EFFICIENT and CUSTOMER FOCUSED and in which water is VALUED as the precious resource it is.” Water for Life, White paper for the UK Water Industry