



# Clean TeQ Water

Investing in a Scarce and Precious Resource

*Investor Presentation – February 2015*

*Clean TeQ Holdings Limited (ASX: CLQ)*

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# Clean TeQ Corporate | ASX : CLQ

## Issued Capital As at 6 February 2015

Year Listed	2007
Shares	300.1 M
Options	8.5 M
Convertible Notes	40.7 M
Fully Diluted Capital	349.3 M
Share Price (6 February)	13.0c
Market Capitalisation (undiluted)	\$39.0 M

## Shareholders

Total shareholders	1,956
Top 10	35.9%
Board & Management	9.1%

## Cash and Debt

Cash on Hand – 31 Dec 2014	\$3.5M
Short Term Debt – 31 Dec 2014	\$2.1M
Convertible Notes – 31 Dec 2014	\$4.1M

## 6 Month Price Chart



# Clean TeQ Water | Management Team



**CHAIRMAN & CEO - Sam Riggall**

Sam is a graduate in law and commerce and an MBA from Melbourne University. He was previously Executive Vice President of Business Development and Strategic Planning at Ivanhoe Mines Ltd. Prior to that Sam worked in a variety of roles in Rio Tinto for over a decade covering project generation and evaluation, business development and capital market transactions.



**FOUNDER & CIO - Peter Voigt**

Peter Voigt is a graduate in chemistry and a MAppSc from Royal Melbourne Institute of Technology. Peter established Clean TeQ in 1990 and became a director of the Company on 10 September 2007 and CEO in 2010. In November 2013 Peter moved to become the Chief of Innovation and Executive Director.



**GM WATER– Ealden Tucker**

Ealden has over 20 years' senior Global Operations experience within Multi National Company environments and geographies, and has recently returned to Australia after 8 years living abroad in China. Prior to joining Clean TeQ, he worked for Armocon Technologies, Flowserve Valve & Controls, Tyco Flow Control, Pentair, Tyco, BHP and Tubemakers. Ealden has formal engineering qualifications from the Royal Melbourne Institute of Technology.



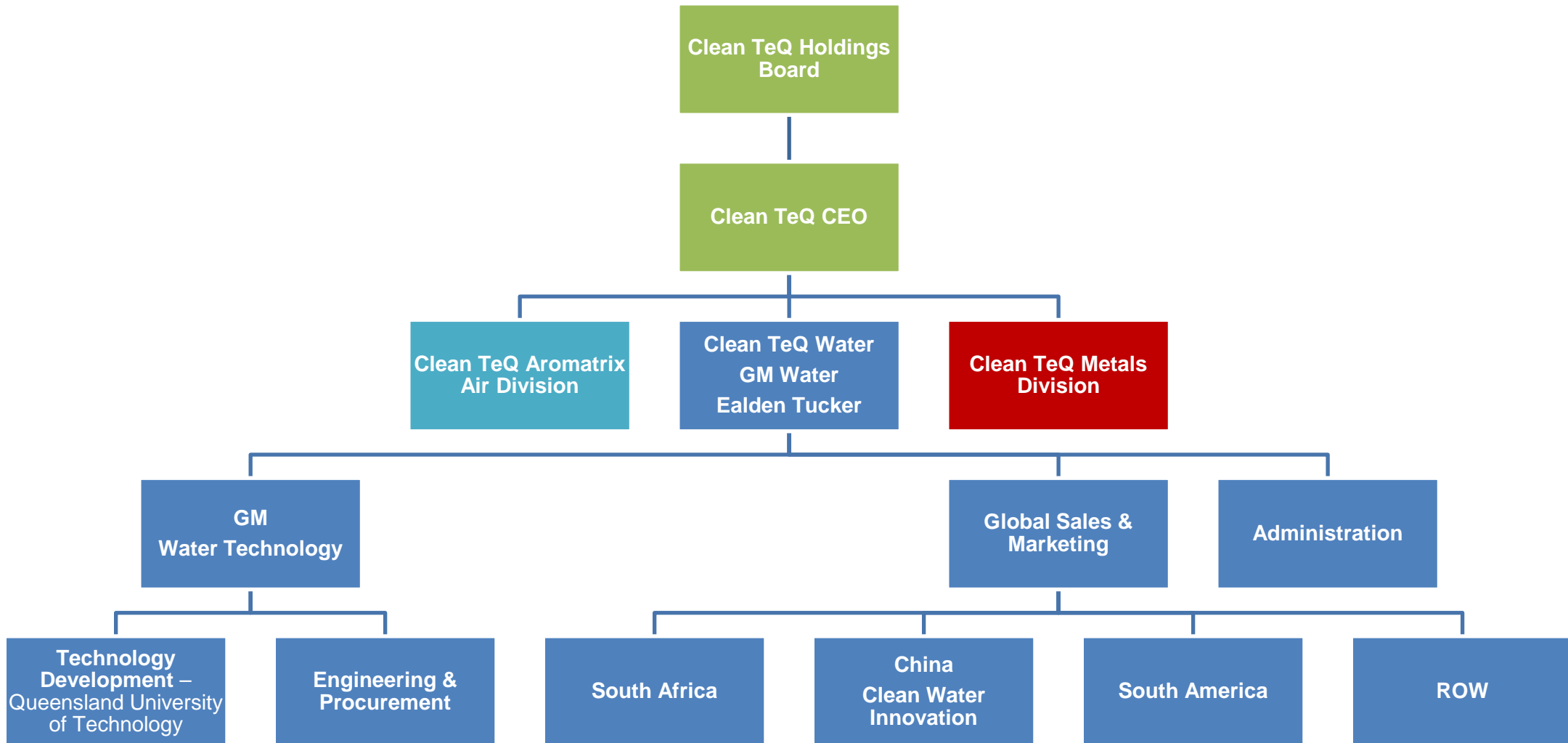
**CFO - Ben Stockdale**

Ben Stockdale is a financial and commercial executive with extensive mining industry experience including project and corporate debt and equity financing, mergers and acquisitions and metals marketing and logistics. Over the past 16 years Ben has held a number of executive roles at public and private mining companies including Oxiana Limited, Citadel Resource Group and Unity Mining. Ben is a graduate in commerce from Melbourne University.

# Clean TeQ Corporate | Key Milestones

Date	Milestone
1989	Company founded - Focused on biological air treatment (Clean Air TechniQ Pty Ltd)
1989-2000	Company grows to largest odour control company in Australia
2000	Company diversifies into water and metals through a worldwide exclusive license for continuous ion exchange technology from All Russian Research Institute of Chemical Technology (ARRICT)
2000-2007	Development of Clean-iX <sup>®</sup> ion exchange technology for metal recovery and water treatment
2007	Company IPO on Australian Stock Exchange (ASX)
2008	License sold to BHPB for nickel and cobalt recovery
2007	Clean TeQ successfully demonstrates the use continuous ion exchange for treated effluent desalination
2009	Clean TeQ develops and patents Continuous Ionic Filtration (CIF <sup>®</sup> ) a new and innovative water technology
2012	Clean TeQ successfully demonstrates the use of CIF <sup>®</sup> for desalination of produced water
2013	Clean TeQ successfully demonstrates the use of CIF <sup>®</sup> for reduction of sulphate in mining waters
2013	Mining entrepreneur Robert Friedland invests in Clean TeQ
2014	Focus on Metals and Water division as Air division merged with Aromatrix Australia
2015	MOU with SIDRI for China JV

# Clean TeQ Water | Water Structure





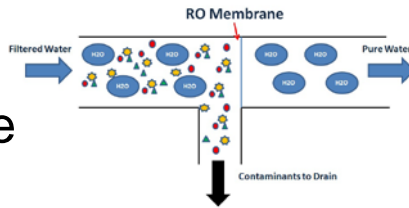
# Clean TeQ Water | Technology Curve



Continuous Ionic Filtration

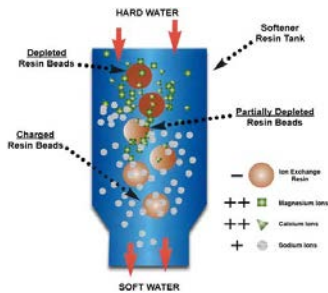
Membrane Filtration

Ion Exchange



Continuous Ionic Filtration – “Difficult to Treat” water recycling

Membranes - Sea & brackish water desalination & water recycling

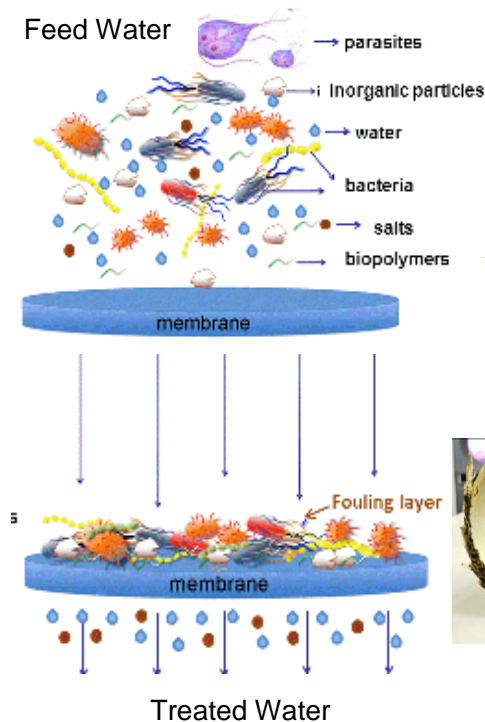


Ion Exchange – high purity water

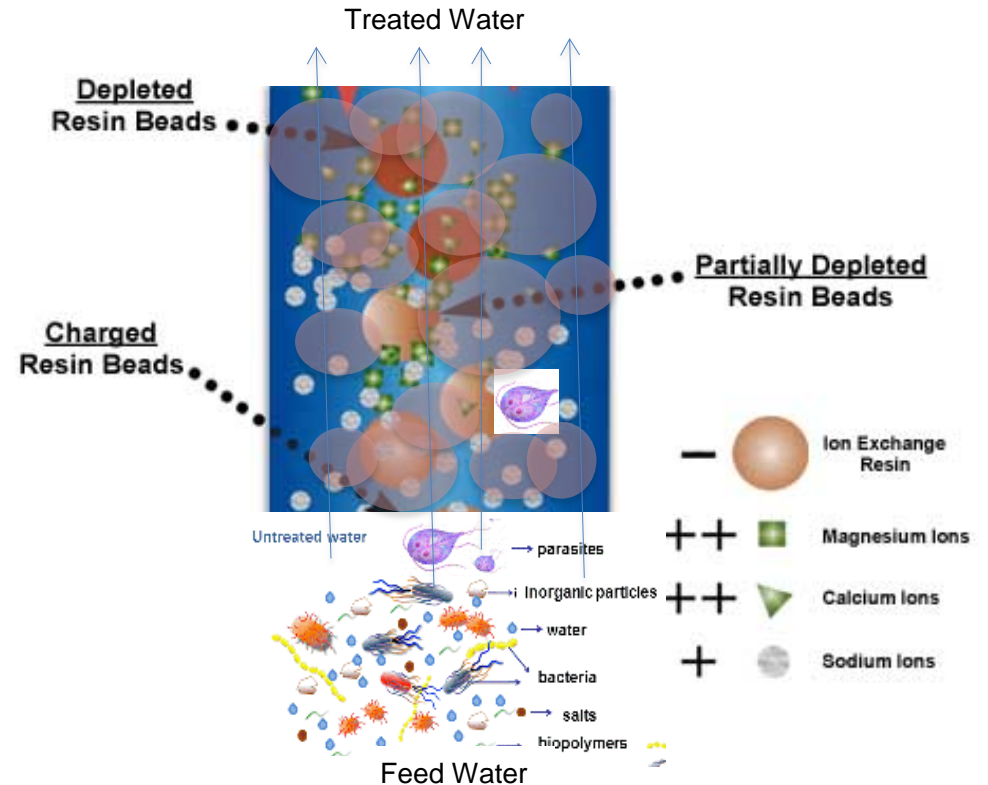
# Clean TeQ Water | Technology

Membranes, such as Reverse Osmosis (RO), use very fine holes to filter out salts. Fouling of these holes by precipitates and particles causes operational problems in some “difficult to treat” water applications.

Continuous Ionic Filtration uses ionic charge rather than size to remove salts. By continually cleaning and regenerating the resin the processes can process difficult to treat waters and operate without fouling



Fouled RO Membrane





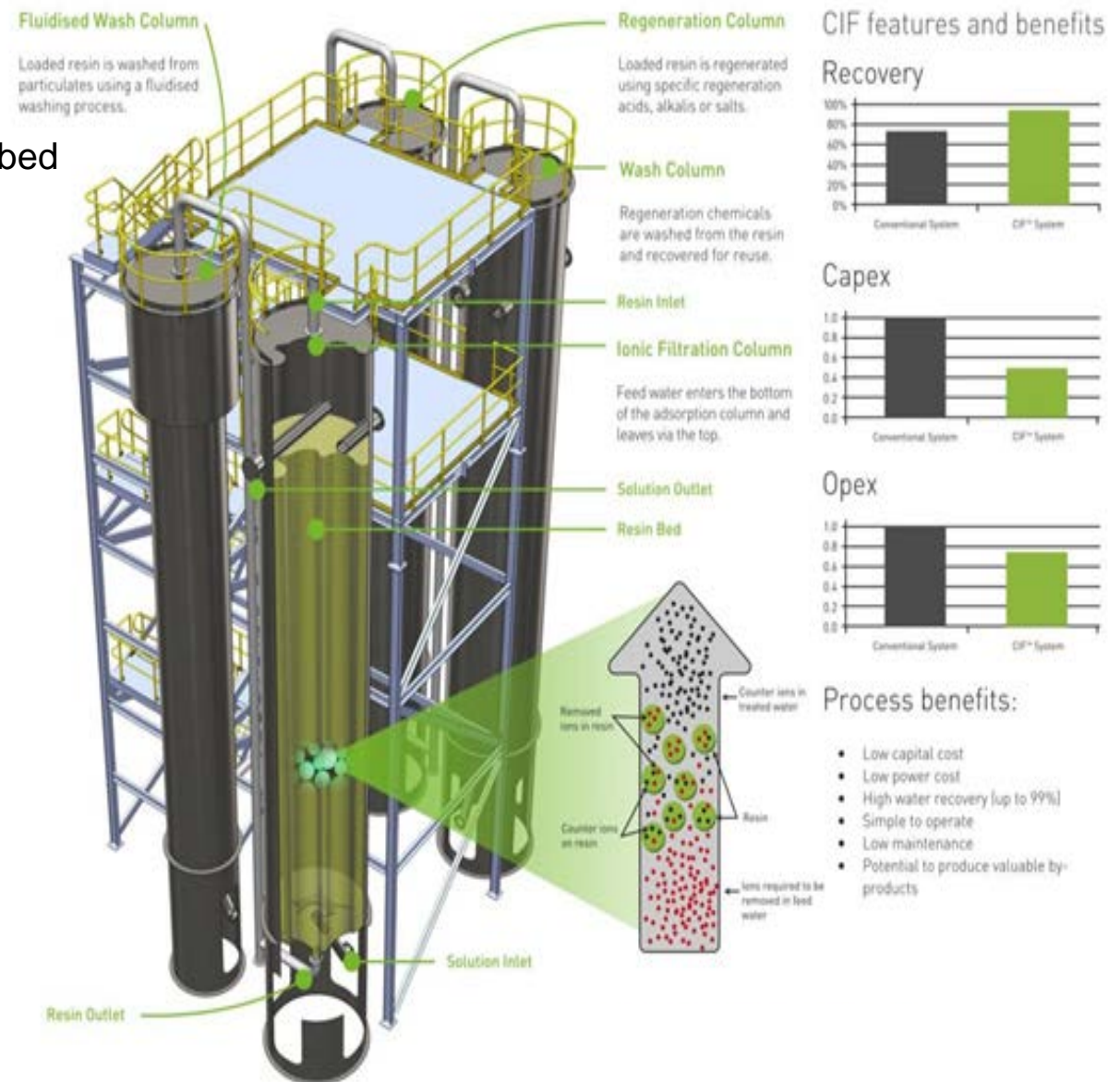
# Clean TeQ Water | Technology

## Features:

- Moving Ionic (CIF®) or Non-ionic (MPA®) resin bed
- Resin and water flow adjustable
- Fully automatic operation
- Uses low cost easily available chemicals
- Tolerates suspended solids without fouling
- Resin continuously cleaned and regenerated
- Modular construction

## Advantages:

- Low capital investment; nom. \$200K per MLD
- Low operating costs; nom. <\$0.5 per kL
- Low power use; nom <0.3kW per kL
- High water recovery; nom >90%
- Produces “fit for purpose” water
- Simple operation and low maintenance
- Potential value in by-products



# Clean TeQ Water | Technology

## Continuous Ionic Filtration (CIF®)

### Removes Inorganic Salts

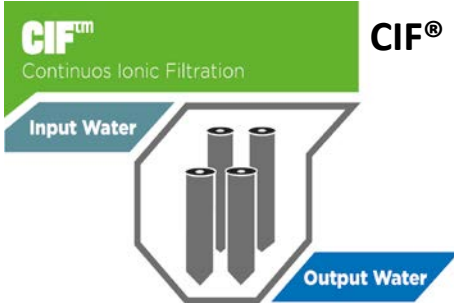
- Total dissolved salt TDS
- Alkalinity
- Hardness
- Sulphate
- Heavy metals
- Nitrate
- Fluoride
- Cyanide
- Arsenic

## Continuous Macroporous Adsorption (MPA®)

### Removes Organic Hydrocarbons

- Hydrocarbons
- Benzene, toluene, xylene (BETX)
- Phenolics
- Polyaromatic hydrocarbons (PAH)
- Chlorinated hydrocarbons
- Chemical oxygen demand (COD)

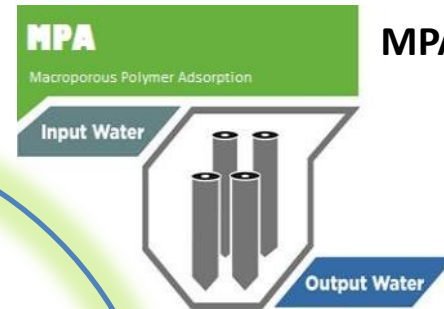
# Clean TeQ Water | Technology Suite



**Continuous Ionic Filtration®**

- Treats
- Alkalinity
  - Hardness
  - Heavy Metals
  - Metalloids
  - Fluoride
  - Cyanide

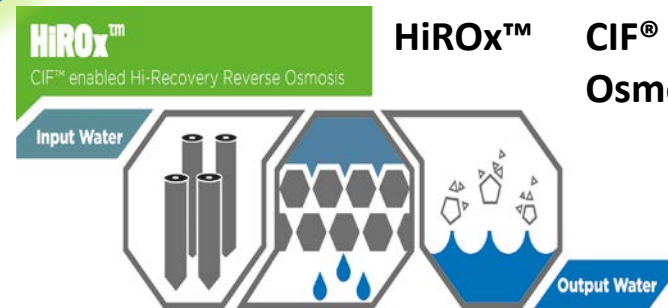
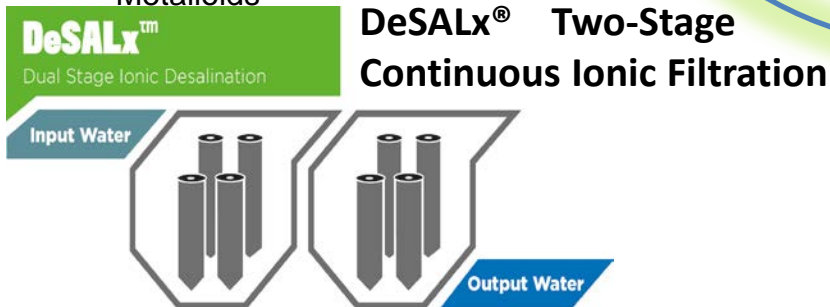
- Treats
- Dissolved salts
  - Sulphate
  - Oxyanions
  - Metalloids



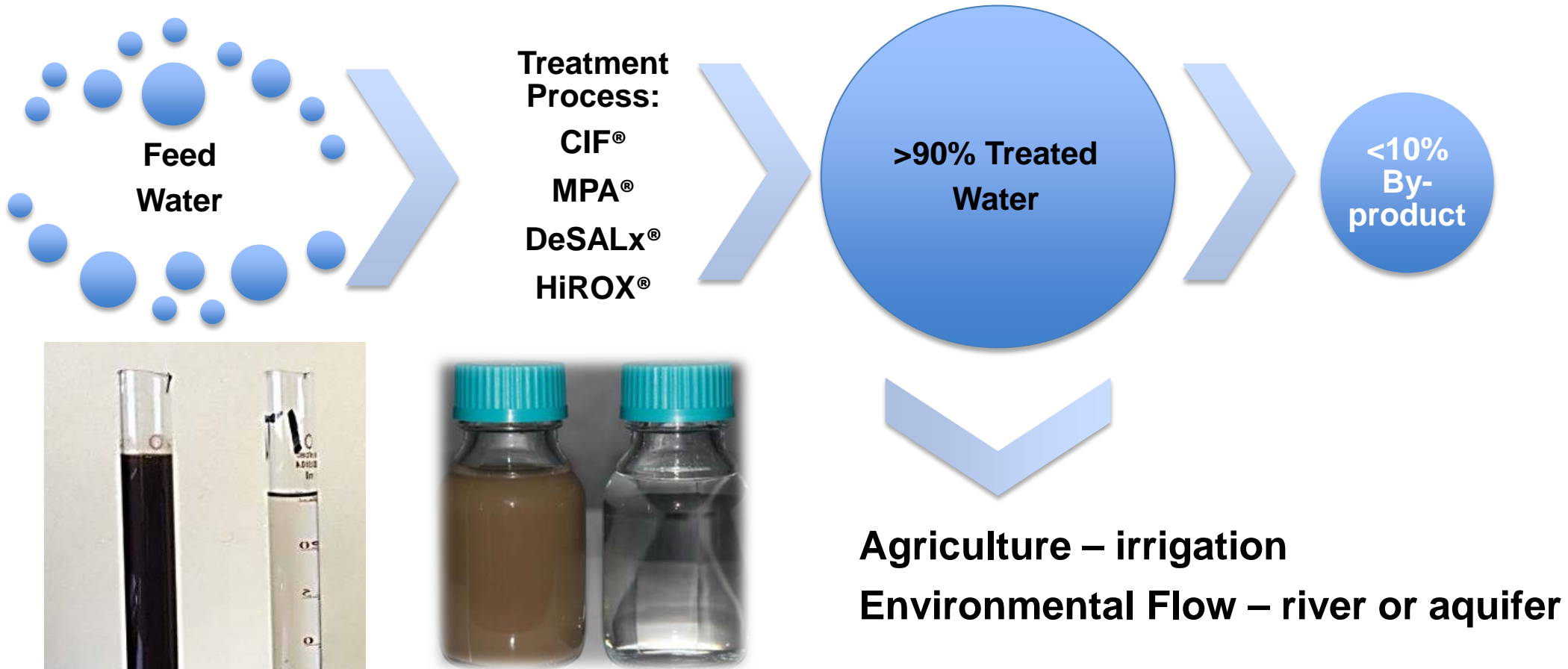
**Macroporous Polymer Adsorption**

- Treats
- Dissolved Hydrocarbons
  - Phenols
  - Polyaromatics
  - Chlorinated Hydrocarbons

- Treats
- Dissolved salts



# Clean TeQ Water | Technology



# Clean TeQ Water | Technology

Source Water	Target	Feed Quality	Treated Quality
Coal Seam Gas Produced Water	Reduce salt for irrigation	5,000 mg/L	<1,500mg/L
Sulphate Impacted Mine Water	Reduce sulphate for environmental discharge	2,000 mg/L	<250 mg/L
Coal Gas Produced Water	Recover phenols and optimise wastewater treatment	15,000 mg/L	4,000 mg/L
Treated Effluent	Reduce salt for irrigation	1,200 mg/L	<150 mg/L
Paper Plant Wastewater	Reduce calcium for wastewater treatment	1,200 mg/L	< 250 mg/L
Acid Mine Drainage	Reduce copper for environmental discharge	40mg/L	<0.5mg/L
Groundwater	Reduce calcium for water treatment	400mg/L	<20 mg/L



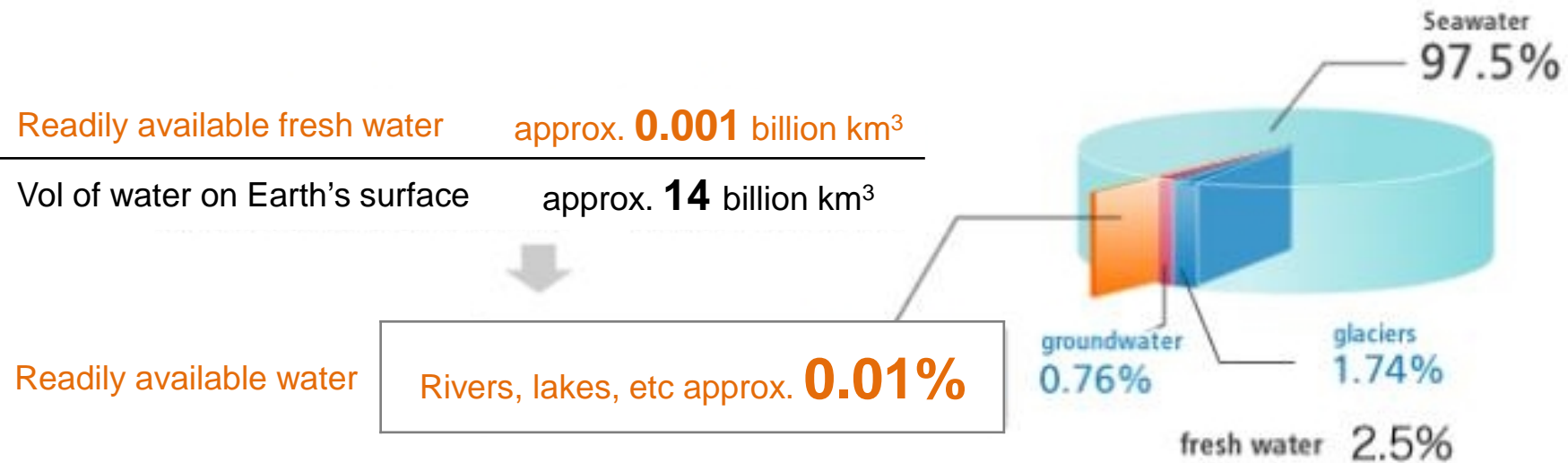
# Clean TeQ Water | Overview

- Technology suite is a paradigm change for a well recognised water treatment process
- Highly effective for the treatment of “difficult waters” where membranes and distillation struggle
- Works alone or as a pre-treatment for conventional membrane and distillation technologies
- By-products can potentially add value
- Cost of ownership (capex & opex) is very attractive in the right application
- Overseas partners have high level of interest in the application of the technology to alleviate water scarcity and water pollution problems
- A game changer for water recycling applications



# Clean TeQ Water | Drivers

The percentage of the world's water that can be easily accessed: **0.01%**

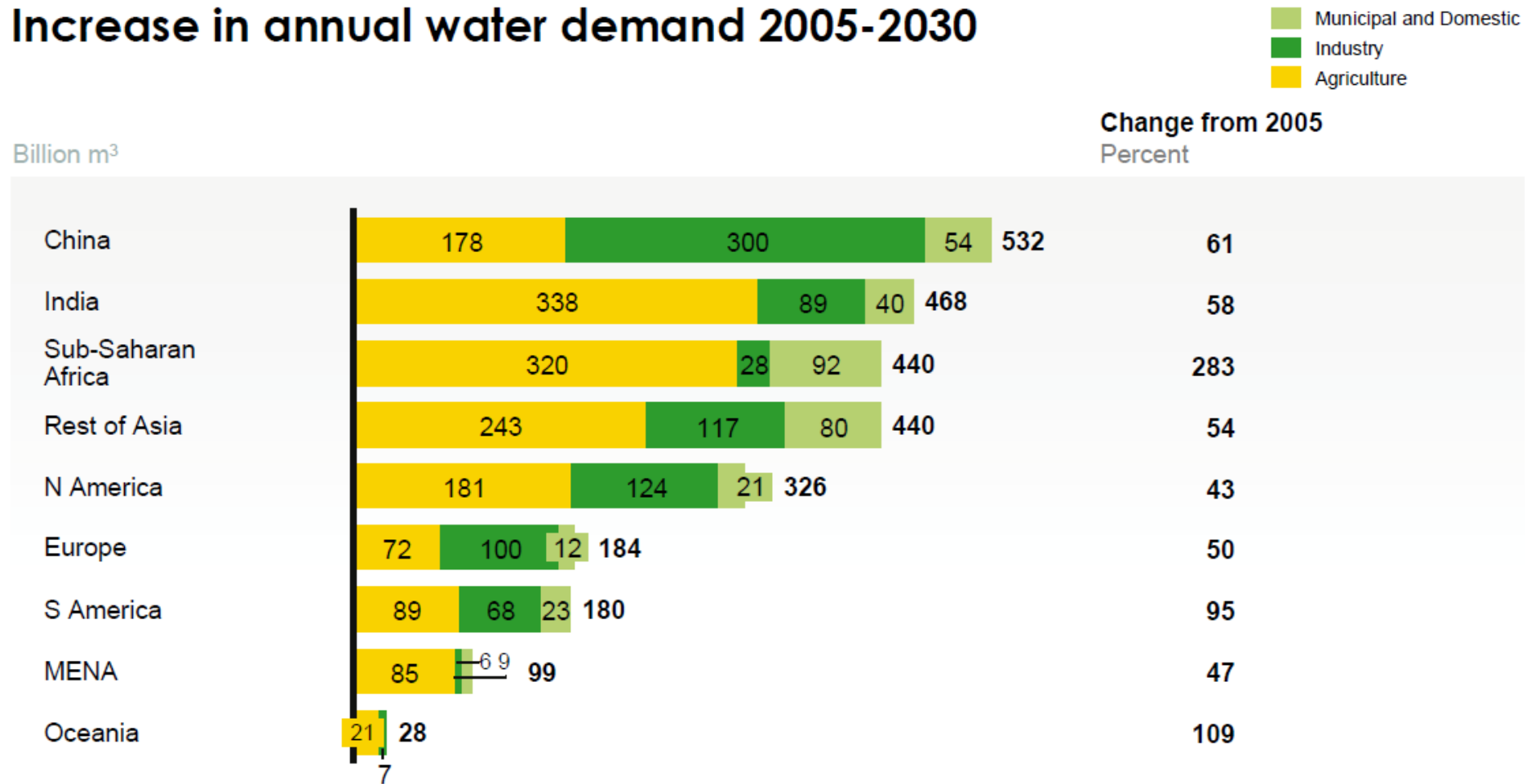


Source: Ministry of Land, Infrastructure, Transport and Tourism

- Competition for *scarce water* from multiple uses within a river basin
- The role of *agriculture* for food, feed, fibre and bioenergy as a key demand driver for water.
- Creating the need for *economical and environmentally sustainable water reuse* in industrial and municipal situations.
- Clean Teq is committed to ensuring a future that includes *global fresh water security* by providing innovative solutions for water and wastewater treatment and reuse.

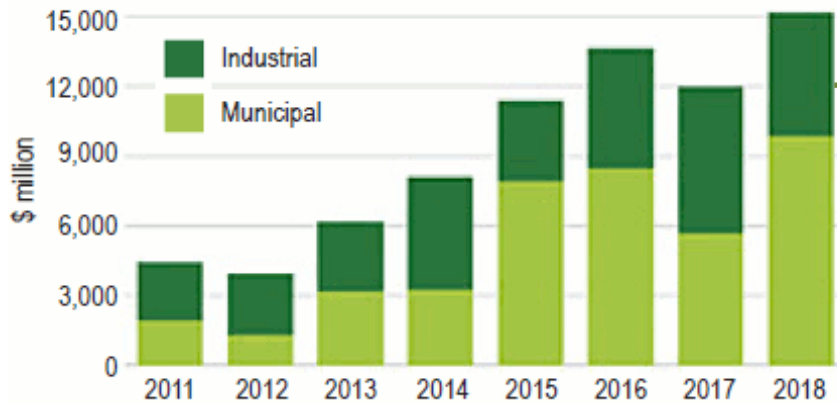
# Clean TeQ Water | Target Markets by Region

## Increase in annual water demand 2005-2030



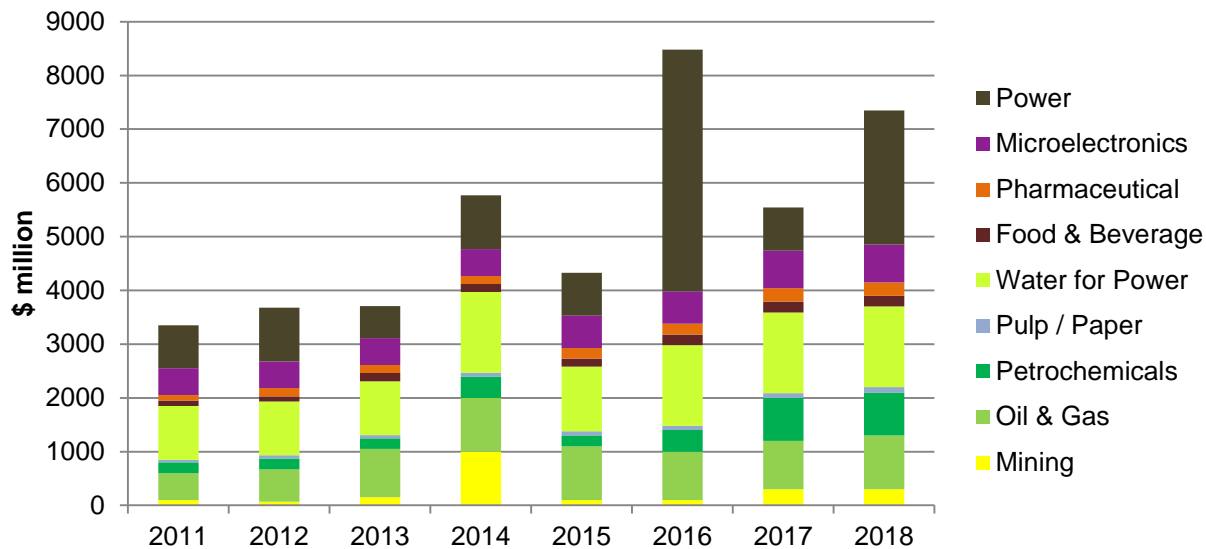
SOURCE: 2030 Water Resources Global Water Supply and Demand model; baseline agricultural production based on IFPRI IMPACT-WATER base case

# Clean TeQ Water | Target Markets by Sector



Global Seawater and Brackish Desal Market

Large and growing global water market



Identifiable markets in target industries

# Clean TeQ Water | Target Markets within Sectors



## Oil & Gas

**Produced water** treatment for water reuse in process, use in agriculture, aquifer recharge or environmental flows



## Mining

**Process water** treatment for water recycling and / or metals recovery

**Surface and Tailings water** for water reuse in process or use in agriculture, aquifer recharge or environmental flows

**Acid Mine Drainage** for metal recovery, water recycling or use in agriculture, aquifer recharge or environmental flows



## Industrial

**Wastewater** treatment for water reuse in process or use in agriculture, aquifer recharge or environmental flows

**Cooling water** treatment for water reuse in process

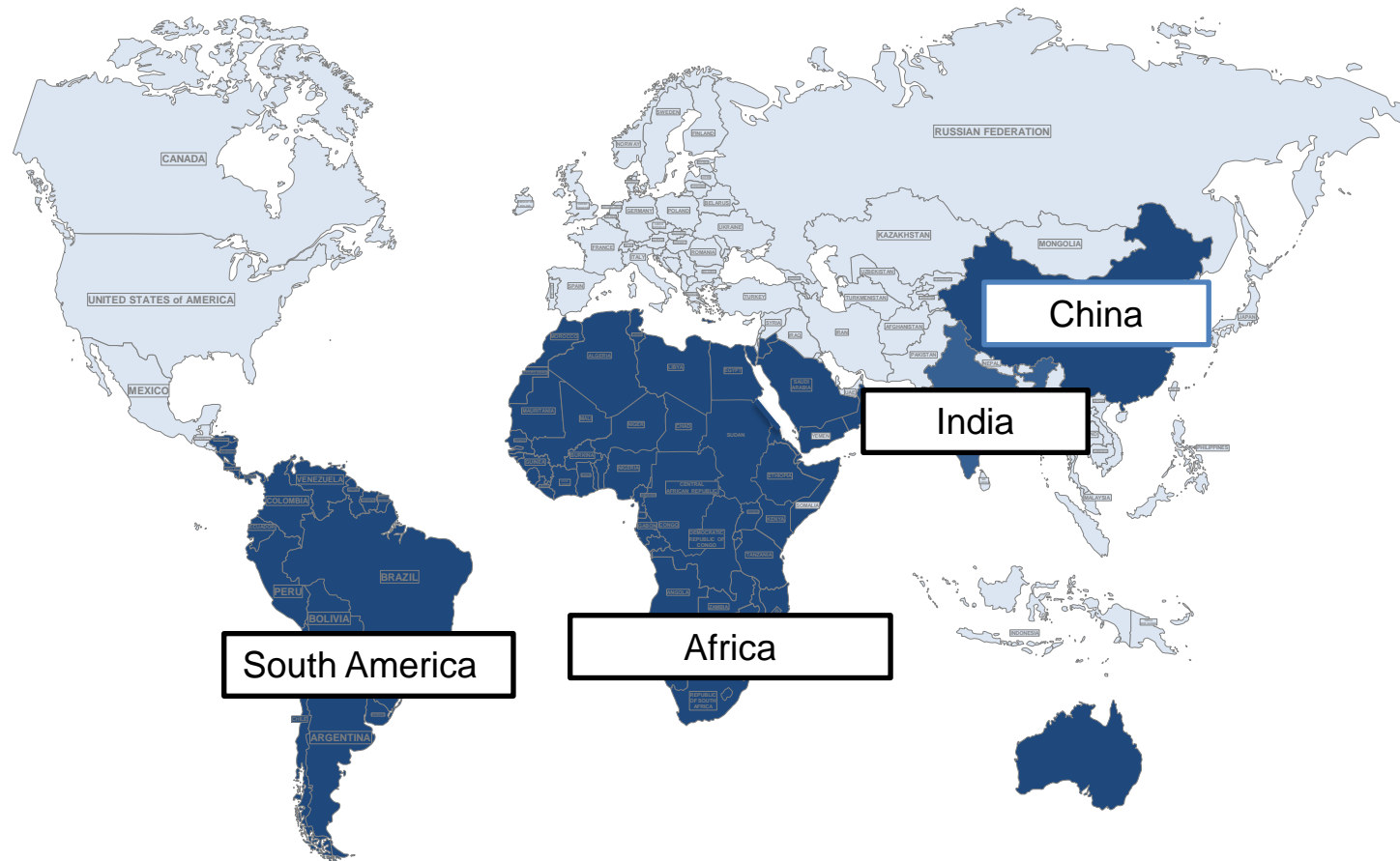


## Municipal

**Water** treatment for potable use

**Wastewater** treatment for recycling, nutrient recovery or use in agriculture, aquifer recharge or environmental flows

# Clean TeQ Water | 5-Year Strategy



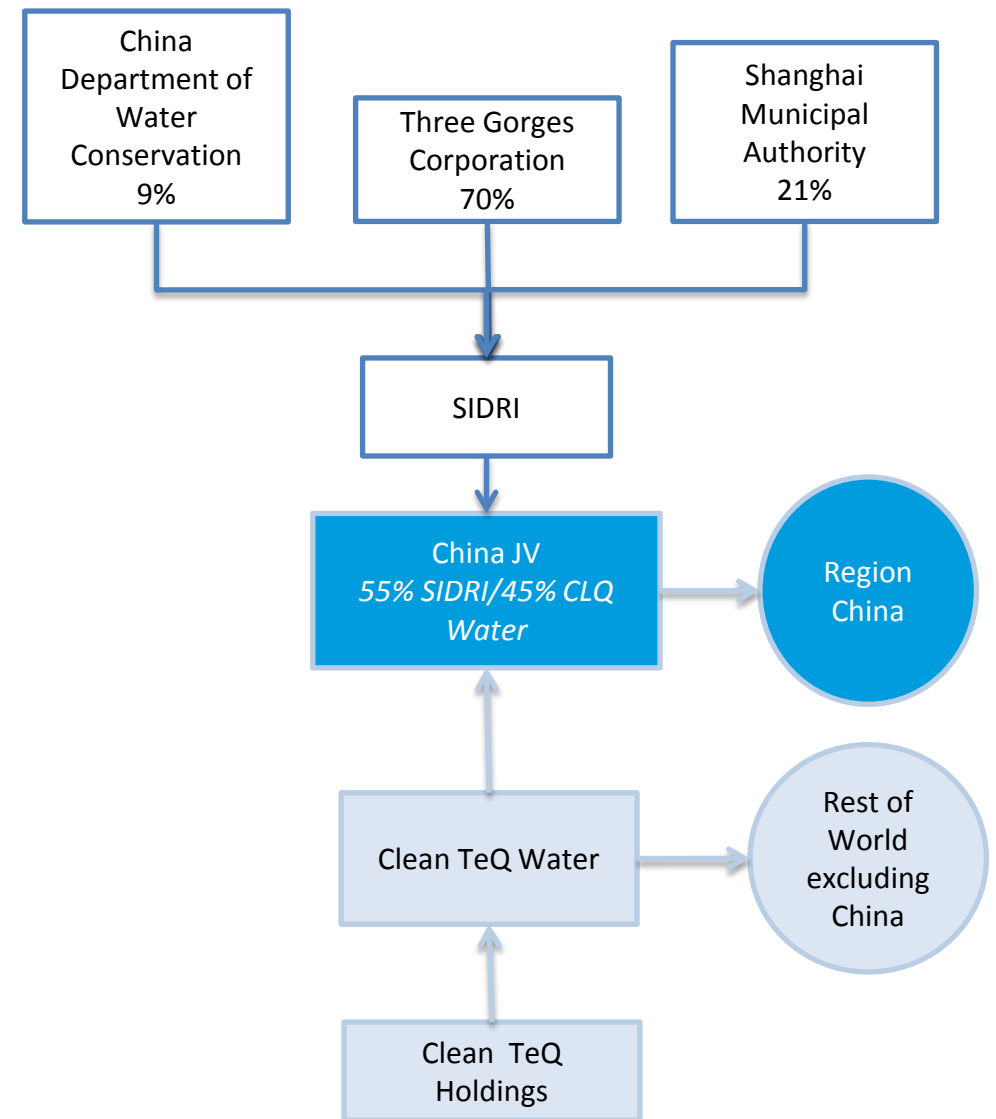
## Key Focus

1. Establish China Water Service Joint Venture with SIDRI
2. Cornerstone investor and distributors in key regions
3. Develop \$70M+ project pipeline by Year 2
4. Develop \$100m+ p.a. water service business by Year 5

# Clean TeQ Water | JV Achievement

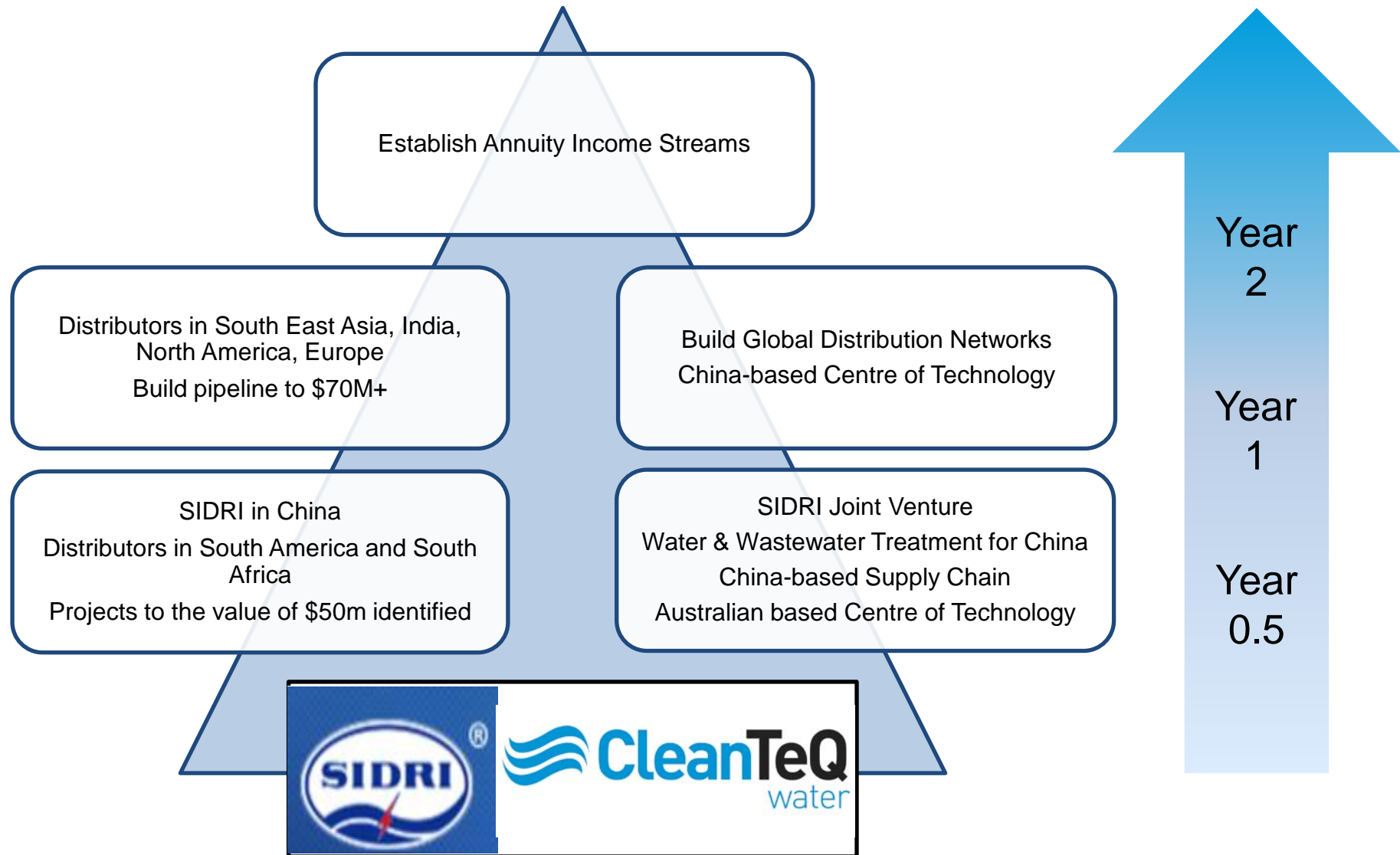
Clean TeQ Water and Shanghai Investigation Design Research Institute (SIDRI) have signed an MOU with Clean TeQ for the marketing and sales of water services based on the Clean TeQ Continuous Ion Exchange Technology Platform

Qualification test work is underway to satisfy technical hurdles for the formation of the JV





# Clean TeQ Water | Value Creation





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Creating sustainable solutions for industrial and municipal water treatment.