Sustainable Water & Agriculture Management

XVth World Water Congress
International Water Resource Association (IWRA)
May 26th 2015
Pictet Asset Management

“Water is a very good servant, but it is a cruel master”.

William Bullein
(famed 16th century English physician)

Philippe Rohner, CChem., PhD., MBA
Senior Investment Manager
Thematic strategies within Pictet Asset Management

Founded in Geneva in 1805 the Pictet Group has over USD 438 bn in assets under management & custody.

Thematic strategies AuM (USD)*

- **Premium Brands**: 1998, 8.6 bn
- **Utilities**: 2005, 8.6 bn
- **Biotech**: 1995, 1.7 bn
- **Water**: 2000, 4.1 bn
- **Clean Energy**: 2008, 4.9 bn
- **Security**: 2006, 1.1 bn
- **Generics**: 2004, 893 mn
- **Digicom**: 1997, 1 bn
- **Timber**: 2008, 1.3 bn
- **Agriculture**: 2009, 1 bn
- **Global Megatrend**: 2008, 4.9 bn
- **High Dividend**: 2010, 1.6 bn
- **EMS**: 2014, 98 mn

- **20 years of experience**
- **23 investment managers**

Water – when perception meets reality

«Water» as a risk factor and sustainable development, 2007-15

Source: WEF Global Risks Reports, Envisager (2015)

Million people served by PSP contracts, 1985-2015

Source: Envisager Limited, 2015
Water – the resource management challenge

- BSI - Biodiversity stress index
- CSI – commodities stress index
- DRI – disturbance regulation index
- GRI – greenhouse gas release index
- WQI – water quality index
- WSI – water availability stress index
- HFI – overall index of global human freshwater impact

Source: Dodds et al. Environ.Sci.Technol. 2013, 47, 9061-9068; HFI computed by determining proportion of value compromised in each index and summing within each country after scaling by the proportion of the total value made up by each individual ecosystem service category.
Ceres’s investor handbook for water risk integration

Environmental Implications

- Vital for all life on earth
- Regional & planet coolant
- Critical for natural biological reactions
- Vital for ecosystems to function & elements to cycle

Corporate Implications

- Sustains all life
- Ability to absorb heat: Only molecule naturally found in gas, liquid & solid.
- Universal solvent for chemical reactions
- Easily polluted—expensive & energy intensive to clean

Traditional Fundamental Analysis

- Management
- Strategic Positioning
- Financial & Operational

More Comprehensive Analysis

- Governance
- Environment & Social Factors
- Macroeconomic & Political, Natural Capital & Climate Background

Source: Ceres Report, 2015
Towers Watson’s long-term themes & thematic framework

Source: Towers & Watson, 2015

Pictet Asset Management  |  XVth World Water Congress  |  Sustainable Water & Agriculture Management
Raymond James’s segmentation

### Key Water Industry Themes

<table>
<thead>
<tr>
<th>Catalysts</th>
<th>Regulation</th>
<th>Scarcity</th>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Hydraulic fracking growth</td>
<td>+ Population growth</td>
<td>+ Aging systems</td>
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<tr>
<td>+ Storm water</td>
<td>+ Industrialization</td>
<td>+ Economic development</td>
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<tr>
<td>+ Ballast water</td>
<td>+ Urbanization</td>
<td>+ Population shift/growth</td>
<td></td>
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<tr>
<td>+ Oceanic dead zones</td>
<td>+ Climate change</td>
<td>+ Capital gap</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Solutions</th>
<th>Monitor</th>
<th>Comply</th>
<th>Adapt</th>
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</thead>
<tbody>
<tr>
<td>✓ Monitor</td>
<td>✓ Comply</td>
<td>✓ Adapt</td>
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<tr>
<td>✓ Conserve</td>
<td>✓ Transport</td>
<td>✓ Develop</td>
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<tr>
<td>✓ Prevent</td>
<td>✓ Repair</td>
<td>✓ Replace</td>
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<table>
<thead>
<tr>
<th>Constraints</th>
<th>Money to comply</th>
<th>Water rights</th>
<th>Regulated revenue model</th>
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<tbody>
<tr>
<td>Unknown laws</td>
<td>Aligning incentives</td>
<td>Consumer perception</td>
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<td>Difficult to enforce</td>
<td>Local bureaucracy</td>
<td>Length of payback</td>
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<tr>
<td>State vs Federal regulations</td>
<td>Physics</td>
<td>Political priorities</td>
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### Large Opportunities and End Markets

**Themes**
- Regulation
- Scarcity
- Infrastructure

**Solutions**
- Monitor
- Comply
- Adapt
- Conserve
- Transport
- Develop
- Prevent
- Repair
- Replace

**Opportunities**
- Test & Equipment, Labs, Software, Homeland Security
- Advanced Filtration, Ballast Treatment, Speciality Chemicals, Fracking Treatment
- Recycle & Reuse, Alternative Energy
- Smart Meters, Smart Irrigation, Stormwater
- Large D&C Contractors, Large Diameter Pipe Manufacturing, Pumps & Valves
- ASR systems, Desalination, Build, Own and Operate Providers, Water Rights
- Test & Monitor, Leak Detection, Smart Water Infrastructure
- Emergency Services, Desalting, Cured-In-Place Pipe (CIPP)
- High Efficiency Pumps & Equipment, New Pipe Technology

**End Markets**
- Energy
- Power
- Industrial
- Residential
- Marine
- Commercial
- Food & Beverage
- Agriculture
- Municipalities
- Utilities

Source: Raymond James, June 2014
# Frost & Sullivan’s analysis

<table>
<thead>
<tr>
<th>Major trend</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
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<tbody>
<tr>
<td><strong>1 Drinking water &amp; sanitation needs</strong></td>
<td>Driven by new build in Asia Pacific, Middle East, North Africa and Latin America</td>
<td>China, Latin America nears completion of basic sanitation infrastructure</td>
<td>India drives the global momentum of meeting millennium linked drinking and sanitation needs in developing countries</td>
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<tr>
<td><strong>2 Water reuse &amp; recycling</strong></td>
<td>Water stress driving water reuse in Middle East, Australia and US</td>
<td>Spain water reuse &amp; recycling catalyses growth</td>
<td>China &amp; India boost momentum</td>
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<td></td>
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<td>Industrial sector, esp Power closing in municipal sector for water reuse</td>
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<td><strong>3 Biogas from wastewater</strong></td>
<td>Carbon footprint drives energy recovery particularly in industrial</td>
<td>Bio-solids concerns in municipal sector catalyse growth in Europe &amp; US</td>
<td>Sludge generation in developing countries triggers biogas market</td>
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<tr>
<td><strong>4 Bio-solids management</strong></td>
<td>Bio-solids steeps up concern in EU</td>
<td>Incinerators gain in popularity in Central Europe</td>
<td>Asia Pacific emerges as the strongest market opportunity for bio-solids</td>
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<td>Sludge dewatering continues to be the choice for developing countries</td>
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<td><strong>5 Resource &amp; nutrient recovery</strong></td>
<td>Closed loop systems gain popularity particularly in sectors such as PV</td>
<td>Produced water sector for oil &amp; gas establishes presences</td>
<td>Mines and minerals cement market opportunity for sustainable business models for recovery</td>
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<td><strong>6 Public health &amp; water security</strong></td>
<td>Concerns on chlorine by-products benefits non-chlorine disinfectants such as UV</td>
<td>UV joined by Ozone, advanced oxidation as well as chlorine alternatives</td>
<td>Complex contaminants such as endocrine disruptors gain focal point</td>
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<td><strong>7 Smart water grids</strong></td>
<td>Leakage prevention and identification gains prominence with utilities</td>
<td>Smart meters and monitors deployed to secure better integration of performance</td>
<td>Smart water grids move East</td>
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<tr>
<td><strong>8 Water trading</strong></td>
<td>Water stress drives water trading market in Australia and North America</td>
<td>Municipalities establish commercial links of selling treated wastewater to industry</td>
<td>Marketplace established for water trading between municipalities and commerce</td>
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<tr>
<td><strong>9 Decentralised integrated sys</strong></td>
<td>Decentralised systems’ market heats up in Southern, Central &amp; Eastern Europe</td>
<td>Rainwater harvesting systems emerges strong market in Asia Pacific</td>
<td>Utilities begin to opt decentralised units in mega cities</td>
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<tr>
<td><strong>10 Storm water management</strong></td>
<td>Europe &amp; North America evaluate best options to tackle extreme weather events related flooding</td>
<td>Utilities opt for streamlining collection and storage/treatment/reuse/disposal of storm water</td>
<td>Storm water management emerges as integral part of water resource management plans</td>
</tr>
</tbody>
</table>

*Source: Frost & Sullivan, World’s Top Global MegaTrends To 2020 and Implications to Business, Society and Cultures – 10/2010*
Trends creating opportunities for private sector...

Rehabilitation and new resources development...

... more than new networks

Breakdown of infrastructure market by region

Source: Global Water Intelligence – Water Technology markets 2010
Megatrends

- Megatrends are large, social, economic, political, environmental or technological changes.
- They impact business, economy, society, cultures and personal lives.
- They represent seismic shifts, providing long term investment opportunities.

Source: Copenhagen Institute for Futures Studies
A freshwater stewardship framework

Megatrends discussed and trends identified (Water)

- **COMMERCIALIZATION**
  - Need for efficient water allocation mechanism
  - Leveraging benefits of privatization

- **TECHNOLOGY DEVELOPMENT**
  - Protection of freshwater resources

- **DEMOGRAPHIC DEVELOPMENT**
  - Resource constraints facing increased demand
  - Infrastructure: Anticipating investment needs

- **ECONOMIC GROWTH**
  - Linking water treatment standards to usage

- **FOCUS ON HEALTH**

**SUSTAINABILITY**

*Selected CIFS Megatrend

*Water trends identified

*The CIFS Megatrend “Technology Development” was at the workshop, and after, discussed as potentially relevant for the Water theme.
Summary

Why we work with Megatrends

› Provides a secular framework to monitor our investment themes which is decoupled from short-term (cyclical) and other market factors.

› The “top down” secular growth view provides a contextual framework for our “bottom-up” fundamental investment approach.

Key outcomes

› Addressing water issues in a sustainable way requires a deeper understanding of both its Environmental, Social and Economic dimension and their inter-dependence.

› Concepts that aimed at increasing awareness are not necessarily suited for designing the intended optimum resource allocation outcome.

› Constructing sustainable freshwater allocation mechanisms increasingly needs to consider not only quantity, but also incorporate the required quality dimension.
Philippe Rohner joined Pictet Asset Management in 2002 and he is a Senior Investment Manager. Philippe is co-manager of Pictet's Water funds. Previously he was at Pictet, as an Equity Analyst in the Institutional Brokerage Services (now Helvea SA) starting in 1998.

He began his career as a Chemical Engineer at Texaco’s Port Arthur Research Labs (Air & Water Conservation Dept). Then he joined Ciba-Geigy where he held managerial positions in R&D and Manufacturing both in Switzerland and the UK. As Investor Relations Manager, he was part of the task force in the successful spin-off of Ciba Specialty Chemicals as part of the Ciba-Geigy and Sandoz merger.

Philippe holds a Ph.D from the Swiss Federal Institute of Technology (ETH), an MBA Degree from the University of Strathclyde and completed post graduate courses in Environmental Engineering at the University of Texas.
For more information, please contact

Pictet Asset Management

www.pictet.com
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