



A view of the best of advanced water tech
The 2011 Artemis Top 50

THE VALUE OF INNOVATION IN WATER

The Artemis Project Top 50

- Introduction
- How Will Advanced Water Products Solve Water Challenges?
- Early-Mover Industries and Customers
- Metrics– Water Nexus
- A View of a New Infrastructure
- Success Stories



Artemis' Unique Focus

- **“High tech” water– business model**
 - **Venture capital worthy**
 - **Information technology company for the New Era of Water**
- **Products that can address water challenges at their full magnitude**
- **Intellectual-property intensive, products vs. customized projects, addressing large-scale homogenous market where decisions are made in months**





The Artemis Project

Strategic Consulting for a Water-Constrained World

- We focus on multi-stakeholder projects and hold one of the largest databases of the best advanced water tech companies.
- Helping business thrive in a world of increasing water challenge
- Working with global corporations to achieve sustainable competitive advantage through operational excellence in water management
- Helping advanced tech water companies penetrate key markets
- Ongoing market scan, annual company competition, specialized conferences



The Artemis Project Top 50

- **Established in 2009**
- **Identifies the critical mass of innovation in water**
- **Provides a unique venue for the best of water tech innovation to gain exposure with investors, partners and early-customers**



2011 Artemis Project Top 50 Judges



Peleg Chevion

Head of Business Development, Water |
Syngenta International AG



Paul O'Callaghan

CEO | O₂ Environmental



Jean Debroux

Director of the Advanced Technologies Group |
Kennedy/Jenks Consultants



Rengarajan Ramesh

Chief Architect | Angstroms



Paul Gagliardo

Manager of the Innovation Development |
American Water



Andrew Salveson

Project Manager | Carollo Engineers



Laura Shenkar

Principal | The Artemis Project



Steve Kloos

Advanced Technologies Leader | GE Power & Water,
Water & Process Technologies



William F. Wescott, Ph.D.

Vice President, Innovation – Americas | Veolia Environnement



Chris Morrison

Strategic Account Manager - Division VP |
NALCO Company

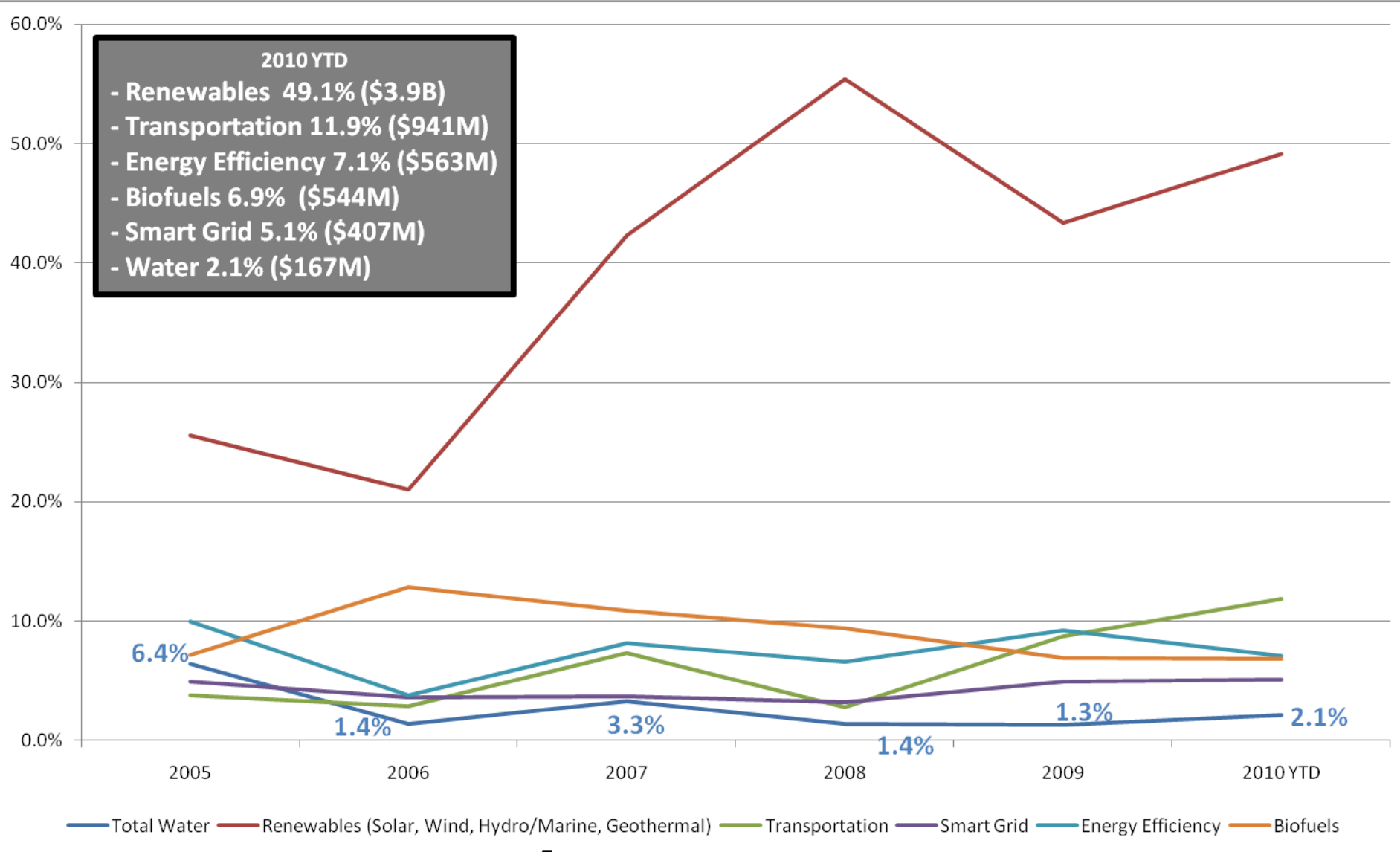


Peter Williams

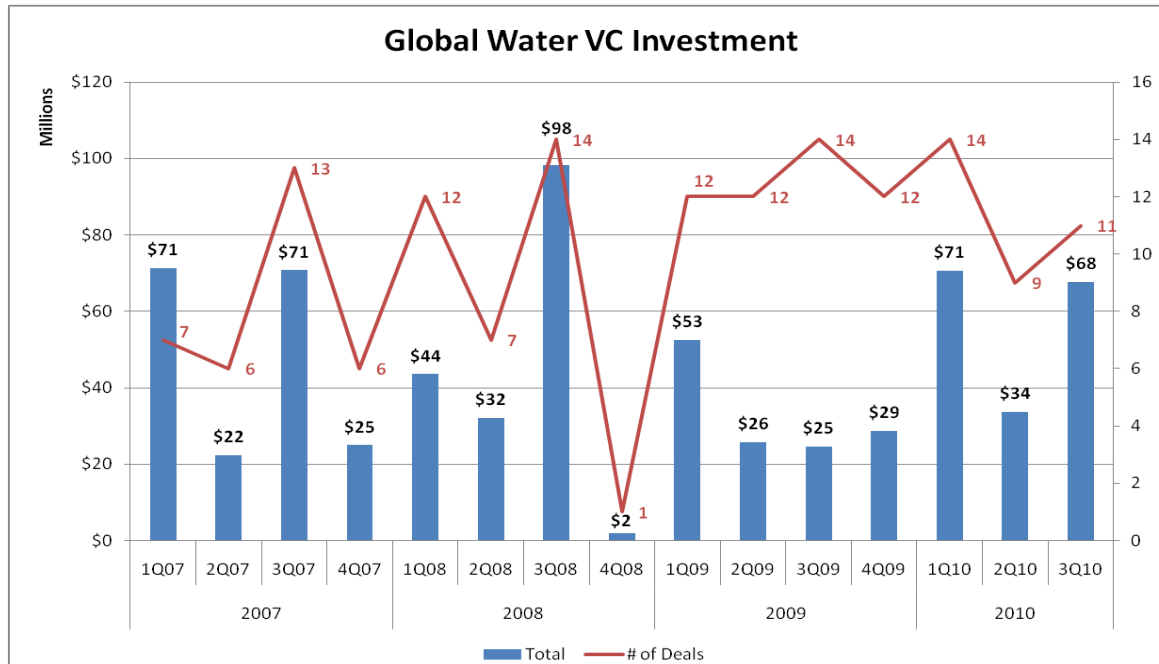
Chief Technology Officer | IBM's Big Green Innovations



Water Remains A Small Part Of Cleantech Venture Finance




Venture Water Investments— The Big Wave Isn't in Sight Yet



\$166M raised during the first three quarters of 2010, just \$15M short of the 2007 record.

Acquisitions of Venture-Backed Companies

Buyer	Transaction	Target
	Acquisition	
	Acquisition	

Source: The Cleantech Group

Metrics for Valuing Innovation in Real-Life Operations

Technology/Product
Solution

Initial Market Focus

Business Viability

- Proof Points
- Costs to Profitability
- Market Potential
- Team



How Will IP-Intensive Innovation Solve Water Challenges?

- **Asset Management/Infrastructure**
- **Water Treatment**
- **Resource Refining**



Category: Asset Management

- Sensing, detection and metering, including water quality monitors, biodetection, trace organics and trace metals, fouling sensor
- Modeling, analytics and optimization
- Coatings and surface coverings to support water infrastructure, including engineered biofilms, polymers to fix pipes, etc.
- Storage - drinking water and reclaimed water storage, as well as rainwater storage





The
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Project

Asset Management, Continued: Integrated on-site water management

- **Cooling towers**
- **Onsite water reclaim**
- **Onsite treatment for produced water**



Category: Water and Waste Water Purification

- **Disinfection and destruction** - approaches that change molecular configurations to render a substance inert, including UV, AOP, oxidation, organic destruction and supercritical
- **Contaminant removal** - Innovations that separate contaminants, including primary waste water treatment membrane processes, thermal, filtration, adsorptive media, de-oiling technologies, water & plasma
- **Bioprocesses**, including microbial fuel cells, and secondary treatment, anaerobic digestion, enzymes, bacteriophages, sludge treatment



Category: Waste Water Refining, Resource Recovery

- Recovering valuable bi-products, such as phosphorus and other nutrients, lithium etc., metal plating,
- Energy recovery, waste heat recovery
- Waste to energy



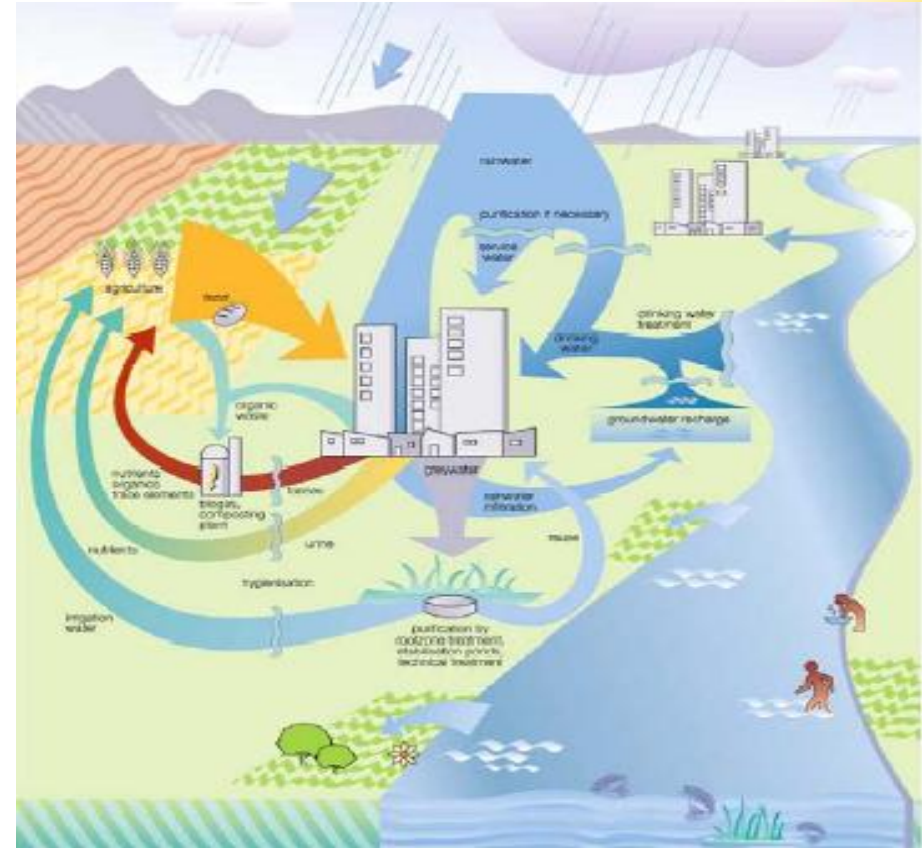
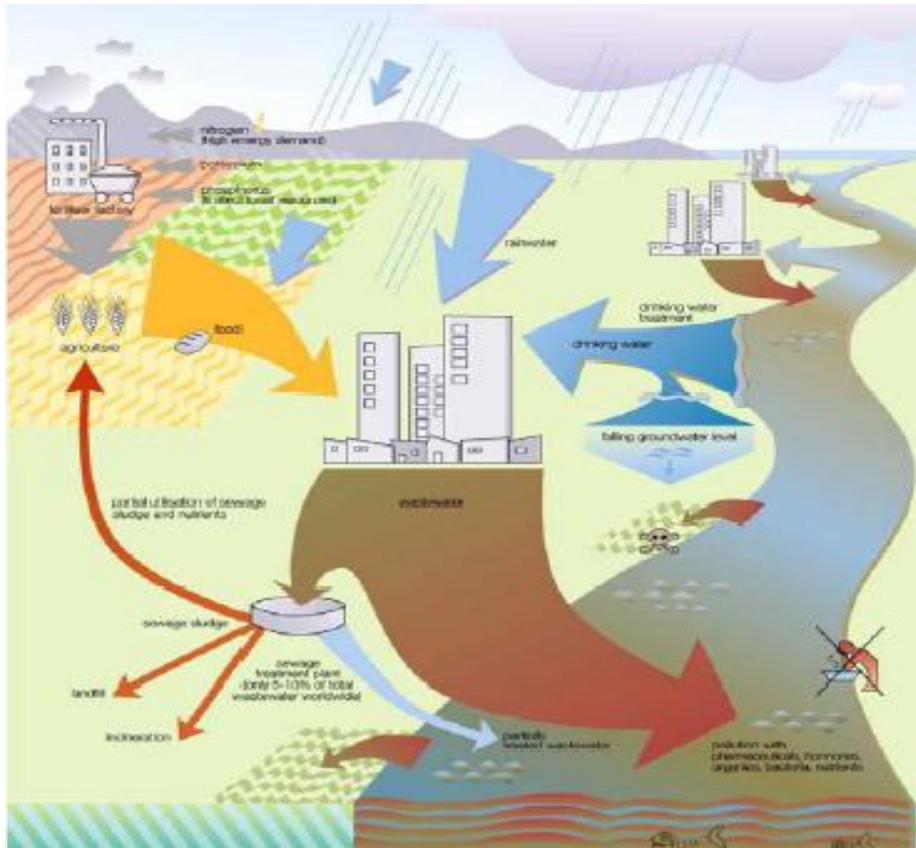


Which water tech solutions do you see as the most promising?

For more information, see
<http://theartemisproject.com/news-events/competition/>

Measuring the Value of Innovation--Water Nexa

Current: use water once & disposal



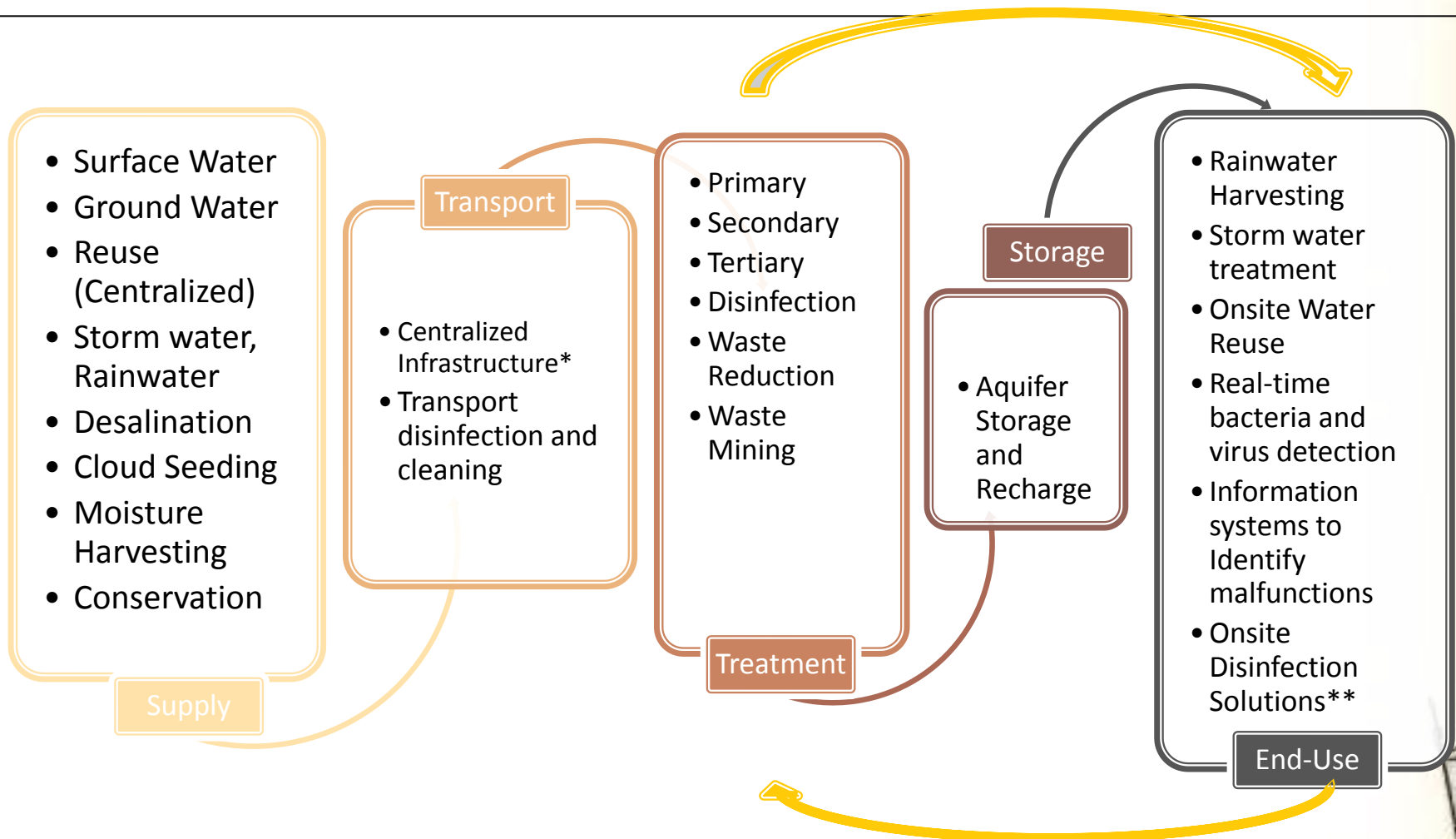
<http://www.ecosanservices.org>

Resource recycle instead of disposal



Key Opportunities in the Water Cycle

Location-Based Water Management



Promising Strategies

- **Smarter Infrastructure**
- **Water Management for Energy Exploration**
- **Mid-Size Onsite Industrial Water Treatment**





Vision of the Future

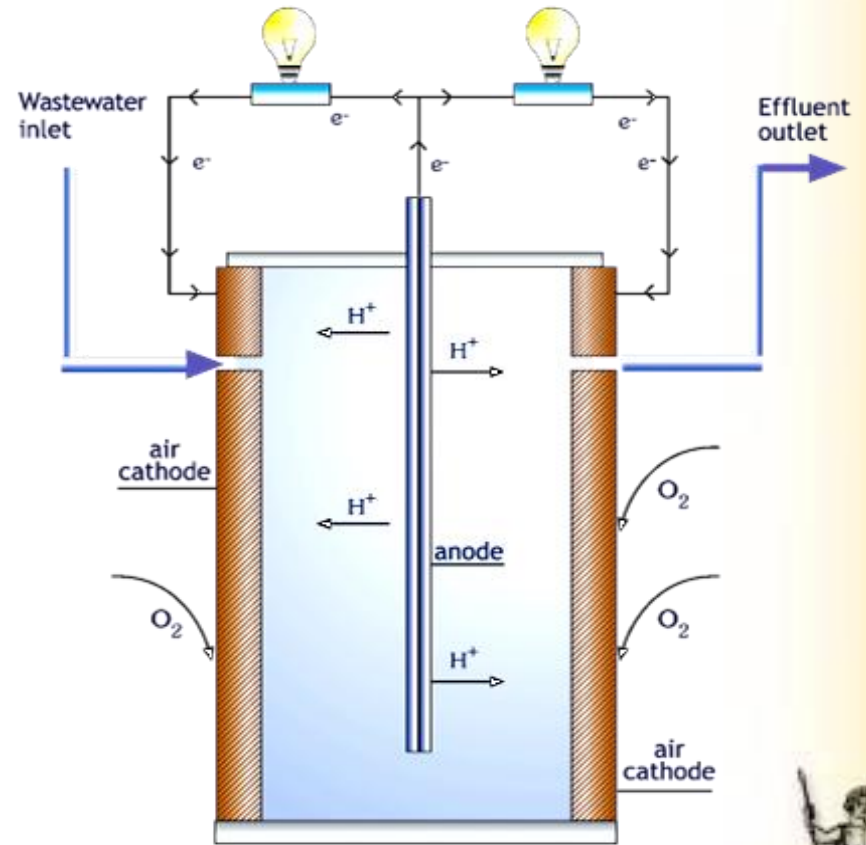
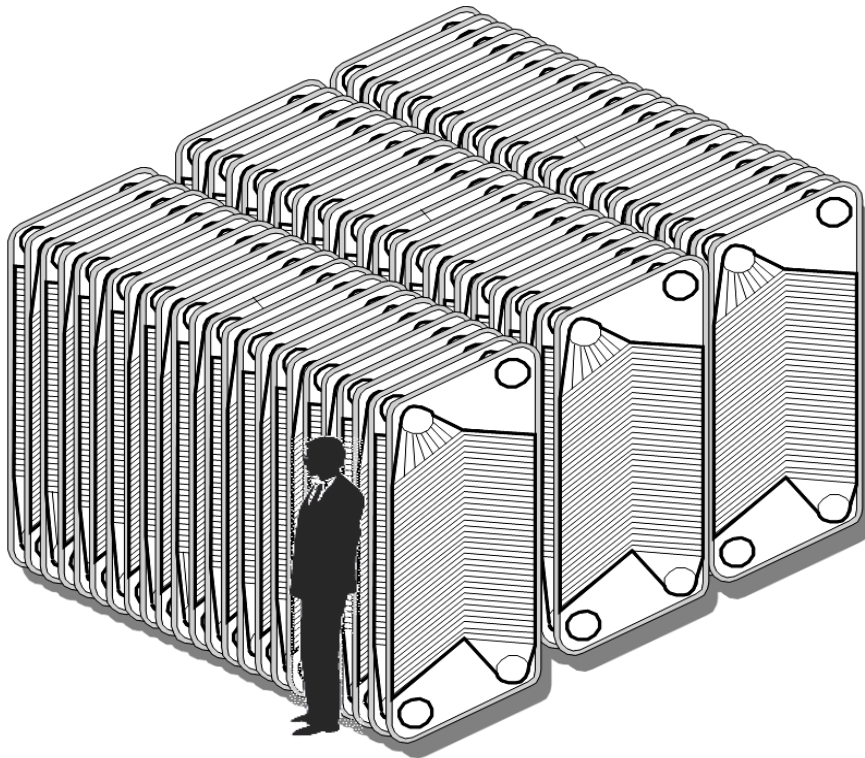
WHAT IF...

The New Infrastructure

What if...?

**We could convert waste water into
electricity?**





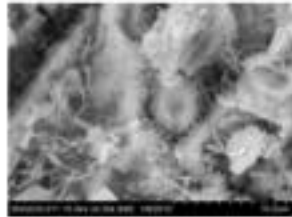
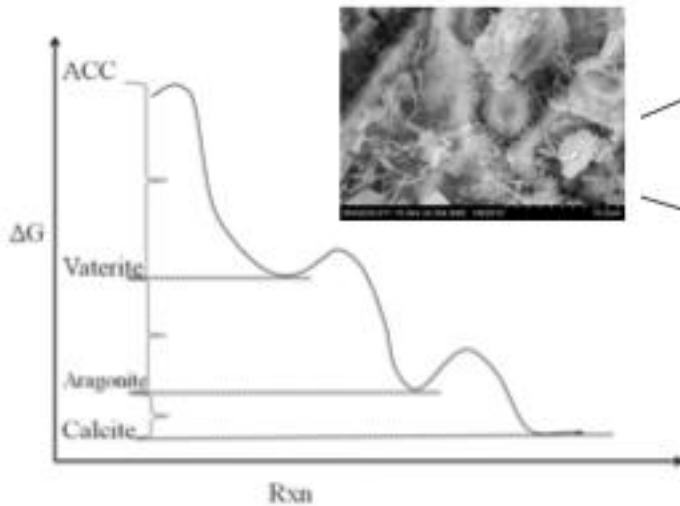
What if...?

We could make cement that doesn't create emissions, but instead sequesters them?

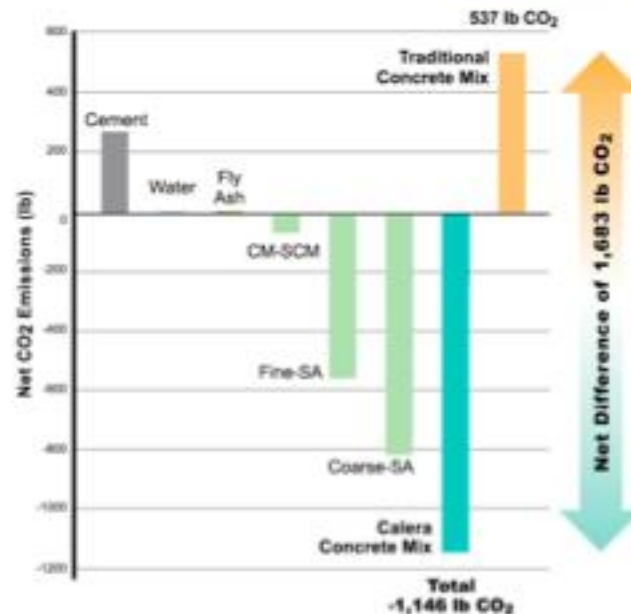


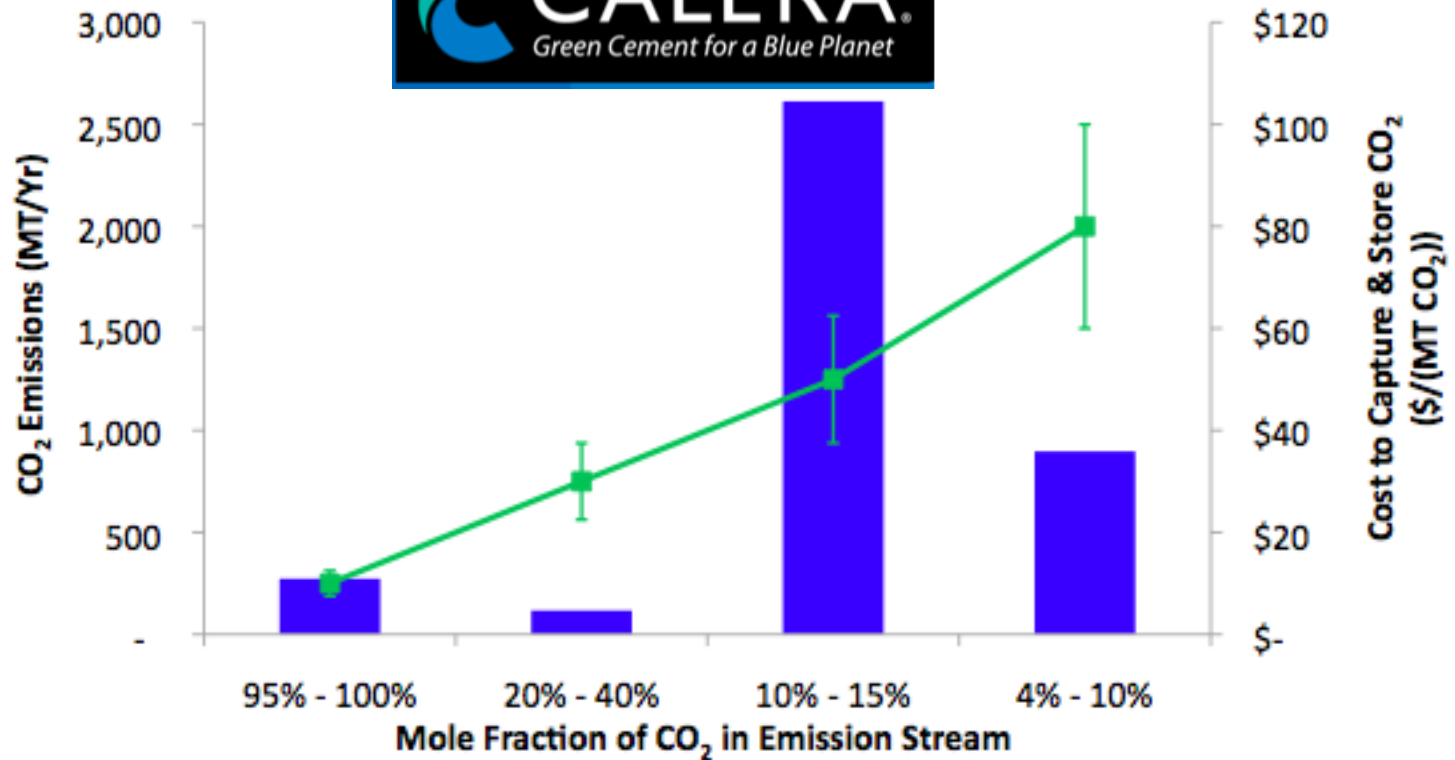
Carbon Negative Building Materials

Amorphous Calcium Carbonate



Green Concrete





95%-100%

20% - 40%

10% - 15%

4% - 10%

- 1) CO₂ from Ethanol Fermenters
- 2) CO₂ from steam reforming at Refineries, Ammonia Plants, SNG Plants,
- 3) CO₂ Separated from sour natural gas

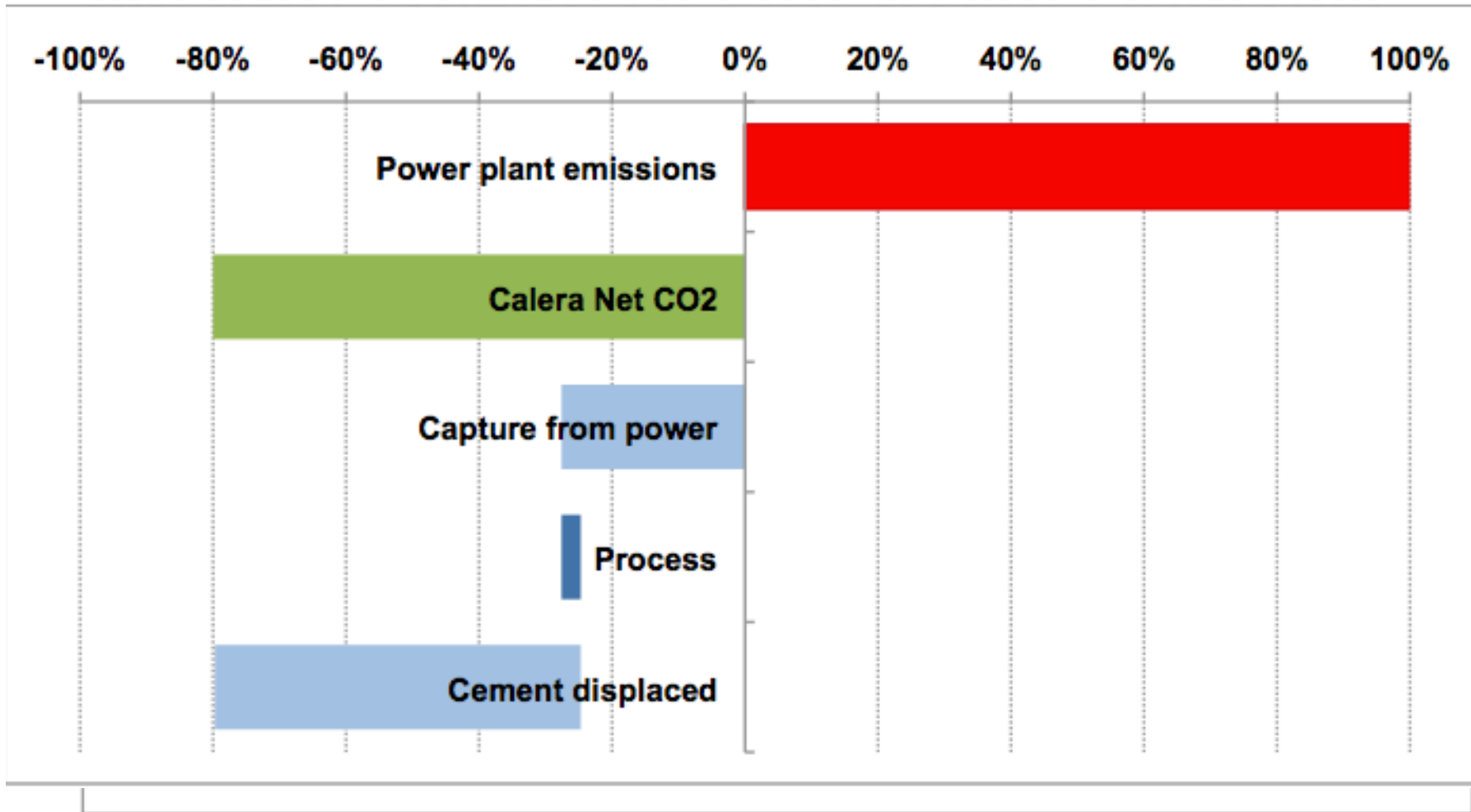
- 1) CO₂ from Cement Calcination
- 2) Other chemical plants

- 1) Coal Fired power plants
- 2) Oil & diesel generators

- 1) Natural gas fired power plants
- 2) Furnaces, small boilers, etc.

Source: Natcarb - EIA - IPCC Special Report on Carbon Capture and Sequestration - Kurt House Analysis (MIT)
 Calera Corporation

Carbon Negative Life Cycle Analysis



100% Brine, Coal, 100% cement

Existing means of measuring energy, water and resource requirements are not designed to track operations in dramatically more efficient ways.. Calera is applying new metrics to measure the benefits of their innovation.