



Cleantech Forum San Francisco

San Francisco | January 22-24, 2018



Cleantech Forum
San Francisco

NEXT-GEN: FOOD & AG

Feeding the World Through Digital Agriculture

Co-hosted by:





Cleantech Forum | San Francisco

Next-Gen: Agriculture & Food



ASHLEY GROSH

VP Sr. Relationship Manager, Corporate Clean Tech
Banking Group, Wells Fargo



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IN² By The Numbers



M&A Activity



Channel Partners

\$668,000

in follow-on funding distributed to date

\$86.65 million

raised from external follow-on funding



Portfolio Companies



\$30M Program

20 Portfolio Companies to date



Whisker Labs



Go Electric



J2INNOVATIONS

simuwatt®



Fostering a Cleantech Ecosystem



Channel Partners

ACRE | New York, NY

Caltech, Flow Program | Los Angeles, CA

Carnegie Mellon University | Pittsburgh, PA

Case Western Reserve University |
Cleveland, OH

Clean Energy Trust | Chicago, IL

Cleantech Group | New York, NY

Cleantech Open | Redwood City, CA

Coachella Valley Economic Partnership |
Palm Springs, CA

**Colorado State University Energy Institute,
Powerhouse** | Fort Collins, CO

Cyclotron Road | Berkeley, CA

Elemental Excelerator | Honolulu, HI

Greentown Labs | Boston, MA

Imagine H2O Inc. | San Francisco, CA

Innosphere | Fort Collins, CO

Los Angeles Cleantech Incubator |
Los Angeles, CA

Mass Challenge | Boston, MA

MIT Energy Club | Boston, MA

NextEnergy Center | Detroit, MI

**Northeast Clean Energy Council (NECEC)
Institute** | Boston, MA

Northwestern University | Evanston, IL

Oregon BEST | Portland, OR

Portland State University Foundation |
Portland, OR

Prospect SV | San Jose, CA

Purdue University | West Lafayette, IN

Rice University | Houston, TX

Stanford, TomKat Center for Sustainable Energy |
Stanford, CA

Sustainable Startups | Salt Lake City, UT

Telluride Venture Accelerator | Telluride, CO

**Texas A&M Engineering Experiment Station
Clean Energy Incubator (TAMCEI)** |
College Station, TX

Texas State University | San Marcos, TX

The Water Council | Milwaukee, WI

UC Berkeley | Berkeley, CA

UNC Charlotte | Charlotte, NC

**University of California, Davis Energy Efficiency
Center (EEC)** | Davis, CA

University of California, Irvine | Irvine, CA

University of California, San Diego |
San Diego, CA

**University of Colorado Boulder; Renewable and
Sustainable Energy Institute (RASEI)** |
Boulder, CO

University of Denver | Denver, CO

University of Michigan | Ann Arbor, MI

**University of Texas at Austin, Austin Technology
Incubator (ATI)** | Austin, TX

**University of Texas at Austin, McCombs School
of Business** | Austin, TX

University of Washington | Seattle, WA

**University of Wisconsin-Madison, Wisconsin
Energy Institute** | Madison, WI



Wells Fargo committed an additional \$20M through 2020 to expand the IN² program!



IN² will continue to grow along the commercial building track while adding new verticals each year, driving us towards a more sustainable future.





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Feeding the World Through Digital Agriculture



MODERATOR:
LAURA SHENKAR
Founder and
Principal, Artemis
Water Strategy



WADE BARNES
President & CEO,
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**CHUCK
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ROB O'REILLY
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**CHRIS
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Digital Farming
Lead for North
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Cleantech in the Soil to Shelf Economy

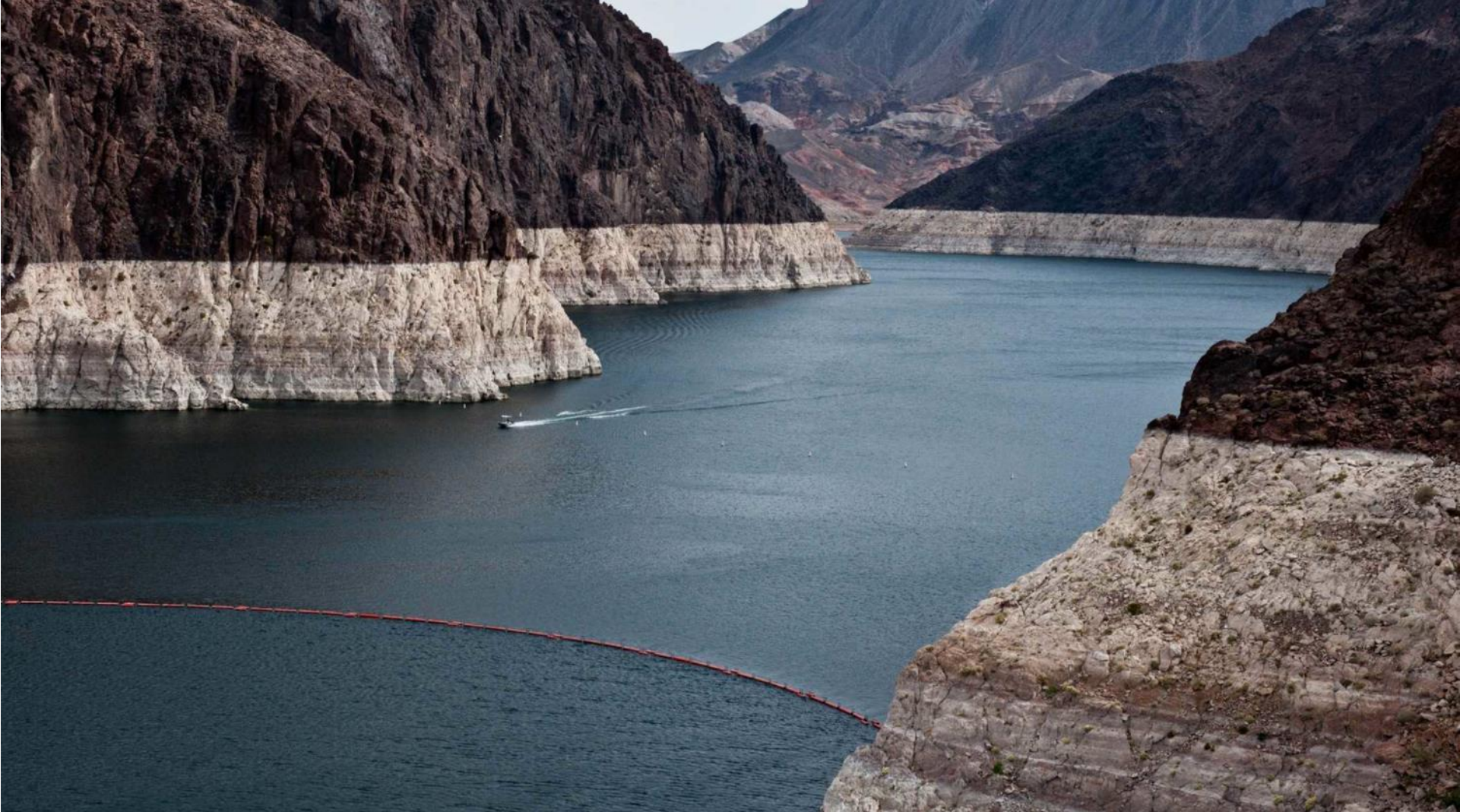
January 24, 2018

San Francisco, CA

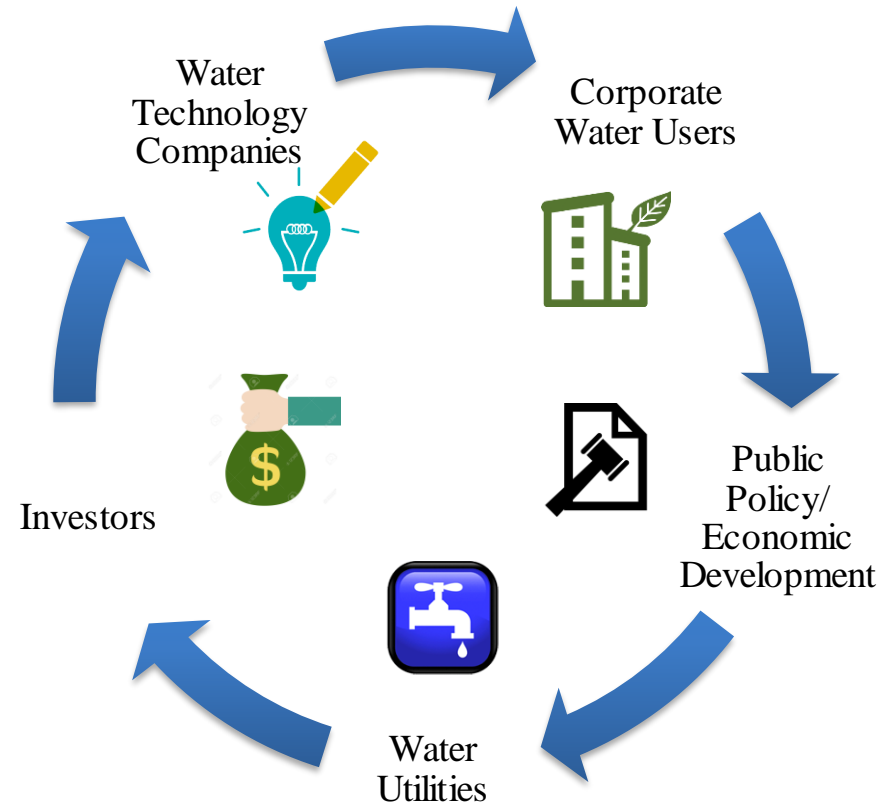
Laura Shenkar, Artemis Water Strategy



Beyond Plans and Pilots. Real World Water Resilience



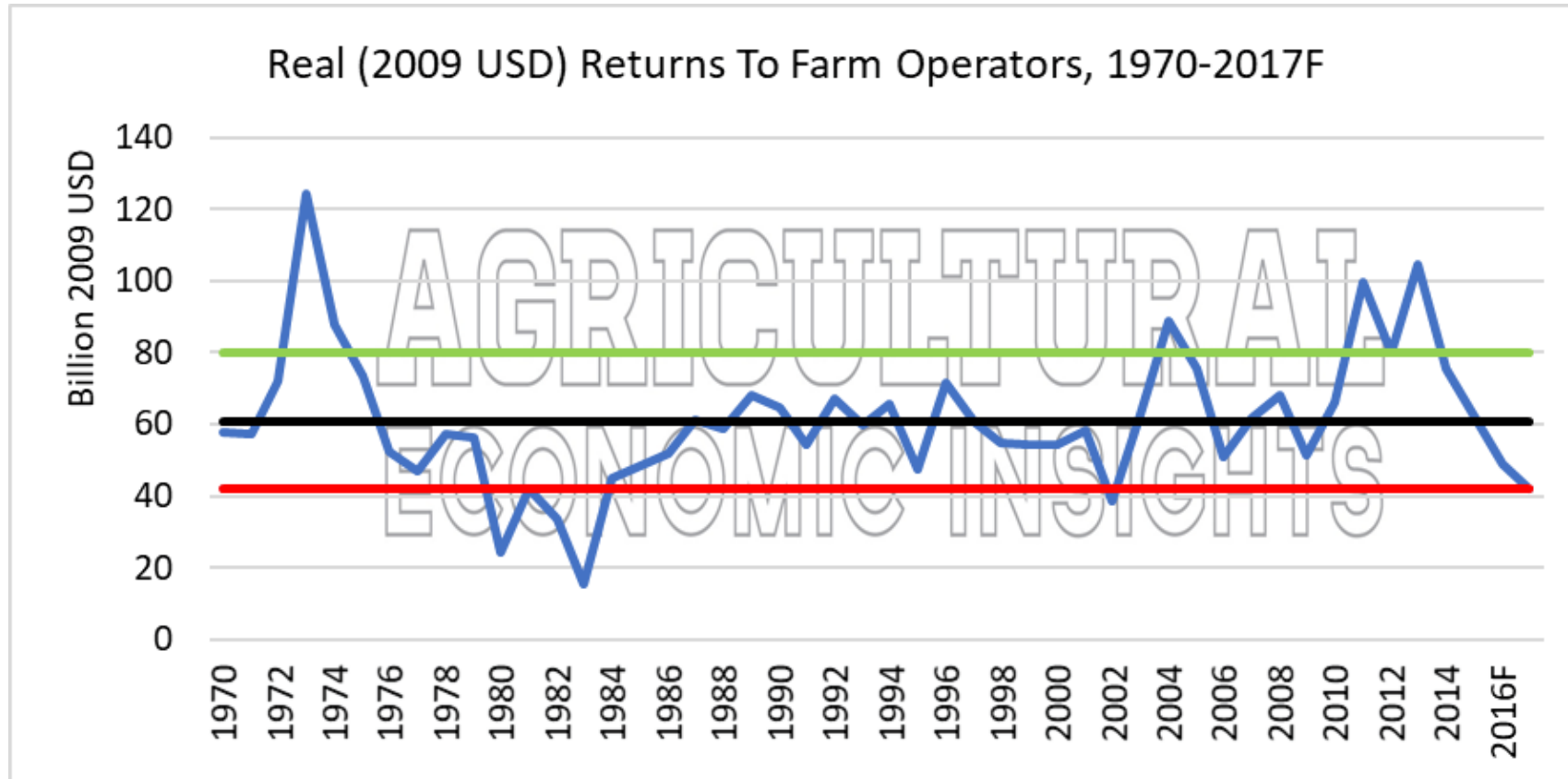
Stakeholders for 21st Century Water



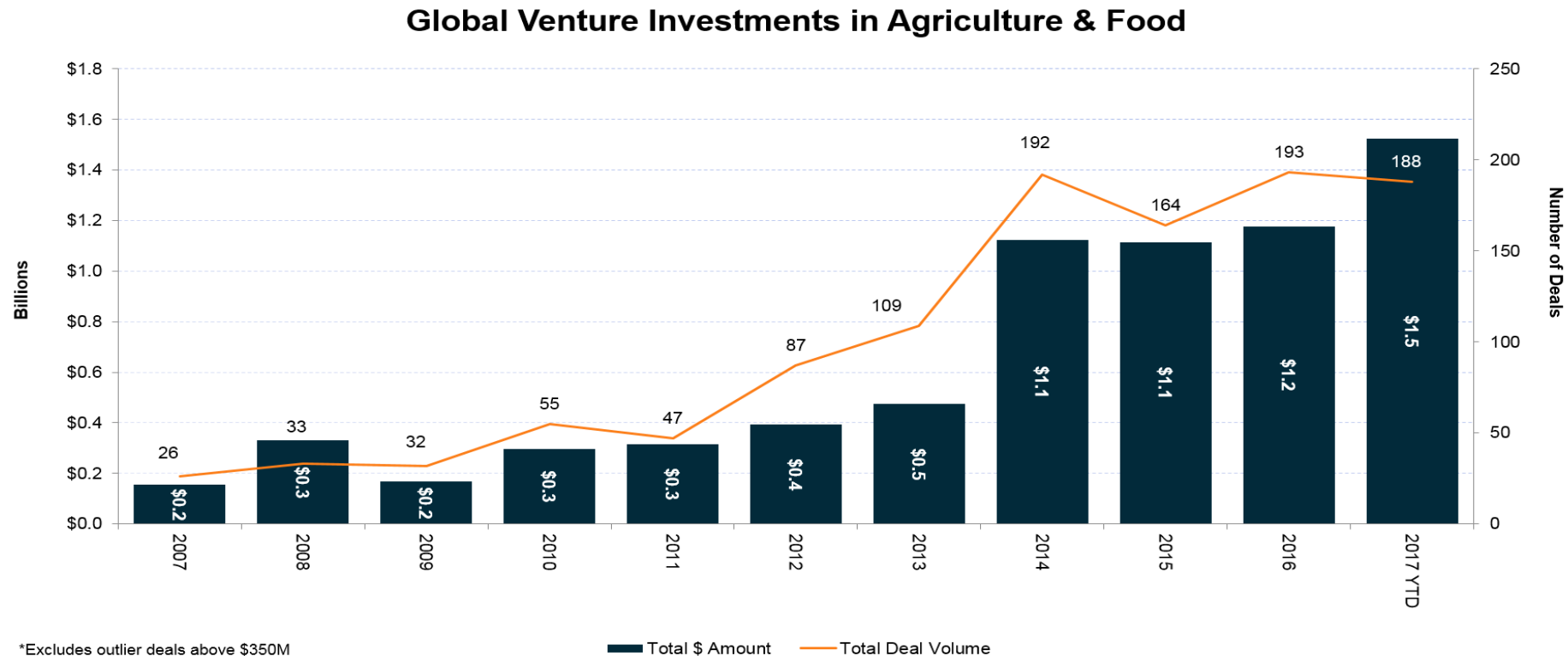
Tectonic Shifts in US Farming



2017 Farm Income Drops 50%, Debt Rises



Farm to Fork Emerges as a Cleantech Opportunity



Source: Cleantech Group

First signs of a new cleantech investment opportunity?

US Agtech Innovators in the Field



Roric Paulman, Sutherland, Nebraska

Randy McGee, Idalou, Texas



The Customers



Jorge Gaviria

Founder, Masienda



Heirloom Blue Cónico Corn
from \$4.00

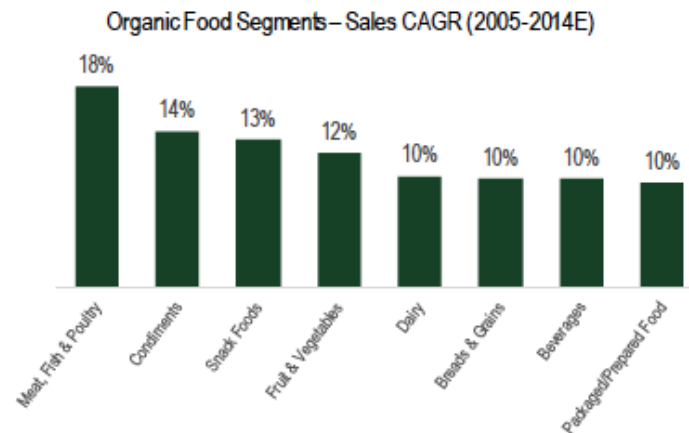
Gaviria hopes his Mexican maize becomes the next grain craze. He imports more than 1,300 tons for high-end restaurants like Cosme, in New York. Gaviria developed a taste for the best ingredients cooking at Maialino and Blue Hill at Stone Barns.

Health and Safety Drive Direct Ties from Consumer to Farmer

For the first time in history, the consumer is beginning to drive agricultural acreage

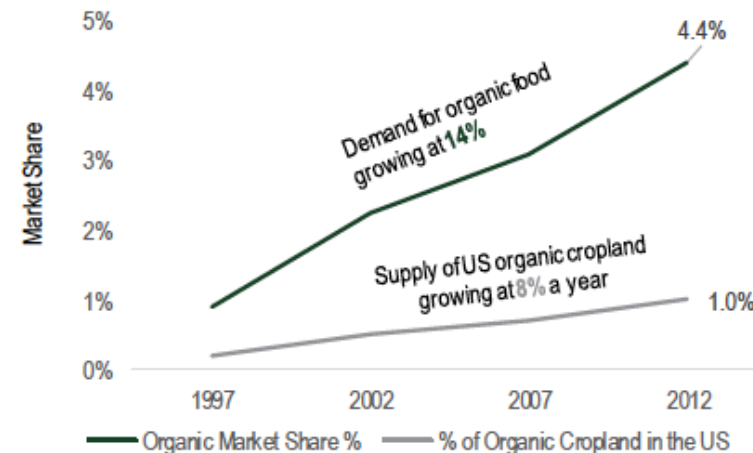
- Customers are starting to shift supply chains:
 - Whole Foods' announcement last spring that it would require GMO labels on products in its stores by 2018 is also driving demand for non-GMO feed
 - Chipotle and Panera Bread announced plans to eliminate non-GMO and other "artificial inputs" from their menus
- Organic meat and poultry sales growth versus conventional provide some context for row crop agriculture as well
- Identity supply and demand gaps (in the case below organic gaps) create a need for identity specific acreage

Double Digit Organic Growth



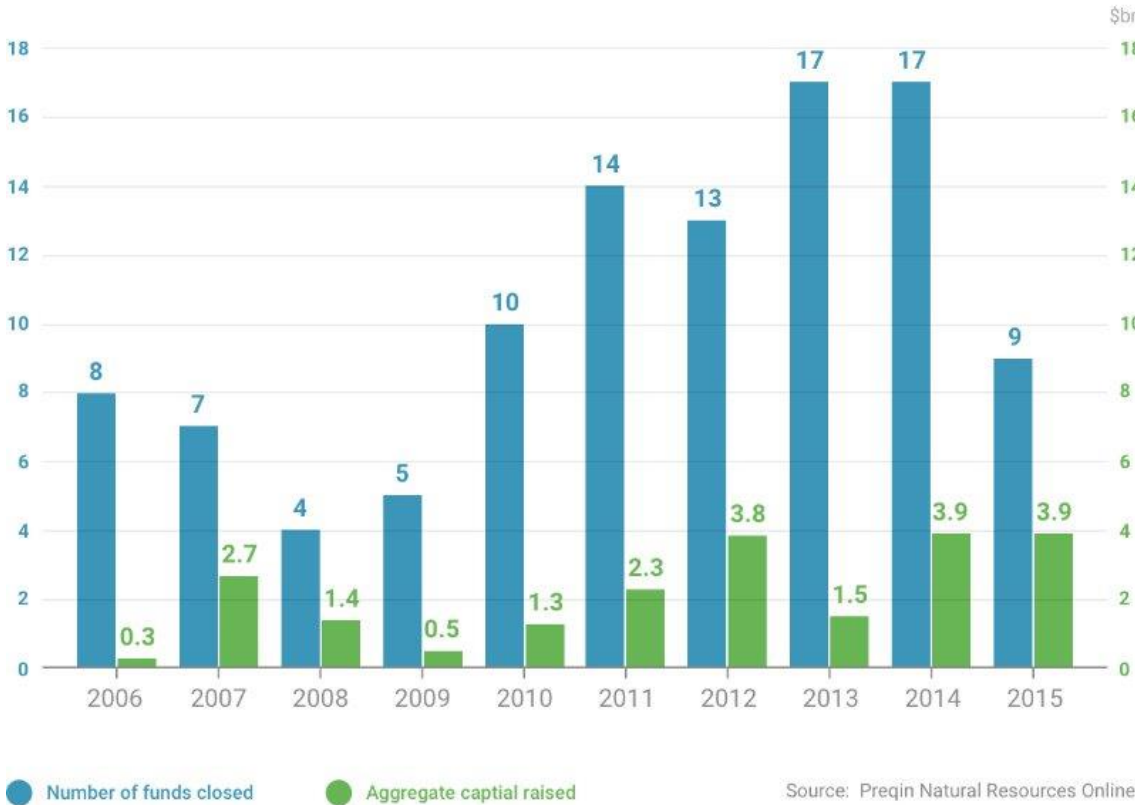
Source: USDA

Organic Growth Rate > Farmland Conversion



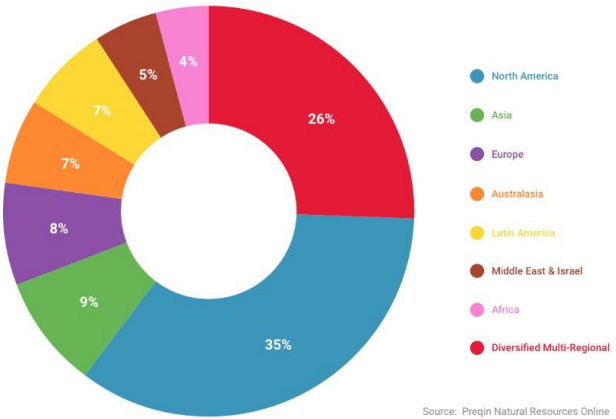
Institutional Investors

Annual Unlisted Agriculture/Farmland-Focused Fundraising (2006-2015)*



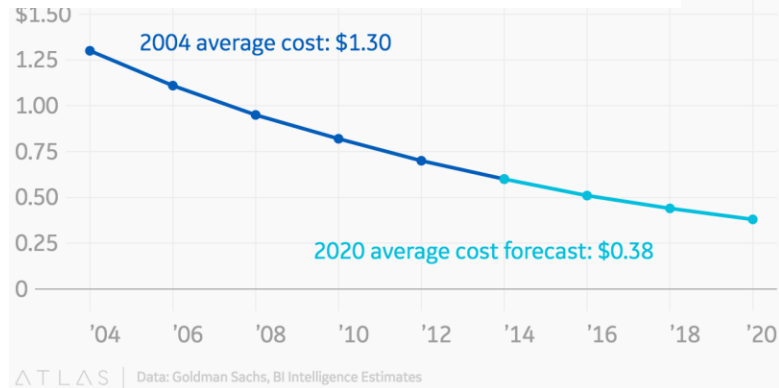
* Year of final close

Capital Raised by Unlisted Agriculture/Farmland-Focused Funds Closed since 2006 by Primary Geographic Focus

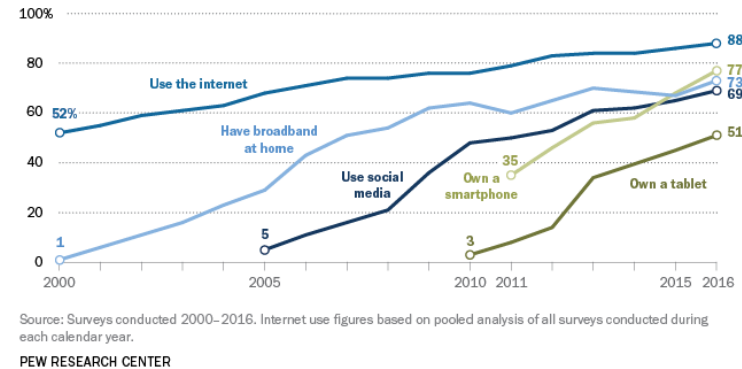


A Confluence of New Technologies

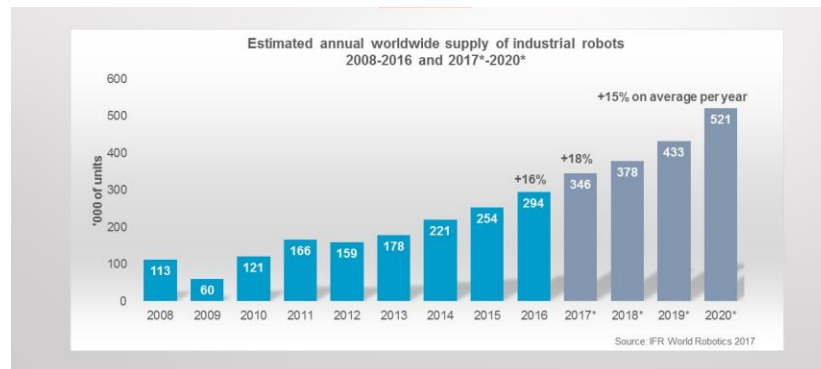
The Cost of IoT Sensors is Falling..



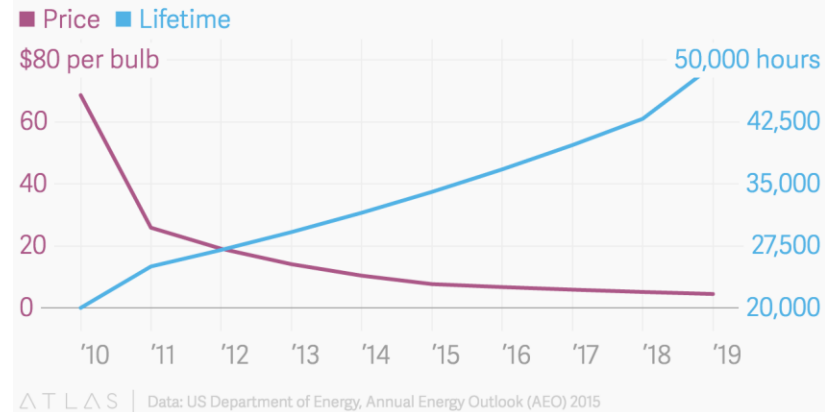
Smart phones and Tablets Usage



1.7 M new industrial robots by 2020



Cost and Lifetime for LED lighting



Cleantech revolution in ag?

- What kinds of data is helping open up the buyers' end of the market?
- What are the critical data ontology, communications, and hardware gaps that will be decisive in the first stage of this market?
- Trend vs. Fad? Specialty food? Identity Crops? (Organic, gluten-free)



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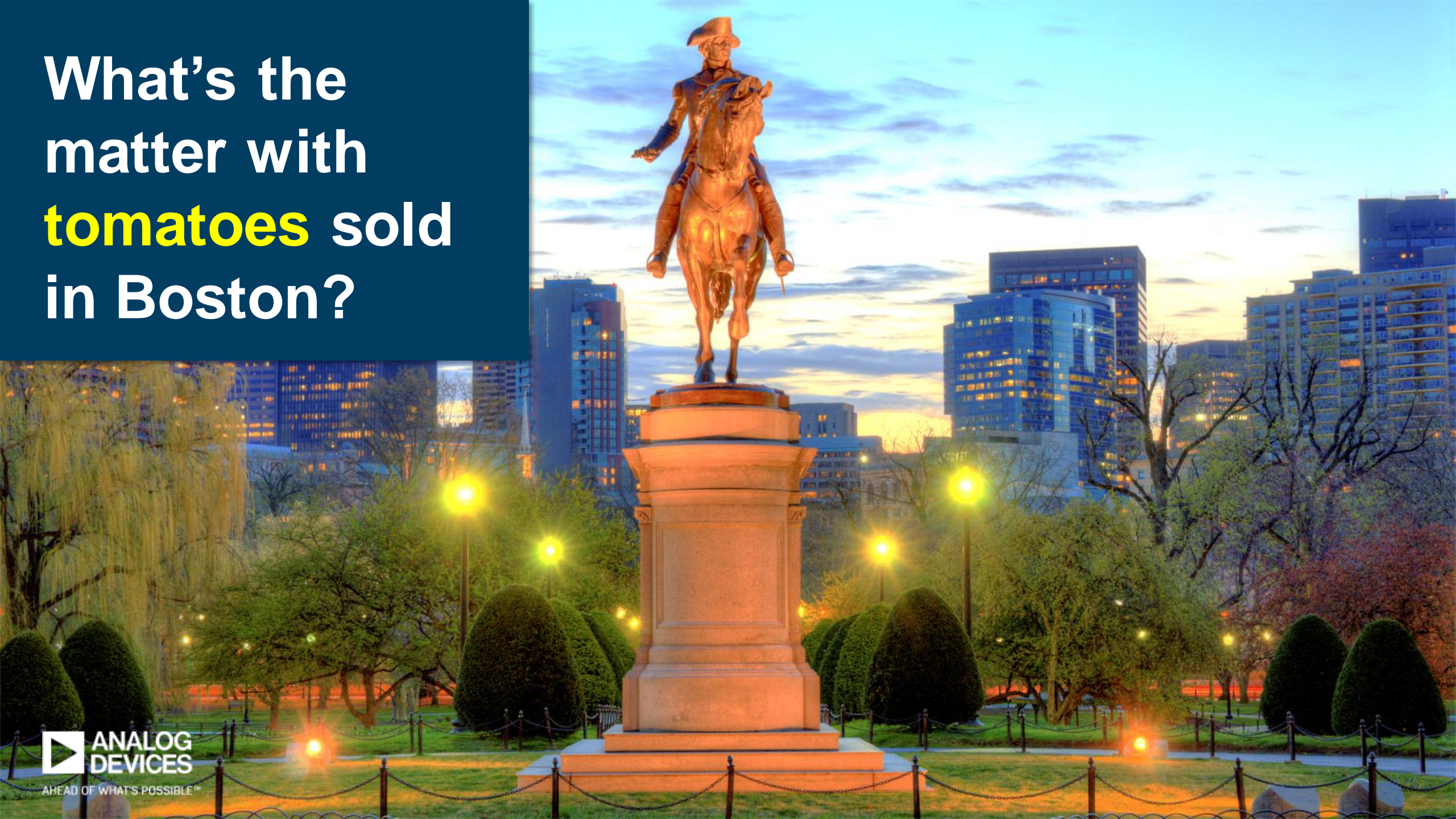


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What's the
matter with
tomatoes sold
in Boston?



What's the
matter with
tomatoes sold
in Boston?

They taste like
chalk ...



What's the
matter with
tomatoes sold
in Boston?

...because they're
grown industrially
as little **green golf
balls**...



What's the matter with tomatoes sold in Boston?

... and low-tech **ethylene gas** is applied on the way to Boston.



Tomatoes are
imported from
weird places.

California
has **no water**

A photograph showing rows of young tomato plants growing in black plastic mulch bags. The plants are small, green, and have several leaves. The bags are arranged in neat rows, and the background shows more of the same setup, suggesting a large-scale nursery or greenhouse operation.

Tomatoes are
imported from
weird places.

Florida has
no soil

Tomatoes are
imported from
weird places.

Other tomato regions
of the world have
dubious **labor** and
environmental
practices



We want more locally-produced tomatoes!

This requires
supporting
the success
and growth
of **local
tomato
farmers**



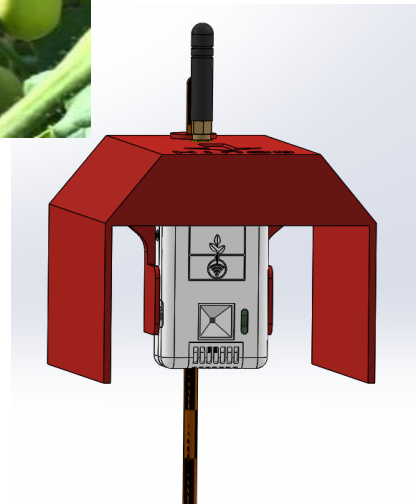
Internet of Tomatoes

FARMERS



PRODUCTIVITY

- ✓ No disease
- ✓ Maximum yield
- ✓ Right water
- ✓ Right heat
- ✓ Right soil
- ✓ Right light
- ✓ When to harvest



Argus C

Goal: Reconcile
Productivity and Taste

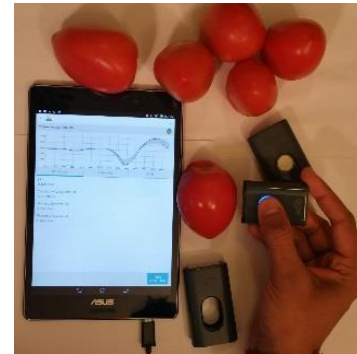
RESTAURANTS
AND CHEFS



CONSUMERS

TASTE

- ✓ Sweet
- ✓ Acid
- ✓ Low water content
- ✓ Salt



Boots on the Ground

Monitoring on the Vine



ADI Smart Ag Farm

In-Field Monitors



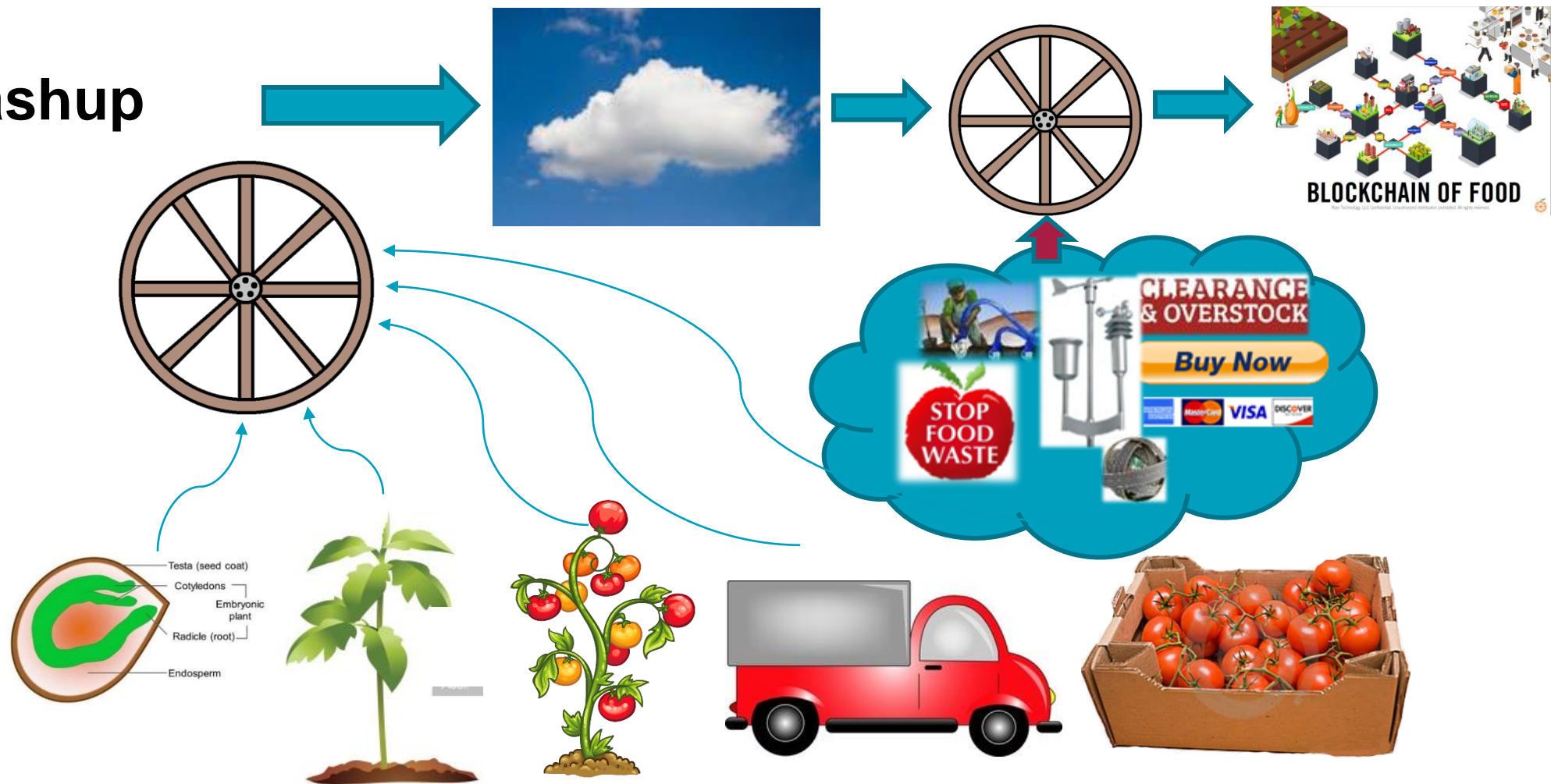
Verrill Farms

Consumer



The Full Chain

Data Mashup



Digital Ag – Still the Beginning of the Beginning

► The Benefits

- Reduced water usage – up to 20%
- More accurate pest and mold prediction
- Increased yield
- Better taste
- Score Card Generation

► The Challenges

- Supply Chain
- Distribution
- Support

Join us to make **Boston** the hub of the next technology revolution: **Ag-Food-Tech**

**BEST
AGRICULTURE**



**BEST
FOOD**



**BEST
TECH**





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Sustainable Food System – Bridging the Gap Between Farm and Table

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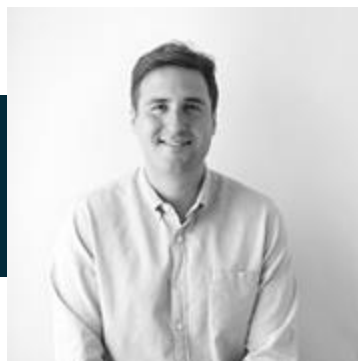
Sustainable Food System – Bridging the Gap Between Farm and Table



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Managing
Director, Obvious
Ventures



SASAN AMINI
Co-founder and
CEO, Clear Labs



SAM SCHATZ
Managing
Director,
AeroFarms



CHRIS MALLET
Corporate Vice
President,
Research &
Development,
Cargill



**WILL
ROSENZWEIG**
Founder and
Chair, Food
Venture Lab



**MICHAEL
SELDEN**
CEO & Co-
Founder, Finless
Foods

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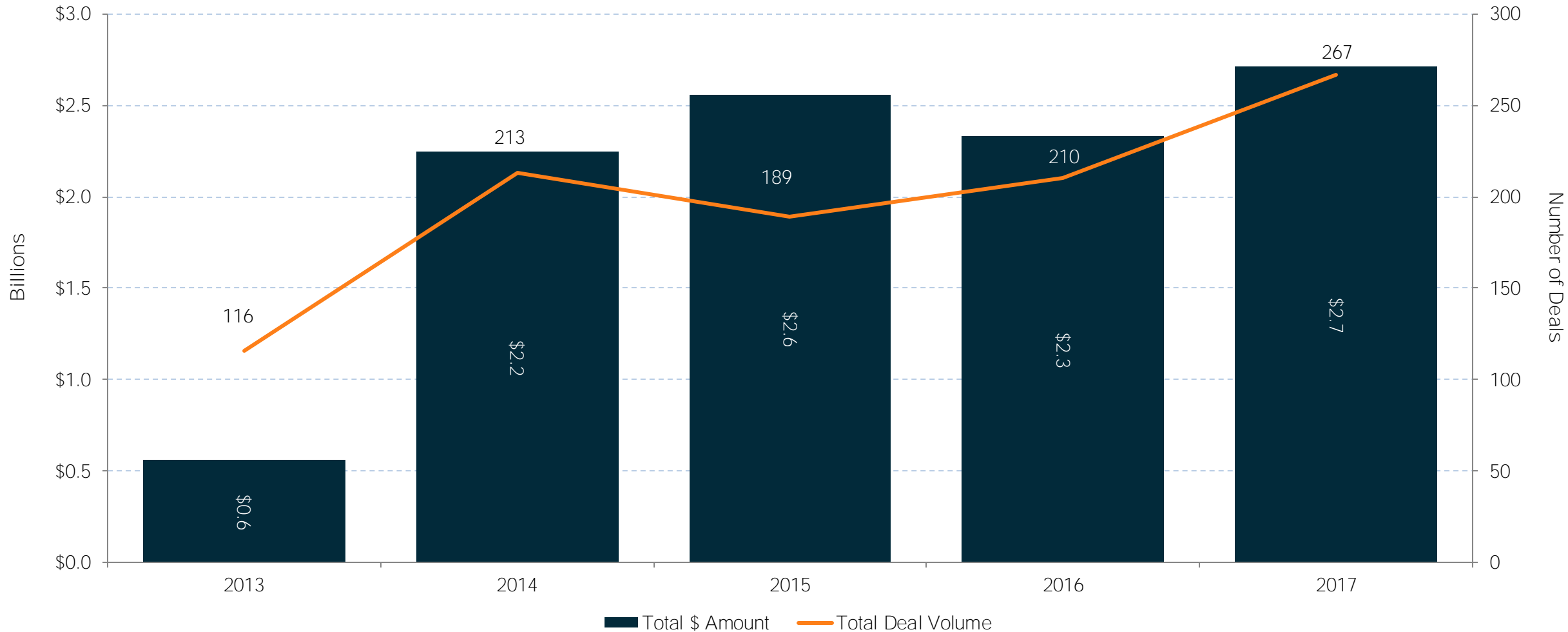
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Agricultural & food sector continues to see venture investments

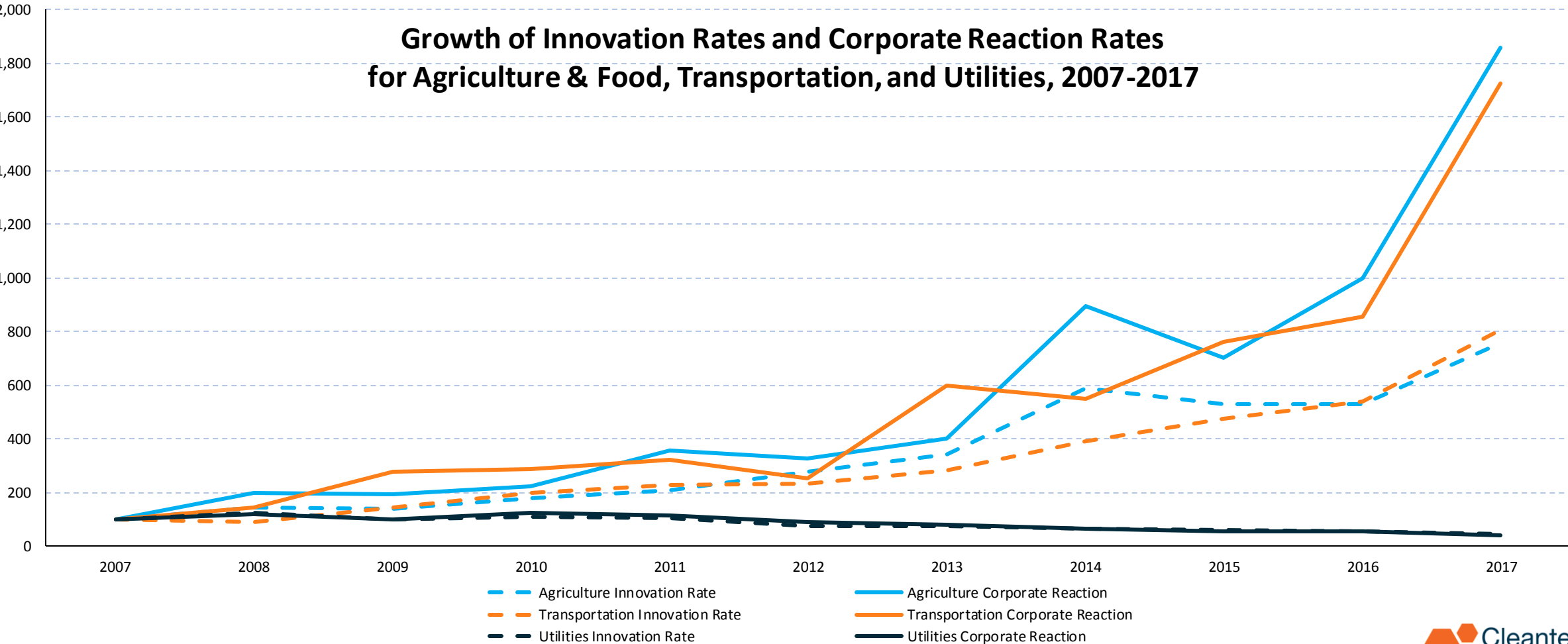
Dollars (left) and volume (right) of global agriculture & food venture capital deal activity



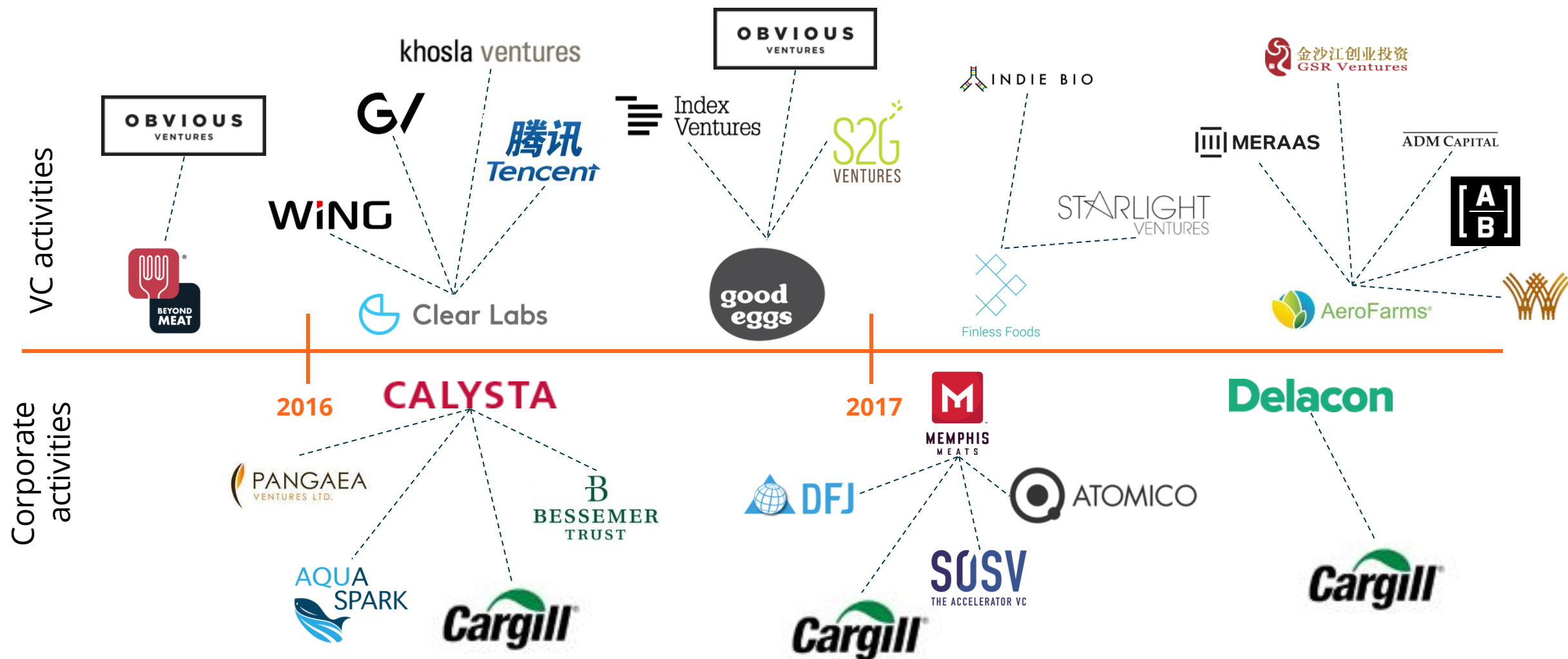
*Excludes outlier deals above \$350M

Disruption Intensity: who's feeling it most right now? where's the momentum?

Utilities exhibit a long, steady burn, but the real intensity in growth rates of open innovation are today found around Transportation & Logistics, and Ag and Food.



Sustainable food system – VC and corporate recent activities





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Sustainable Food System – Bridging the Gap Between Farm and Table



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Biotechnology Applications in Agriculture & Food

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Biotechnology Applications in Agriculture & Food



**MODERATOR:
ANDREW
HAUGHIAN**
General Partner,
Pangaea
Ventures



**ENA
CRATSENBURG**
Chief Business
Officer, Ginkgo
Bioworks



**MATTHEW
CRISP**
President & CEO,
Benson Hill
Biosystems



VONNIE ESTES
Independent
Consultant



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ROGER WYSE
Managing
Partner, Spruce
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