



main sequence
ventures



**Planetary Health Diet.
Why venture is excited
Phil Morle**

CSIRO INNOVATION
FUND - LP



Waves

Inevitable,
unstoppable forces

When they come, which companies
will need to be paid? Who is running
into it?



Science has transformed food production ... but it has also come at a cost.

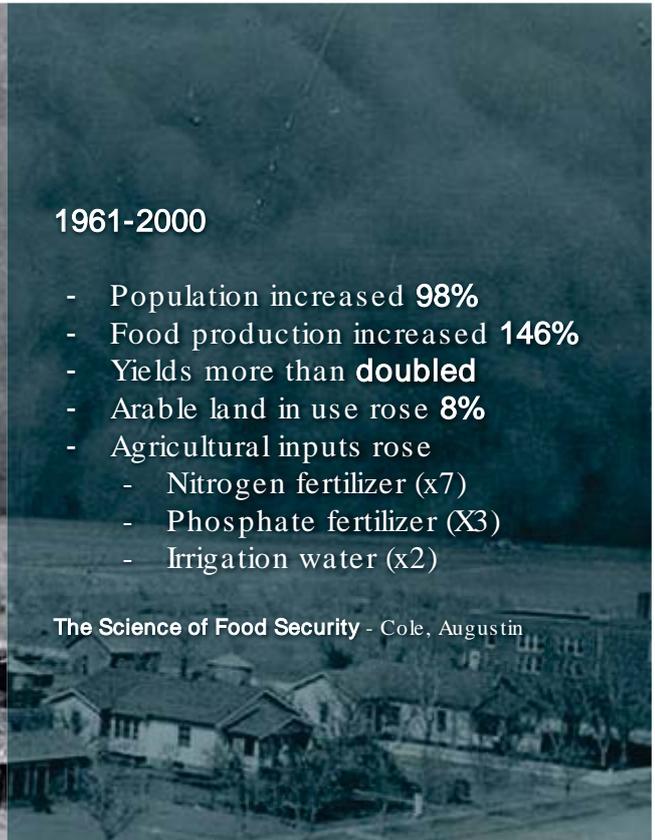
Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems

THE LANCET

1961-2000

- Population increased **98%**
- Food production increased **146%**
- Yields more than **doubled**
- Arable land in use rose **8%**
- Agricultural inputs rose
 - Nitrogen fertilizer (x7)
 - Phosphate fertilizer (X3)
 - Irrigation water (x2)

The Science of Food Security - Cole, Augustin



Planetary Boundaries Breached

THE LANCET

Food production occupies **40%** of land, causes **30%** greenhouse gas, uses **70%** of water.

Crossed

- Climate change
- Biosphere integrity
- Biogeochemical flows (nitrogen/phosphorous)

Will Cross

- Fresh water
- Change in land use
- Ocean acidification

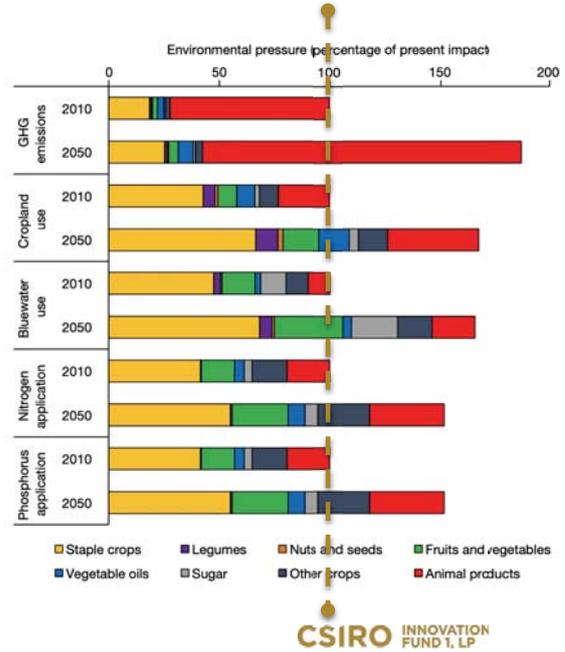
Regulatory functions upon which human populations depend.

Keep eating meat, keep growing, get richer...

Environmental pressure across all planetary boundaries will be breached with BAU scenario

Meat production will be a major part of that.

Options for keeping the food system within environmental limits. Springmann et al 2018



Planetary Option Space - What is possible?

Options for solutions that startups can and are building combine **diet** change, **tech** optimisations and **waste** reduction.

Options for keeping the food system within environmental limits. Springmann et al 2018

Diet scenario	Tech scenario	Loss and waste scenario	GHG emissions			Cropland use			Bluewater use			Nitrogen application			Phosphorus application			
			SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	
Baseline	Baseline	Baseline	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4	
		Waste/2	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4	
		Waste/4	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4	
	Tech	Baseline	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4	
		Waste/2	4	4	4	3	3	3	2	2	2	4	4	4	4	4	4	
		Waste/4	4	4	4	2	2	2	2	2	2	4	4	4	4	4	4	
Tech+	Baseline	Baseline	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2	
		Waste/2	4	4	4	2	2	2	2	2	2	3	3	3	2	2	2	
		Waste/4	4	4	4	1	1	1	2	2	2	3	3	3	2	2	2	
	Guidelines	Baseline	Baseline	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
			Waste/2	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
			Waste/4	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
Flexitarian	Baseline	Baseline	3	2	3	4	4	4	3	3	3	4	4	4	4	4	4	
		Waste/2	1	1	2	4	4	4	3	3	3	3	3	3	4	4	4	
		Waste/4	1	1	1	4	3	4	3	2	3	3	3	3	3	3	3	
	Tech	Baseline	2	1	2	3	3	3	2	2	3	4	4	4	4	4	4	
		Waste/2	1	1	1	2	2	2	2	2	2	3	3	3	4	4	4	
		Waste/4	1	1	1	1	1	2	2	2	2	3	3	3	3	2	3	
Tech+	Baseline	1	1	2	2	2	2	2	2	3	3	3	3	2	2	2		
	Waste/2	1	1	1	1	1	1	2	2	2	3	2	3	2	2	2		
	Waste/4	1	1	1	1	1	1	2	2	2	2	2	2	2	1	2		

Business as usual.

Better diet + best tech optimisation + max waste reduction.



THE LANCET

The same system is also making us sick through diet and this is going to get worse.

2b

overweight or obese

2x

diabetes in last 30 years

11.6m

avoidable deaths annually

Planetary Health Diet

THE LANCET

The Lancet commission proposed some guidelines

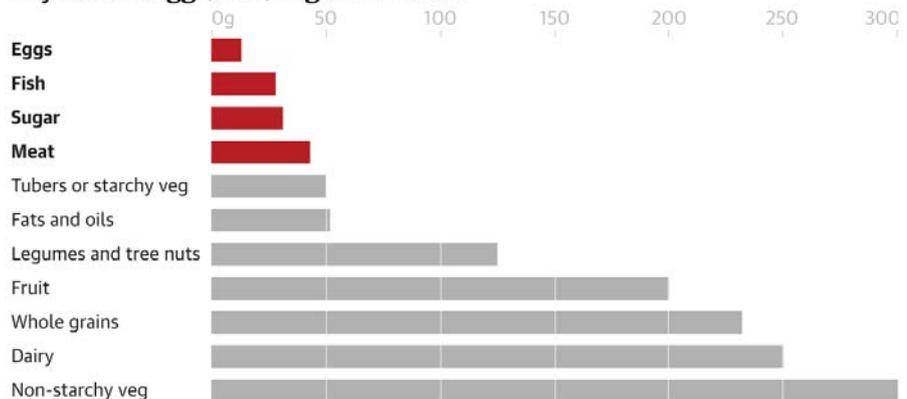
84%

less red meat

6x

more beans and lentils

A person following the planetary health diet would eat less than 50g per day each of eggs, fish, sugar and meat



Guardian Graphic | Source: EAT-Lancet Commission

So, here is the wave. By 2050,
Planet Earth needs to...

Produce

71%

more food by
2050

Eat

87%

less meat +
**other dramatic
diet shifts**

Have

55%

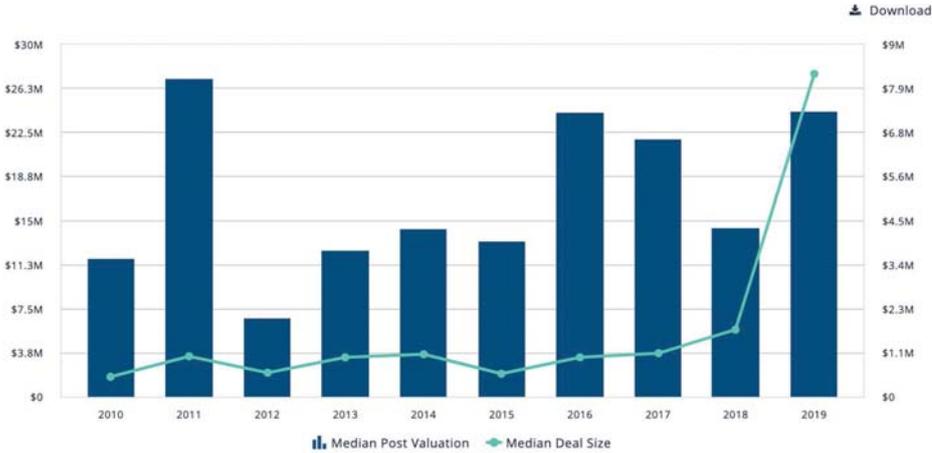
less
environmental
impact

Signals in Agtech investment

Deal sizes increasing greatly in agtech - investment activity enduring

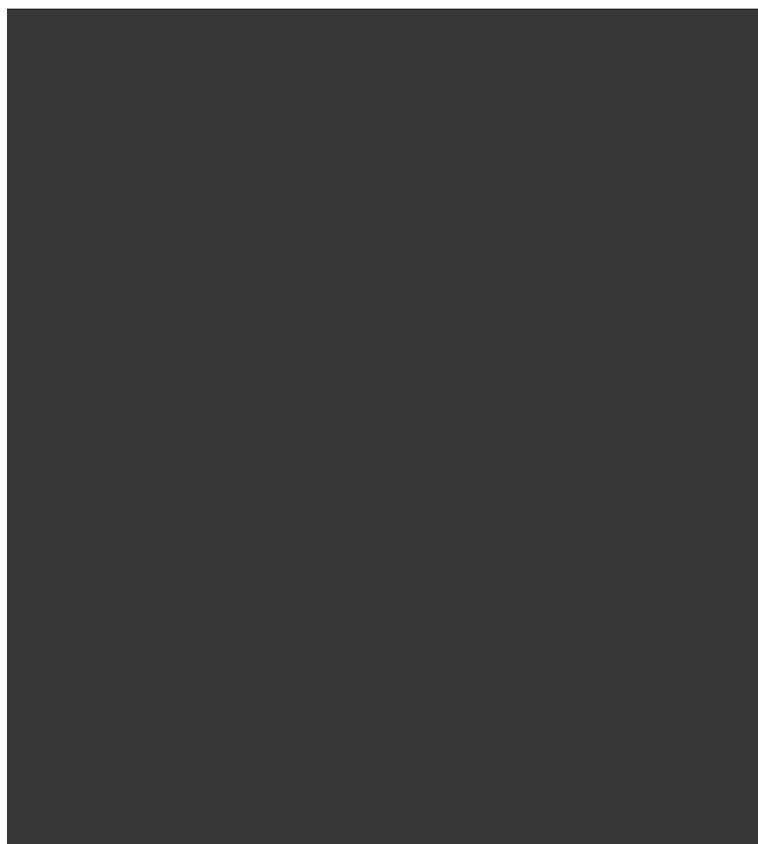
Pitchbook shows that Agtech deals levelled up in 2016 and are now growing in size, presumably as companies mature and need larger rounds.

Median Post Valuation vs. Median Deal Size



Diet

Some companies



Impossible Foods

Plant-based meat

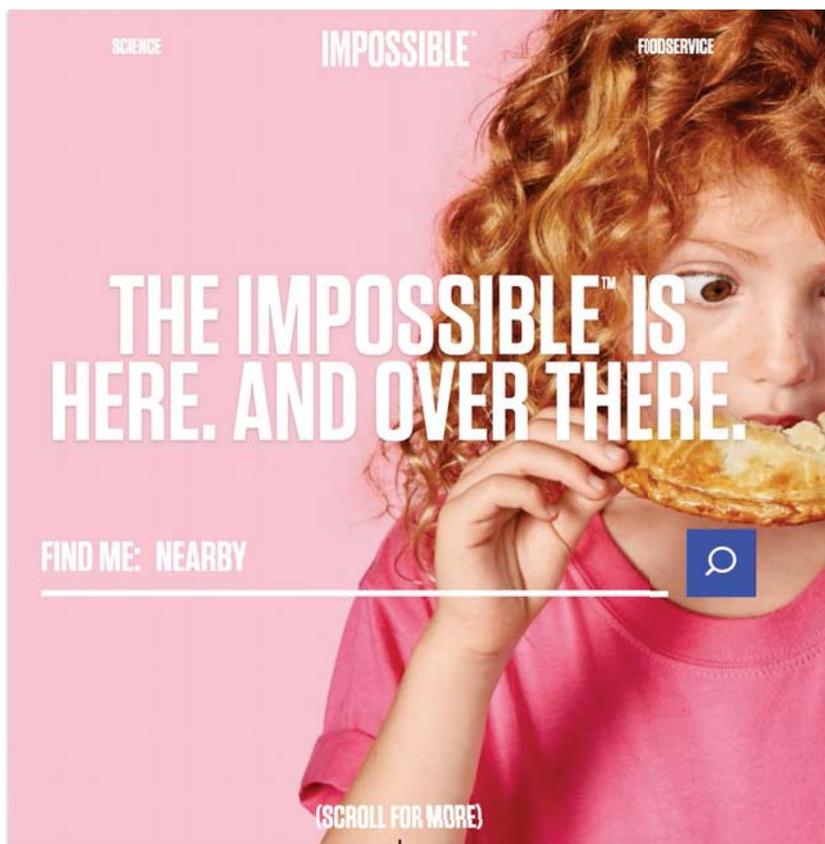
Signals

Valuation: **\$1b**

Raised: **\$477m**

Pull

Health by stealth. Less meat, more plants in diet.



Motif Ingredients

Ingredients for plant based food through fermentation

Signals

90m Series A! Spin out of Ginkgo Bioworks. Ex president of R&D at Pepsico

Pull

Industries making alternatives to meat need base ingredients.



Interesting

A company in Finland is making protein from CO2.



**Time to
catch a
wave**

Thankyou