Planetary Health Diet. Why venture is excited Phil Morle

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.

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)

Planetary Boundaries Breached

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
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 commission proposed some guidelines

**84%** less red meat

**6x** more beans and lentils

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

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Daily Limit (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eggs</td>
<td>0</td>
</tr>
<tr>
<td>Fish</td>
<td>0</td>
</tr>
<tr>
<td>Sugar</td>
<td>0</td>
</tr>
<tr>
<td>Meat</td>
<td>0</td>
</tr>
<tr>
<td>Tubers or starchy veg</td>
<td>450</td>
</tr>
<tr>
<td>Fats and oils</td>
<td>450</td>
</tr>
<tr>
<td>Legumes and tree nuts</td>
<td>450</td>
</tr>
<tr>
<td>Fruit</td>
<td>800</td>
</tr>
<tr>
<td>Whole grains</td>
<td>800</td>
</tr>
<tr>
<td>Dairy</td>
<td>800</td>
</tr>
<tr>
<td>Non-starchy veg</td>
<td>800</td>
</tr>
</tbody>
</table>

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

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**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.
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