Tech startups: a vehicle for change in agri/food?

1.3B tonnes of food is wasted each year, representing a 1/3 of global production. 270,000 tonnes of food is wasted over Christmas in the UK alone. COVID has proved to us all our food systems need some serious shaking up.

Temps de lecture : minute

14 December 2020

The stats go on. By 2050, the <u>World Bank</u> projects that 9.7B people will need feeding. This will require a 70% increase in agricultural production. But we also need to consider the climate component, with 25% of global greenhouse gas emissions coming from food systems.

Corporates + startups = a successful recipe for change?

Collaboration between corporations and startups is not a new phenomenon, although it might not necessarily feel easy and natural at first. However, the pressing need to transition to a lower carbon economy in light of climate change is incentivising corporates and tech startups to partner up. While technology alone will not solve food waste, unsustainable practices, and similar challenges, it has an important role to play.

Over the past few years, corporates have upped their game - running dedicated programmes, commercial contracts, partnerships, acquisitions and so on to reach out to tech startups. These startups will be vehicles for change, offering corporates a competitive advantage when it comes to

adapting and leading in tomorrow's world.

For instance, the InVivo Group, a leading French agricultural cooperative launched 'InVivo Food & Tech' and InViVo Quest in 2017. The objective? To identify pioneering startups and build an international innovation ecosystem to support the transformation of the agri/food industry.

Since 2016, Walmart has worked with IBM to track and improve in supply chains transparency. Soufflet and Mondelez teamed up with French startup Connecting Food to track wheat and highlight the French origin of its products. Groupe Carrefour signalled a push for more investment in digital, and the use of blockchain technology for providing consumers with 'guaranteed complete transparency', in its Carrefour 2022 Transformation Plan.

The 'local-first' approach also gained significant traction throughout the pandemic. Groupe Carrefour partnered with French tech startup Mirakl to launch a food and beverage marketplace that promotes buying locally. Startup Too Good To Go has been closely working with corporations to address food waste challenges, including in France, with an 'anti-food waste pact' on 'use-by' and 'best before' labels signed by 50+ food players including Nestle, Danone, Intermarche, Carrefour. Clearly momentum is building and a sustainable future is possible. But how did we get there?
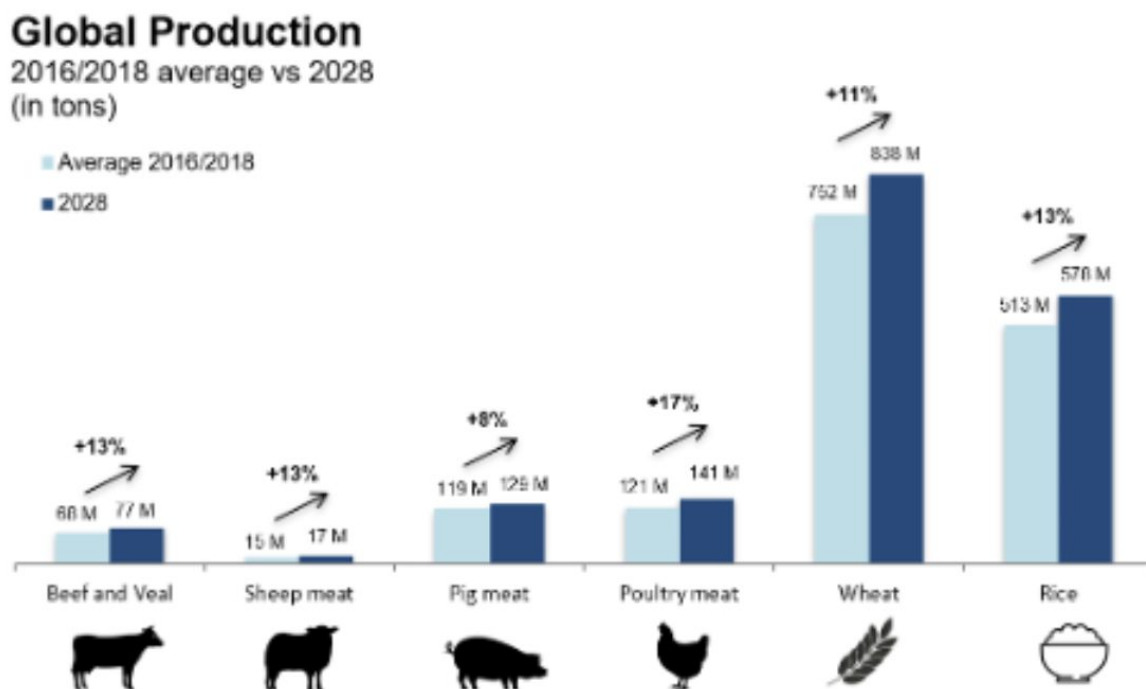
A wake-up call embraced by customers

1. Changing consumption habits

Needless to say, digitalisation has considerably changed our consumption habits. Easier, faster, and cheaper access to information has led consumers to adopt more responsible behaviours, especially in the agri/food industry. As health and sustainability becomes a focus,

consumers are now looking more closely at what they buy – from production practices, localisation, ingredients, to environmental impacts... and are hence calling for more transparency, from 'farm to fork'.

Environmental impact is a buying consideration for <u>70% of consumers</u>. For instance, in France, 86% of consumers are <u>asking for more transparency</u>, while in the UK, 75% of consumers would want <u>food retailers to opt for sustainable and ethical sources</u> for their products.

Global Production
2016/2018 average vs 2028
(in tons)

Average 2016/2018
2028

Beef and Veal: 68 M / 77 M (+13%)
Sheep meat: 15 M / 17 M (+13%)
Pig meat: 119 M / 129 M (+8%)
Poultry meat: 121 M / 141 M (+17%)
Wheat: 752 M / 838 M (+11%)
Rice: 513 M / 578 M (+13%)

2. Dealing with unsustainable production practices

Global population is expected to increase by 2B in the next 30 years but current production practices appear to be unsustainable and will hardly match this rising demand.

<u>According to the FAO</u>, annual cereal production will need to rise to c.3B

tonnes (from 2.1B today) and annual meat production to c.470M tonnes (from c.300M today).

In 2019 global production of beef was close to 60M tonnes.

Assuming 1kg of beef = 4,184l of water + 50kg of CO2:

2019 🐂 Production = 300tn litres of 🚰 + 3bn tonnes of ☁️🏭

To put this into perspective, this was around 70x as much as the water use of France or the UK for 2019. In terms of greenhouse gases, global beef production emitted just under 10 times more than France or the UK that year.

3. Minimising food waste

Issues remain throughout supply chains, with 10M tonnes of food waste generated in the UK each year post-farm gates.

According to Sean O'Keefe, COGZ's founder:

> *"The food supply chain is traditional and relationship-led, which makes it difficult for farmers to find new routes to sell their excess produce."*

Indeed, most 'ugly-looking' products are turned away. Long customs checks also mean that products sometimes expire before getting to market.

This and more sadly leads to a significant volume of food being produced inefficiently and doomed to be wasted. There is a need to better assess demand at all stages of the food value chain to limit food waste.
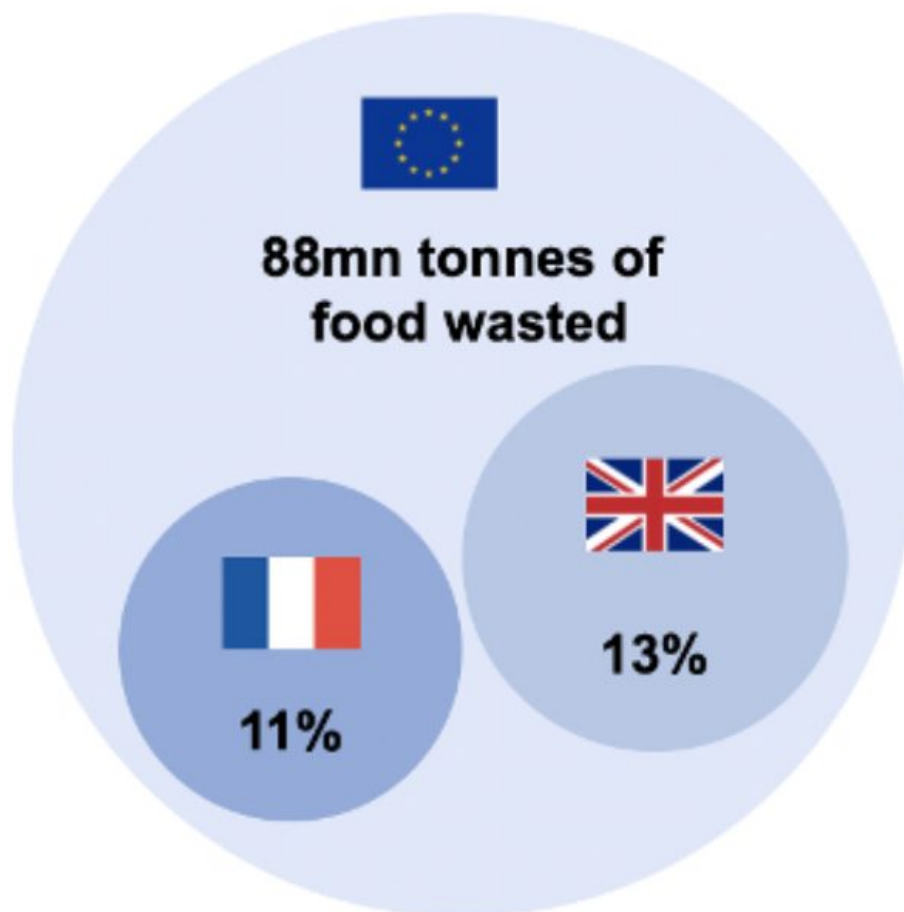
4. Increasing concern for food hazards

The past two decades have seen numerous food safety and fraud scandals, such as the 2013 horse meat scandal in Europe, 2018 E. coli lettuce scandal in the US and the 2019 'sick cow' meat scandal in Poland.

One explanation for this is the development of antimicrobial-resistant bacteria, a side effect of the overuse of antibiotics in animal farming. These bacteria are transmitted to humans through the food chain and can cause serious harm, since they have already developed resistance to most or all available treatments.

This is not to mention the cost of product recalls when such scandals arise. There is now an urgent need to find alternative solutions to limit antimicrobial resistance and to better track the food we ingest.

'Tech for good': a strong footprint in agri/food

Agri/food tech startups raised $11.6B in funding in 2020.

As consumers demand shorter food supply chains, sustainability and more transparency, startups are rising to tackle this challenge.

While both the agri/food and healthcare sectors have been front and centre during the pandemic, food systems have been much slower to benefit from innovation than their healthcare counterparts.

Solutions to the many challenges faced by the agri/food industry

We have focused in on six areas where we have seen 'tech for good' startups flourishing over the past few years:

1. Agritech

Current practices cannot sustain expected population increase. Thus, there is a real need for sustainable agriculture solutions.

For example, Sencrop devices use various metrics (e.g. air quality, temperature and rainfall) to monitor crops and encourage precise, efficient, and eco-friendly agriculture.

LettUs Grow and iFarm have developed vertical farming solutions for more efficient indoor farming, minimising pesticide use, soil degradation, and water withdrawals. The Berlin-based Infarm raised $170M in September this year, to scale its urban farming network.

As of August 2020, $2.6B had been invested in agritech startups globally.

For instance, Pivot Bio raised $100M in April this year to scale its microbial nitrogen technology, which increases crop yields and in turn farmers' revenues. Farmers Business Network, a farmer-to-farmer network helping farmers optimise their financial performance, raised $250M in August.

2. Alternative proteins

Steadily growing consumer interest in alternative proteins has led to a surge in investor confidence.

From a consumer point of view, opting for alternative proteins substantially reduces greenhouse gas emissions and freshwater withdrawals - at the same time as freeing up hectares of land.

This explains the success of plant-based meat such as Impossible Foods or Beyond Meat, which went public in 2019, raising $240M and scoring one of the best IPOs in the US in the last 20 years.

There are many different types of (plant-based, insect-based or microbial-based) and uses for alternative proteins. InnovaFeed and Ynsect make ingredients derived from insects for animal nutrition, and have raised €140M and $372M respectively over the past months.

3. Supply chain transparency

As mentioned, consumers, retailers, brands, and producers are all affected by the demand for increased transparency, traceability and quality.

The use of innovative technologies such as blockchain could help the tracking and digital audit of food supply chains in real time. French startup Connecting Food raised €3.2M in a pre-Series A round this March. US startup GrainChain raised $8.2M to build a global agricultural

marketplace, using blockchain technology to make it transparent and fair to producers.

4. Food/product quality

Easier, faster and cheaper access to information has led to the rise of product analysis apps – dedicated to giving consumers more transparency about the products they're buying.

Yuka, for example, provides consumers with detailed data sheets and independent recommendations for products such as food or cosmetics items, while Siga uses a proprietary index to assess how processed a product is. Other apps, like Twil or Vivino, can be used to scan a product and get more insights (i.e. reviews). Such apps have changed consumers' habits but have also led retailers and FMCG companies, like Nestlé, Mondelez and Unilever, to take action to align with these standards and consumers' needs.

5. Food waste

Food startups are tackling food waste issues from different points in the food chain: from the upstream segment (farmers and producers) right down to the consumers (brands and food retailers).

Startups like Winnow propose AI-led solutions - which can monitor and reduce food waste in hospitality (an estimated $100B problem). UK startups Hello Fresh and Gousto deliver recipe meal boxes with the exact quantity of ingredients needed, avoiding leftovers. French startup FamilEat offers fully prepared meals across the country, which they produce and cook 'on demand' only when ordered in advance.

Combating food waste is among their top priority, they favour 'short circuits', and 'ugly-looking' vegetables that cannot be sold on regular markets (and typically doomed to be thrown away). Irish startup

[FoodCloud](#) connects retailers that have surplus food to a network of charities and community groups.

Halving per capita global food waste and reducing food losses along the production chain by 2030 is one of the [UN Sustainable Development Goals](#). To match this, more and more startup programmes have arisen, facilitating the growth of companies engaged in fighting food waste, such as The Good Kitchen and Horizon 2020. Investors' appetite for the sector has - because of this - been increasing a lot recently.

6. 'Short circuits' supply chain

One thing COVID has highlighted is the need and desire of consumers to consume locally. Consumers are now asking for local, natural, fresh, seasonal products, cultivated as close to home as possible and many businesses have flourished in this area. For instance, [Epicery](#) and [Farmdrop](#) allow consumers to order fresh produce from their local shops or producers delivered to their home.

To conclude, technology has revolutionised the way we consume by, among other things, allowing us (consumers) to take into account the consequences of our consumption for our health and for the Earth. Change in the shape of consumer demand has led corporates to look for ways to become more transparent and adopt more sustainable practices.

Tech startups are becoming an increasingly important vehicle for change in the Agri/Food sector, leveraged by corporates, and consumers. As such, the need to finance the 'tech for good' is now greater than ever and the increasing number of 'impact funds' is one illustration of this trend.

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