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November 2021  
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## SPOTLIGHT

# Global Alternative Proteins

## Big plate, small portion

We examine the alternative proteins market in depth on a global basis to assess its future prospects

Our detailed analysis points to a market that has strong potential but is not accelerating, and where competition is intensifying

Within our coverage of the key global players we prefer Nestlé (Buy). We downgrade Monde Nissin to Hold. We initiate coverage of Beyond Meat and Oatly, both at Reduce.

*This is a Free-to-view version of a report by the same title published on 29-Nov-21. Please contact your HSBC representative or email [AskResearch@hsbc.com](mailto:AskResearch@hsbc.com) for more information.*

**Disclosures & Disclaimer:** This report must be read with the disclosures and the analyst certifications in the Disclosure appendix, and with the Disclaimer, which forms part of it.

## Facts and figures

**75%**

Rise in UK consumption of dairy alternatives 2014-19

**-8%**

Fall in US dairy consumption 2014-21

Beef has by far the highest emissions of any protein source. This compares with 31.8g /CO<sub>2</sub> eq. per kg for poultry

Cow's milk has around 3x the GHG intensity of plant-based alternatives but there are big differences by geography

**221.6g**

CO<sub>2</sub> equivalent emissions of beef per kg of protein

**70%**

Price premium of a Beyond Burger vs organic beef

**USD40bn**

Estimated size of the global protein alternative market today

**USD140bn**

Estimated 2030 market size based on 70bp annual share gain

**USD6.5bn**

Investment in protein alternative companies in 2020 and 2021 to Sept

This USD6.5bn figure compares with USD2.8bn for the entire 2010-19 period

Following Impossible Foods' USD500m November 2021 funding round the 2020-2021 total will rise above USD7bn

**66**

The number of beef alternative SKUs across leading manufacturers

**15%**

Private label market share in dairy alternatives across North America and Western Europe

# Executive summary

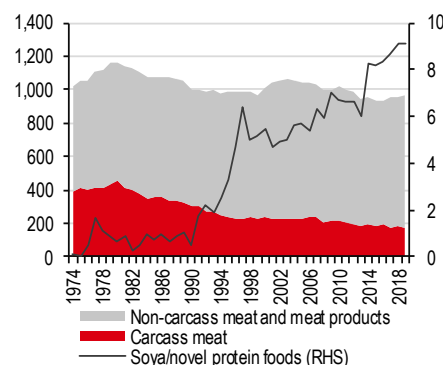
Many changes to consumers' diets take place gradually over a number of years but more recently we have witnessed a rapid scaling of meat alternatives and plant-based dairy substitutes, driven by powerful dynamics of rising health and environmental awareness. In this report we examine the alternative protein space in depth to project how fast it might grow. From a current value of cUSD40bn, moderate increases in annual market share could lead the alternative proteins category to more than triple by the end of the decade. Many end markets are fragmented with low to moderate barriers to entry, but a huge influx of capital and rapidly changing technology means that those who look best placed today have no guarantee of maintaining their lead.

## A new industry emerges amid a changing consumer

**Evidence of structurally rising demand for plant-based foods in some markets**

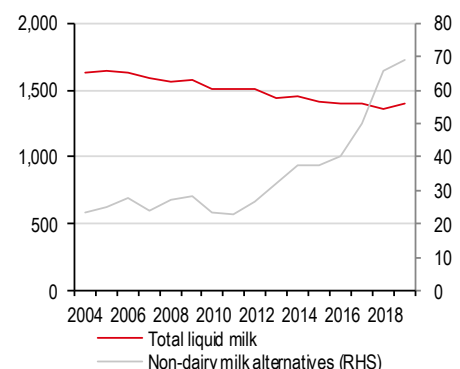
As global dietary habits continue to evolve, demand for plant-based food is structurally growing across a number of geographies. Whether we look at short-term data or much longer series, a picture of stable to declining consumption of animal proteins and clearly rising demand for meat alternatives and plant-based dairy substitutes is evident (as data for the UK illustrates). Despite the recent sharp increases, the plant-based shares remain just a small percentage of their animal based counterparts.

**UK meat and alternatives consumption, 1974-2019, grams per person per week**



Source: Defra, UK Living Costs and Food Survey

**UK consumption of milk and dairy alternatives, ml per person per week**



Source: Defra, UK Living Costs and Food Survey

*We acknowledge the contribution of Nitin Jaggi, Associate, Bangalore to this report. He is employed by a non-US affiliate of HSBC Securities (USA) Inc, and is not registered/ qualified pursuant to FINRA regulations*

### Environmental and health considerations the key factors

There are two very clear reasons for this change in consumer habits: environmental and health considerations. Never before has there been such an unequivocal scientific conclusion on the links between the build-up of greenhouse gases and climate change<sup>1</sup>. Within this, there is a rising consumer awareness of the role of agriculture, particularly livestock, in contributing to the problem.

The headline statistics are stark. Per kg of protein, the quantify of CO<sub>2</sub> emitted is vastly greater for red meat versus all other food groups while pork and poultry also have emissions materially above their plant-based equivalents. On the dairy front, the differences are not so dramatic but are still substantial.

Health awareness among consumers is also much more widespread today and diet is a further manifestation of the trend. This is being reflected in more consumers seeking to moderate their red meat consumption while a much wider understanding of lactose intolerance and allergies is fuelling growth of plant-based dairy substitutes.

### Future growth in little doubt, but a big debate over its pace

These two trends should underpin sustained above-industry growth for alternative proteins. Yet, a much more pertinent question relates to how fast the industry might grow and whether we might be at an inflection point.

## Positive prospects, but no inflection

In the full report, we look in depth at the factors that will determine the speed at which consumers incorporate alternative proteins into their diet. There are five aspects we identify, each of which we touch on briefly here.

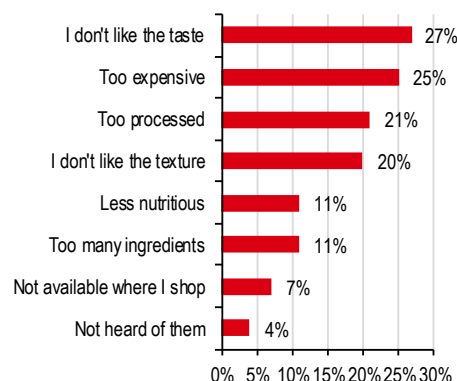
1. **Quality of available alternatives.** This is the area in which recent years have seen the most dramatic advances. Products such as the Beyond Burger and Impossible Burger have played a critical role in changing the perception of plant-based products such that consumers seeking to reduce their meat intake no longer feel they need to compromise on flavour. In an exceptionally dynamic category, new products are continually appearing that push the boundaries further when it comes to offering meat, or meat-like products without some of the adverse health or environmental consequences.

On the plant-based milk substitute side, a burgeoning choice and improved processing allow more consumers to find something that suits their taste profile without compromising on either the taste or textural characteristics they desire.

Yet, it is not all straightforward. Plenty of consumers are still not won over by the taste of alternative proteins while, more so on the meat side, the highly processed and technical nature of the products can also act as a major barrier to adoption.

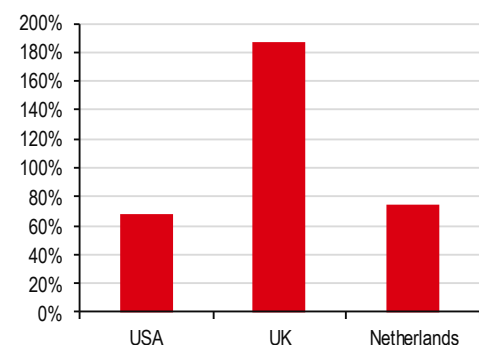
### Important barriers to adoption of plant-based products remain

**US consumers: barriers to eating plant-based meat products (March 2020)**



Source: Good Food Institute

**Beyond Burger price premium (per kg) to organic beef burger**



Source: HSBC, retailer websites  
Prices at 6 October 2021

<sup>1</sup> Intergovernmental Panel on Climate Change Sixth Assessment Report, August 2021

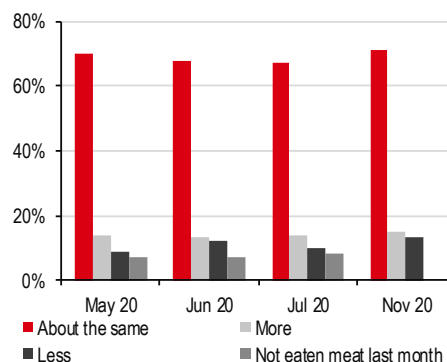
2. **Price of available alternatives.** Linked to the previous chart on barriers to adoption, the prices of most alternative proteins are well above the animal-based equivalents. This will prevent such products becoming truly mainstream. Moreover, because consumers are essentially being required to pay the price of a good steak to receive ground beef in return, the value proposition is also challenging. Therefore, substantial technological progress will be needed to create products of the quality consumers require to switch at a genuinely mass market price.

While plant-based milk substitutes are also materially more expensive than cow's milk in percentage terms, we think their lower absolute price makes the premium less of an impediment to widespread adoption. But it will still be an issue for some consumers.

3. **Extent to which consumers' attitudes are actually changing.** In recent years we have seen a clear increase in consumer interest across the alternative proteins category. However, data from 2020 and 2021 suggest this has slowed.

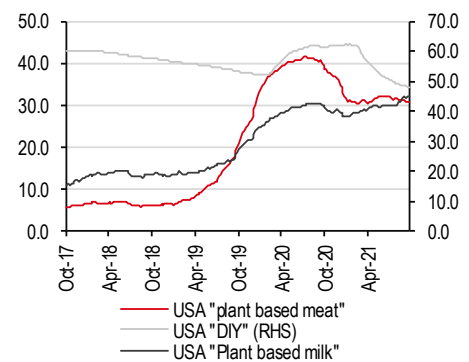
Within the UK (one of the most receptive markets for alternative proteins) there is no evidence that meat eating declined during the pandemic – in fact monthly surveys showed consumers eating *more* meat than previously. Meanwhile, analysis of Google search terms points to a plateauing in demand for meat alternatives while the rate of growth of searches related to plant milks also looks to have slowed.

**Change in meat eating during the pandemic within the UK**



Source: Food Standards Agency

**Google search trends plant-based meat and plant-based milk**



Source: Google trends, HSBC

Note: DIY used as a control to adjust for pandemic related effects on search intensity

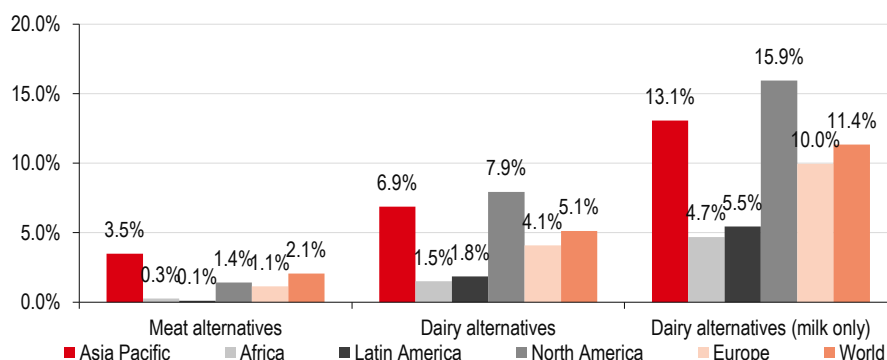
While these shorter-term data points do not impact our views on the category's longer-term potential, they suggest the category is not seeing any upward inflection and point more to a slowing, something corroborated by recent company results.

**Government policy is mostly not in favour of plant-based alternatives**

4. **Government policy and regulation.** At present the regulatory environment is arguably more in favour of animal proteins. For example, in many European countries, the VAT on cow's milk is lower than on the plant-based alternatives. Rules have been introduced restricting the terms that can be put on product packaging. More recently there has been press commentary (Daily Telegraph, 4 February 2021) on making changes to the tax or regulatory landscape to promote the consumption of plant-based products but we have not seen any firm proposals and there is likely to be considerable opposition from the farming lobby.
5. **Extent to which the animal proteins industry can reduce its carbon emissions.** Although the emissions gap between animal and plant-based proteins is currently large, there are many ways in which they can be closed. Implementation of such measures is going to happen progressively but any ways in which animal proteins can become more carbon neutral will damp the ecological pressure to switch.



### Global market share of plant-based products (2020)



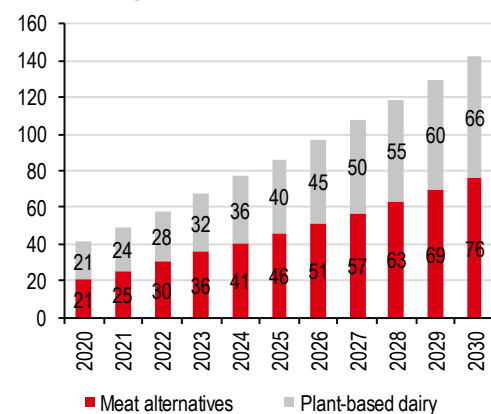
Source: HSBC, Euromonitor

Global animal proteins are worth approaching USD2trn including fish and seafood

**Forecasting the industry.** As discussed, current penetration of alternative proteins is extremely low. Meanwhile the addressable market is huge. We estimate that the global meat market in 2020 was worth around USD1,000bn (and some estimates are well above this) while global dairy markets are worth cUSD400bn. Fish and seafood is worth a further cUSD350bn, albeit we focus less on this in our work.

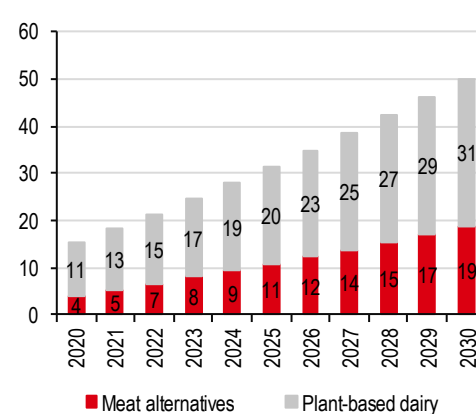
To estimate how far the industry can grow over the remainder of the decade, we look at a range of scenarios that assume different rates of conversion from meat eating. Given the major differences in attitudes to meat eating by age, we model different rates of adoption of plant-based product by age cohort and translate this into a view on the overall market.

### Estimated growth of alternative protein markets – global (USDbn)



Source: HSBC, Euromonitor

### Estimated growth of alternative protein markets – N. America & Europe (USDbn)



Source: HSBC, Euromonitor

We estimate a 70bp of annual share gain for plant-based proteins...

...but this growth is heavily contingent on further technological advances

Our forecasts are explained in detail in the full report but our central case is that the global share of alternative proteins will rise by approximately **70bp per annum**. This translates into a meat alternatives market that can grow at a teens pace over the remainder of the decade and a plant-based dairy market that will grow at a low double-digit pace.

While these forecasts represent a sizeable expansion, particularly for meat alternatives, we think further technological advances will be critical in realising them. In particular, our forecasts imply that cultivated meat and novel fermentation products comprise a significant percentage of the total and that price reductions will pave the way to mainstream adoption. Yet, achieving this will require dramatic improvements in product economics and there are substantial obstacles to scaling up the process that need to be overcome.

## Jostling for position as technology evolves

Even if the market does achieve the lofty growth we outline, there remain major questions over who the eventual winners will be. Using HSBC's framework for disruptive technologies we look at some of the factors determining market attractiveness from an investment standpoint.

**The base meat and dairy markets are commoditised and fragmented**

The starting point is challenging. If we look at the base markets – meat and dairy – they are among the most commoditised and fragmented across the consumer staples industry. Therefore, the ability of alternative protein providers to overcome these and globalise their products will be key. We consider a number of the markets' attributes in the following table. In short, the alternative protein categories offer more opportunity for consistently good returns than the meat or dairy precursors, but they do not screen that well either.

### Market attractiveness attributes – animal proteins and alternative proteins

Aspect of market	Comment on base market	Comment on plant-based alternative
Level of fragmentation	Both meat and dairy highly fragmented	More concentrated than straightforward animal proteins although still towards the lower end of the consumer staples industry
Ability to globalise	Local markets with limited ability to globalise	Moderate ability to globalise with brands travelling more easily across borders although meat alternatives in particular are still mainly led by local brands
Network or scale effects	None	Scale effects can become important as a way of lowering unit costs. Networks effects limited although social pressure could lead to accelerated adoption in some quarters
Barriers to entry	Low	Variable. Low to moderate on the plant milk side with rising complexity in meat alternatives. Cultivated meat can potentially have the highest barriers to entry given the formidable obstacles to scaling
Manufacturing complexity	Low	Variable and reflect similar elements to the barriers to entry
Brand loyalty and switching costs	Limited loyalty with low switching costs	Switching costs are uniformly low in consumer staples but brand loyalty can be high for a superior product

Source: HSBC

We also examine a number of examples of historical disruption within fast moving consumer goods (FMCG). Although there are no hard-and-fast rules, it has often been the incumbents who have ultimately prevailed. Meanwhile successful disruptors have usually seen gains plateau after three to four years.

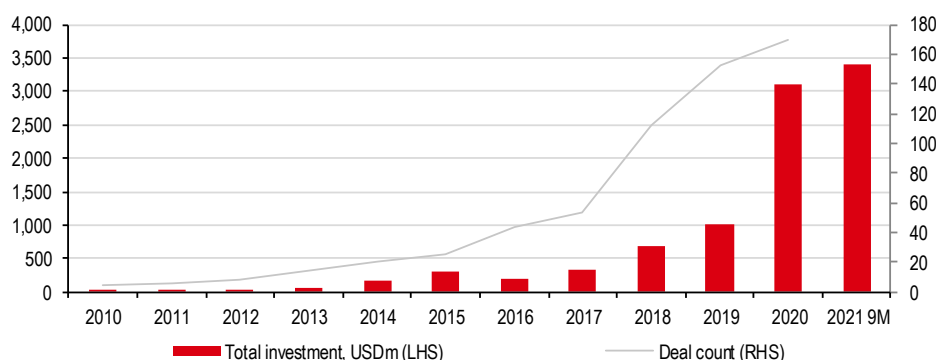
**Alternative proteins are seeing an unprecedented influx of new capital...**

At the same time, there is a flood of capital entering the alternative proteins space, the likes of which have never seen before. According to data from the Good Food Institute, total investment in the alternative protein space in 2020 was three times 2019's level. In the first nine months of 2021, the 2020 total had already been exceeded.

**...which puts the current leaders at higher risk of being displaced**

With so much capital entering the industry we see a high chance of new technologies emerging that can end up displacing those currently occupying the leading positions. It also means that the size of the potential profit pool and how it is distributed remains incredibly unclear, with even the leading companies today not necessarily winners over the longer term. We profile some of the most interesting new technologies from unquoted players within the report.

### Annual investments in alternative proteins, 2010-2021 9M



Source: Good Food Institute

The full note contains an in-depth look at the evolving global diet, from the growth of plant-based proteins in developed markets to the impact on climate change, from vegetable and pulses to lab-grown meats.

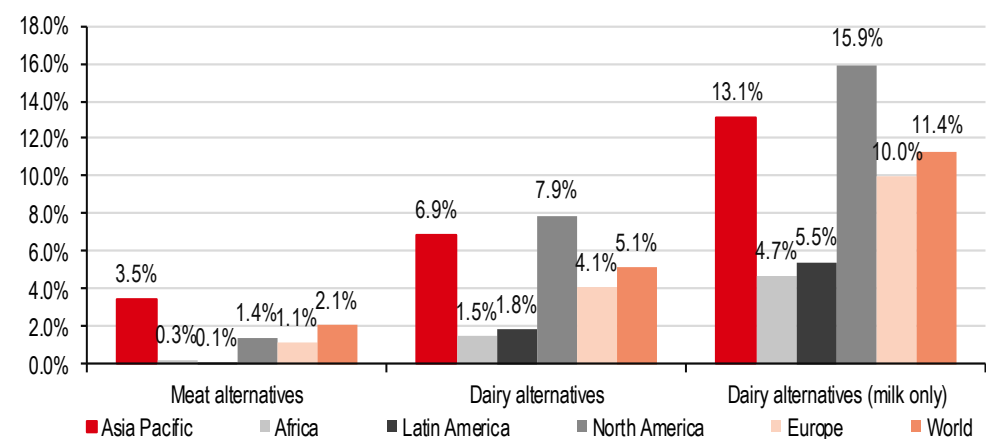
We also look at the next stage for this segment given that there is an increasingly concrete consensus amongst scientists, environmentalists and researchers that greater consumption of alternatives proteins will be necessary to help meet both rising protein demand and climate and environmental targets; we also look at whether adoption is increasing or plateauing.

Lastly, we look at how to capture the opportunity using HSBC's disruptive technology framework to examine some of the key factors determining competitive advantage amid industry disruption.

The note also includes a look at the alternative proteins names we cover and their investment thesis

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### Global market share of plant-based products (2020)



Source: HSBC, Euromonitor



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