

THEME 01

# The plant-based protein transition

FOOD

ENVIRONMENT

PROTEIN  
TRANSITION

Much of the debate around meat production today centers on its environmental impact and particularly its greenhouse gas emissions, especially since the global growth of demand for animal protein is unprecedented and will further affect the environment in the future. To ensure food security, food safety and sustainability, a transition from animal protein-based diets towards plant-based protein diets is needed. Most interest and investment in alternative proteins is currently in Europe and North America, with the recent Beyond Meat IPO as a symbol of the search for meat substitutes. How can we understand this trend and what are the underlying realities of it?

## Our observations

- Globally, meat production today is nearly [five times](#) higher than in the early 1960s. Although there are variations from one region to another, generally, the richer we are, the more meat we eat. High levels of meat consumption can be seen across the West (Western Europeans consume between [80 and 90 kilograms](#) of meat per person). For decades, the growing demand for high-value animal protein in mostly Western countries increased pressure on the livestock sector, resulting in unsustainable farming. But currently, middle-income countries are driving the global rise in demand for meat. Rapidly-growing nations such as China and Brazil have seen significant economic growth in recent decades, and a large rise in meat consumption. In both countries, meat consumption has [tripled](#) in the last few decades.
- Animal sources of protein cause a lot of problems that require countries to make a transition to alternative protein. Nutrition from animal sources is inefficient in a world of limited resources and a growing population, as livestock need vast amounts of feed (grass, corn, soy, etc.) and can be seen as an unnecessary link in our food chain. Furthermore, we pollute land, water and air to get our nutrition from animal sources, instead of directly from plants. About [15%](#) of anthropogenic greenhouse gas emissions come from livestock production (about 3% is due to dairy production), of which 40% are due to beef and dairy farming. The UN calls meat [our "most urgent problem"](#).
- The word protein originates from the Greek *protos*, meaning "the first quality", reflecting the central role it plays in our nutrition. Protein provides the body with approximately 10 to 15% of its dietary energy and it is the second most abundant compound in the body, following water. Human beings have a [preference](#) for food that is both energy-dense and protein-rich – such as meat – as human beings originally evolved in an environment where energy and protein were scarce. However, in a world of abundance, we seem not to be able to handle the ubiquity of protein: we already eat [too much protein](#) in high-income countries.
- Alternative protein is receiving a lot of attention and investment in Europe and North America. Indeed, the numbers of vegetarians and vegans has [risen](#) in high-income countries over the past decade, especially among the generation of millennials. *The Economist* therefore calls 2019 [the year of the vegan](#), describing veganism as a consumer trend that will force businesses and governments to reduce dependency on animal-based foods and shift to plant-based protein.
- However, this alternative protein trend has not yet had any real effect on meat consumption. Meat consumption per head has actually slightly [increased](#) in the U.S. and in the EU over the past few years. In the U.S., only [5%](#) of households are vegan or vegetarian, partially because meat is very affordable. For instance, chicken, pork and turkey cost the least per gram, at 2 cents, well below the price of 10 cents for meat alternatives. Due to environmental reasons, however, [62%](#) of consumers are willing to reduce meat consumption and 43% would replace meat-based protein with plant-based protein.
- In the latest [Chinese dietary guidelines](#) (2016), it is encouraged to eat less meat and China has set the target of a 50% reduction by 2030. China has become the alternative meat industry's most valued market, accounting for 28% of global meat consumption and half of global pork consumption. Domestic pork prices are expected to increase up to [70%](#) and there are many concerns around food safety, creating tailwind for the move toward plant-based alternatives such as [Omnipork](#), an alternative to pork made from peas, soy and mushroom protein.

>> see next page



## Connecting the dots

When countries climb the economic ladder, they move through a nutrition transition, dietary changes that happen in response to economic development. They move from a traditional diet built around a starchy staple crop, such as cassava or rice, to a more varied diet containing more animal products, more vegetables and fruit, and more processed foods. The protein transition, the increase in consumption of animal-based food, is thus a component of the more broadly defined nutrition transition. But while there is a general shift from plant to animal proteins, the choice for animal protein is still linked to the country-specific culture. For instance, there are sharp regional differences within Asia. While meat consumption is increasing rapidly in emerging powers such as China, [India](#) seems to be an exception, as we [wrote](#) before, as plant-based diets have historical roots there. Nonetheless, meat consumption is rapidly rising worldwide, and especially in high-income Western countries, excessive amounts of meat are consumed. The fact that the consumption of heavy animal-sourced diets is leading to insurmountable problems for the consumer and for the planet might trigger the next phase in the nutrition transition: a transition to more plant-based protein sources (peas, algae, lentils, soy, nuts, beans, etc.).

This beginning protein transition in rich Western countries is clearly visible in the steep rise of plant-based meat alternatives or meat analogues that mimic certain characteristics of real meat. Following this year's best performing IPO, producer of meat substitutes [Beyond Meat](#) beat expectations with its first earnings report. U.S. fast-food chains known for their burgers have taken to further mainstreaming these alternatives by selling "vegan junk food" (Burger King's [Impossible Whopper](#), Qdoba's Impossible Meat bowls and tacos, and Del Taco's Beyond Meat beef alternative). Although the rise of these alternatives was long unexpected, their current popularity is undeniable, as they are present on restaurant menus

and supermarket shelves across Western countries, and seem here to stay. However, the question is what role they play in Western consumers' transition to a more plant-based diet. If plant-based protein is an efficient and more sustainable protein source, why would we stick with a sort of ersatz meat?

Meat occupies a central place on most plates in Western countries: we know its taste, our recipes revolve around it, and it is connected to the special emotion of asserting our dominance over other animals in the food chain. In changing eating habits, imitation meat provides us with a kind of stepping stone to eating entirely new forms of food. Indeed, [95%](#) of people who purchased a plant-based burger this year are meat-eaters, not vegetarians. An analogy can be drawn from the transition from the carriage to the first types of cars that looked like horseless carriages. The same function evolved into a new shape, but we held onto the old phenomenon a bit longer to get used to the new one. Meat substitutes can be seen as the horseless carriage of meat. In this light, meat alternatives are thus only a transitional phenomenon. As new generations grow up eating meat alternatives, with no memory of the old burger they resemble so much, the transition food will lose its legitimacy. Plant-based diets will increasingly differ from meat-focused meals, making vegan junk food only a passing phase. The transition to a more sustainable model to meet the world's growing protein demand is complex, and companies are only just beginning their journey towards protein diversification. If only because the environmental sustainability gains of processing meat alternatives, algae- and insect-based food are still [limited](#) and consumers increasingly want real, unprocessed food, they will turn to diverse and less-processed sources of protein. But for now, as lab-grown meat is still very [expensive](#) and low in production and we still have to get used to eating insects, plant-based meat alternatives are having their moment in the sun in Western countries.

## Implications

- Environmental reasons and food security issues linked to meat consumption will also drive non-Western countries to make a shift to a more plant-based diet. The [EAT lancet report](#) outlines a planetary health diet that requires the global population to cut its meat consumption in half. Already, the "meatless mania" is spreading. Brazilian startup Fazenda Futuro wants to be the "[Beyond Meat of Latin America](#)" and the "[Beyond Meat of fish](#)" is in the making.
- In many countries that are in the early or middle stages of the nutrition transition, plant-based meat alternatives may not set foot, as vegetarianism and veganism are [still firmly present](#) in the local, cultural dishes, and will remain so even as meat consumption increases. These plant-based dishes might gain popularity in Western countries.
- Plant-based meat alternatives are a phase in the move towards new forms of food. They signal the importance of the multisensory experience of texture, colors, and (artificial) flavors, as we are starting to accept more forms of nutrition and a possible future of more liquid dinners or maybe ultimately highly efficient food pills or tube food. However, the history of meat teaches us about the emotional and cultural values attached to food, and how slow our habits change.