

□□□ **ACADEMIC STUDIES WITHOUT TEARS** □□□

ACADEMIC RESEARCH FINDINGS TURNED INTO INFORMATION THAT ADVOCATES CAN GRASP AND USE EFFORTLESSLY

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Nutrition transition and animal-source foods consumption



A number of developing countries are experiencing *nutrition transition*. This term refers to "the significant dietary, lifestyle, and epidemiological shifts that occur as global incomes rise. . . . driven by globalization, trade, urbanization, and consumer preference". (Jessica Fanzo, Bloomberg Distinguished Professor of Global Food & Agricultural Policy and Ethics at Johns Hopkins University, in her book *Global Food Systems, Diets, and Nutrition: Linking Science, Economics, and Policy*, published in June 2021).

This issue of ASWT gives examples of nutrition transition and meatification in different regions of the world, from Africa, Latin America, to Asia.

A key characteristic of nutrition transition is the shift from carbohydrates-rich staples (e.g. cereals, roots, tubers) to foods derived from animals. Nutrition transition therefore provides a framework and lens through which advocates can view the increase in animal-source foods consumption in developing countries, and consider questions relevant to their core assumptions and actions.

Question one:

- Why are people in developing countries consuming more animal-source foods? Is it a simple, linear case of A (e.g. more money in people's pockets) leads to B (e.g. more money spent on meat)?
- Studies based on the nutrition transition concept serve up plenty of "facts on the ground" that point to the complexity involved in changes to dietary patterns. In view of these multiple dimensions, is it wise for advocates to assume that in order to depress the demand for animal-source foods in these countries, providing consumers with tasty, reasonably-priced alternative protein sources and encouraging them to go vegan is sufficient, and there is no need to pay attention to any of the strands woven tightly into the nutrition transition fabric (e.g. government policies, trade liberalization, supermarketization, food choice environment, socio-cultural considerations, global food systems)?

Question two:

- What is nutrition transition's linkage to the rise in large-scale production of food animals in countries experiencing nutrition transition and in places that export to these countries?
- According to the current understanding of how nutrition transition works and gets going, the dietary shift owes a lot to *supply-side* factors, including plenty more animal-source foods being produced and made readily accessible to consumers. How does this understanding fit in with the reason often given by advocates that it is primarily heightened consumer demand for animal-source foods that causes the rise in large-scale farms?

- Can the main weapon currently deployed by advocates to try to defeat factory farming — namely, reducing developing countries' consumer demand for animal-source foods — make a huge difference in curbing industrial animal agriculture, when evidence from nutrition transition research indicates that the jump in animal-source foods consumption in these countries is more of a corollary and response to instead of the root cause of the mass production of such foods and farmed animals?

1. Why do Zambians spend more on beef and eggs even though they cost more than maize?

Zambians are spending less on traditional staple foods such as maize and cassava, and more on animal-source foods, processed foods, fruits and vegetables, sugar and fat. Why?

It is not that people in Zambia wake up one fine day and decide to eat more beef and eggs rather than traditional foods that are largely vegetarian and starchy. Or the price of meat has fallen. The absolute cost of foods has dropped markedly, and consumers' purchasing power has indeed increased. But fish, eggs, beef actually cost 70% *more, relative* to maize, and milk costs 20% *more*.

Various developments during the 1990s and 2010s have influenced Zambian households to reduce their expenditure on staple foods and nudged them toward a nutrition transition:

1. Rapid urbanization and penetration of supermarkets into urban areas drastically alters the way householders acquire food and the availability of new kinds of food. Rural locations also experience nutrition transition even though hunger and undernutrition still persists. In fact changes are even more pronounced in rural places.
2. Rising GDP gives consumers more options in their food choices.
3. When "sweeping liberal economic reforms" were introduced in Zambia in 1991, food value chains have become globalized and foods originating from a number of countries (including animal-source foods) were soon within the reach of Zambians.

Harris, Jody, Brian Chisanga, Scott Drimie, and Gina Kennedy. "Nutrition Transition in Zambia: Changing Food Supply, Food Prices, Household Consumption, Diet and Nutrition Outcomes." *Food Security* 11, no. 2 (April 1, 2019): 371–387. doi: 10.1007/s12571-019-00903-4.

A bit more info:

- "Concurrent with the rise in urban supermarkets, there has been a rapid increase in fast food chains and access to convenience food in Zambia, including through *kantemba* catering mostly to lower socio-economic groups, and a proliferation of fast food restaurants in Lusaka and other urban areas serving fried foods and meats, pizza, and other convenience foods."
- "Mirroring the global and regional trends, Zambia has both a high (though decreasing) prevalence of stunting in children and a high (and increasing) prevalence of overweight and obesity in women."

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LONG READ ALERT! This item takes at least two minutes to read.

2. Whose hands propelled Chile's leap in meat and dairy consumption?

Chile's nutrition transition — started in the 1990s and sustained to this day, with huge jumps in the consumption of meat (especially chicken) and dairy — is nothing short of spectacular. Millennials in Chile are called the "*chicken generation*".

Who whipped up this perfect storm? Is it the invisible hand of free market economy and international development forces? Hands of Chileans stretching out for plates of meat and cups of milk? Decades of deliberate government policies stoking the flame?

As most of the meat and dairy consumed in Chile come from the country itself, the ingredients for the rise of both consumption and production are baked together. "National production is the driving force behind the dramatic increase in national consumption."

1. Broiler, pig, and dairy industries' adoption of new technological innovations, organizational structures, and management practices to ramp up production and lower prices, with the government's steadfast backing of the agriculture sector:

- Entrepreneurs introduced new bovine breeds into Chile with government support.
- Government provided schemes and cheap credit to help fund industry investments.
- Corporate acquisitions and vertical integration: In 1967 there were 26 poultry producers. By 1996 Agrosuper controls about half of Chile's chicken meat production. Super Cerdo, formed in the 1980s, now presides over two-thirds of the country's pig production, with "1,000 pork raising facilities (incorporating nearly 4 million pigs), several slaughtering factories and large pig food plants".

2. Decades of government promotion of meat and dairy:

- Back in the days of heavy state intervention in many facets of life from the 1930s to 1960s, the Milk Industry Council (Consejo de la Industria Lechera) was formed, "entrusted by the Government with the promotion of production, distribution and consumption of milk and ensuring low prices". Powdered milk distribution programs started in those decades are still in operation today.
- "As early as 1965, when an appraisal of Alessandri's governmental agricultural policies was completed, it accounted for an increase of 25% in the capacity of industrial milking plants".
- The National Program of Economic Development for 1961-70 included a plan designed specifically for the livestock sector.
- There were also major private-public initiatives. "Nestlé in particular played a crucial role in satisfying the state's demand for powdered and condensed milk."

3. After the tough period of the 1970s and most of the 1980s, the country gained macro-economic stability in the 1990s, with an increase not only of per capita GDP but also of real wages.

4. Fall in food prices, with meat and dairy products maintaining high income elasticity.

5. Power of the supermarket industry; installation of refrigerators in households:

- Supermarkets opened in the 1980s. They continue to expand and the industry is getting more concentrated. Supermarkets, with their refrigeration capability, greatly improve storage and distribution of milk and meat. They lower prices and replace traditional specialty meat markets. (Beef is less affected).
- Having refrigerators in households is a key factor in driving consumption of perishable animal-source foods. In the 1980s, only half of Chilean households had refrigerators. The figure rose to over 80% by the end of the 20th century.
- The government had a hand in making all this possible with its national electrification plan.

6. Trade liberalization and government deregulation in the 1990s, including the signing of numerous trade agreements which substantially lowered import duties. These moves also prompted more private firms to participate in food supply and production.

7. The 1980s and 1990s saw the ascendancy of neoliberal globalization — a phenomenon that emphasizes market coordination and forces — and the capitalist approach in global agriculture systems and food regimes. These global developments had profound impacts on the situation inside Chile.

A lot more info:

- "Industrial modes of production were increasingly responsible for the nation's milk. [In the 1930s] about half of all fresh milk was produced by industrial dairy establishments; by the early 1990s this figure had increased to three-quarters, and today it is over 80%."
- "Initiatives to distribute milk in Chile, in particular to the poor, had long been administered by the public sector and charitable organizations. . . . In 1957 the first industrial powdered milk plant in Chile was built with UNICEF's support and supplied with fresh milk by local cooperatives. Many more plants were subsequently created."
- "In 2019, the big seven companies were either multinationals or national companies. In the first group, the most important is the Swiss firm Nestlé, which has been operating in the country since 1934 and was the first to arrive in Chile. It is followed by the New Zealand Fonterra through Soprole and Prolesur, two formerly significant national companies acquired by this firm, and by the French Lactalis. The most important Chilean company is Coluñ, a cooperative leader of the market. It is followed by Watt's (which acquired Loncoleche and Calo, two formerly influential national companies), Surlat and Quillayes."
- "Chile's meat consumption for 2013 was only slightly less than that of Argentina and Brazil and greater than that of Uruguay. More importantly, the country's meat consumption is equivalent to that of Germany and above that of other developed nations such as the UK, Italy, Finland, and Sweden."
- "During the most recent two decades imports of poultry – and of pork during the 2010s – have been considerable. Yet Chileans prefer homegrown chicken, which is unfrozen, over imported chicken, which is bought frozen. Furthermore, during these decades Chile exported more pork and chicken than it imported (an example of international intra-industry trade), so that on balance Chile is a net exporter, in particular of hog meat. The scale of the exports of pork have largely counterbalanced the imports of other meats, and of beef in particular. . . . Chile is now exporting nearly half of its pork products."
- "Per capita consumption of chicken increased more than 20-fold between the 1930s and the 2010s, while that of pork increased some 400% in the same period. Beef consumption has remained stable. . . . while ovine meat has become less popular among Chilean consumers and is now largely exported."
- "From the late 1990s, though, beef production has declined in Chile even in absolute terms: between 2007 and 2017 the total number of heads of cattle declined by nearly a quarter in the face of cheaper beef imports. Slaughter is concentrated in a small number of abattoirs: Frigorífico Osorno; Frigorífico Temuco; Firma SA; Frigorífico Simunovic; and Matadero Frigorífico del Sur Ltda. Beef production was the only sector in Chile that lagged behind technologically in the meat industry, in particular in comparison to chicken and pork production. The main change implemented by the beef industry was not technological but organizational: formerly most cows were sold in fairs or transported alive to distant markets; now they are taken directly to slaughtering plants controlled by these few companies, a process facilitated by transport improvements undertaken by the country."
- ". . . 1994 was a watershed in the history of Chilean meat consumption: for the first time Chileans consumed more chicken per capita than beef. The Chilean poultry sector was quickly transformed into a highly concentrated capital-intensive industry, with a few large companies making low-cost products. Agrosuper (with its brands Super Pollo and Pollos King), Ariztía, Sopraval, Don Pollo and La Cartuja dominated the market, and many of these companies had acquired facilities from CORFO during the privatization process under Pinochet."
- "During the 1930s-1970s pork meat accounted for between 16% and 20% of all meat produced in the country; during the 2000s this share increased to 34%, second only to the poultry industry. Today the combined share of chicken and pork is over 80% of all meats, far more than the 25% they constituted during the distant 1930s-1940s."

Llorca-Jaña, Manuel, Ricardo Nazer, Daniel Morales, and Juan Navarrete-Montalvo. "Milk and Meat Consumption and Production in Chile, c. 1930-2017: A History of a Successful Nutrition Transition." *Historia Agraria Revista de agricultura e historia rural*, no. 82 (December 1, 2020): 245-285.

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3. Jump in red meat consumption blamed for worsening of diet quality as Colombia continues its nutrition transition

An analysis of national nutrition surveys from 2005 to 2015 finds that the diet quality of children and adults in Colombia has been decreasing ever since the country enters into a nutrition transition, with residents in urban areas having a worse diet than those in rural environments.

This worsening is attributable to the rise in the consumption of red meat, sodium, sugar-sweetened beverage, and the reduction of legumes, fruits, vegetables in people's diet.

This diet shift is "influenced by the increase in availability of ultra-processed, hyper-caloric, inexpensive, and easy-to-prepare products".

Mora-García, Gustavo, María Stephany Ruiz-Díaz, Rodrigo Villegas, and Vanessa García-Larsen. "Changes in Diet Quality over 10 Years of Nutrition Transition in Colombia: Analysis of the 2005 and 2015 Nationally Representative Cross-Sectional Surveys." *International Journal of Public Health* 65, no. 5 (June 1, 2020): 547–558. doi: 10.1007/s00038-020-01396-1.



4. What has internet access got to do with nutrition transition in China?

Nutrition transition sounds like a nebulous and abstract concept. But it can be observed in numerous ways, including in mundane activities such as using the internet.

"Over the past 4 decades, China has experienced a nutritional transition and has developed the largest population of internet users." So it is possible to find out whether internet use has any bearing on diet shifts in rural residents.

A study of over 10,000 rural households in six provinces reveals that those with internet access consume a significantly higher amount of non-staple food and spend more money on food. Compared with those without internet, these rural internet users consume more red meat (5.74%), eggs (21.53%), dairy products (23.35%), aquatic products (14.55%), fruits (14.7%).

It boils down to internet users having opportunities not available to non-users: A wider market with more food choices, and lower prices.

Xue, Ping, Xinru Han, Ehsan Elahi, Yinyu Zhao, and Xiudong Wang. "Internet Access and Nutritional Intake: Evidence from Rural China." *Nutrients* 13, no. 6 (June 2021): 2015. doi: 10.3390/nu13062015.



5. What is driving the meatification trend in Southeast Asian countries?

A phenomenon that is related to nutrition transition is *meatification*. The term refers to the consumption of more meat, driven by the industrialization of livestock production, motivated by economic gains and capitalist developments, and powered by the ease of obtaining feed grains and conducting trade. It highlights not just an increase in meat consumption, but also this heightened consumption's linkage with production, with social and economic aspects, with movements in (often globalized) food systems.

A clear and systematic meatification trend can be observed in Vietnam, Indonesia, and other Southeast Asian countries.

This trend is shaped by major recent changes in economic developments, trade patterns, and capital availability that are connected to meat products and the main crops used to feed farmed animals *within the Southeast Asia region* as well as to *new South-South connections* that involve countries such as China, India, Australia.

For example, the "meat of bovine animals" that India exports to Vietnam is "the fifth largest bilateral meat trade flow measured in monetary value globally" at \$1.9 billion annually.

In other words, the narrative of corporations based in the global North marching into Vietnam and other Southeast Asian countries to influence their diet and animal agriculture does not tell the whole story. One must give top billing to the dynamic and complex political economy *in that region itself*.

A bit more info:

- "We find both state-owned enterprises and private enterprises rooted in regional capital emerging as important actors in the Southeast Asian meat trade. Some of these companies are also branching out by establishing processing plants and offices in other countries in the region and beyond, as well as buying up shares in foreign companies. To take meat processing companies as an instructive example, Charoen Pokphand from Thailand is a case in point, boosting the status as Thailand's largest private company with considerable investments in other countries in Asia. In Indonesia, Japfa Comfeed, now headquartered in Singapore, is the leading agri-food company and has been diversifying to other Asian countries, most notably India, China, Vietnam and Myanmar."

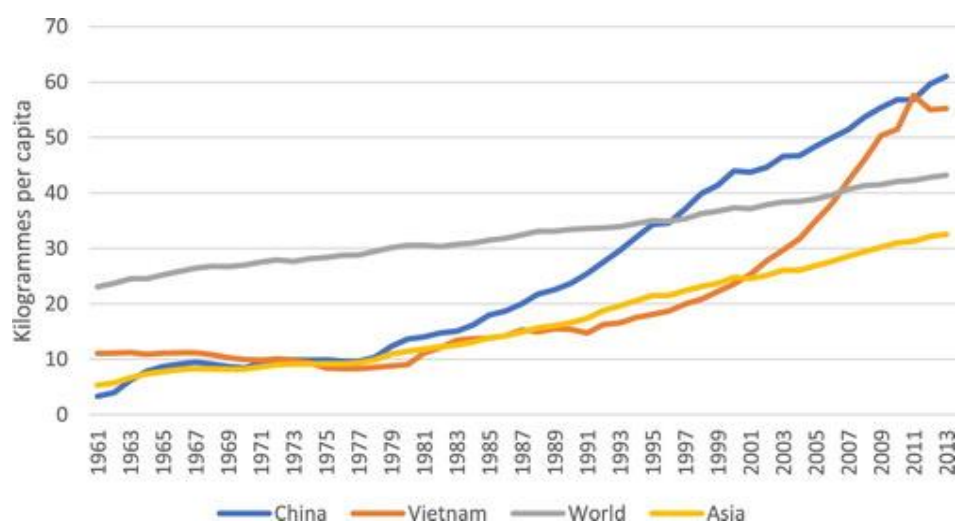


Figure 5. Annual meat consumption per capita, China and Vietnam, 1961–2013. Source: Compiled by authors based on numbers from FAOSTAT.

Hansen, Arve, and Jostein Jakobsen. "Meatification and Everyday Geographies of Consumption in Vietnam and China." *Geografiska Annaler: Series B, Human Geography* 102, no. 1 (January 2, 2020): 21–39. doi: 10.1080/04353684.2019.1709217.

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6. Don't slam supermarkets and foreign forces for meatification in Nigeria

Yes, more meat is consumed in Nigeria in this decade compared to the last decade even though the price of meat is high relative to other countries. Yes, meatification is going on in Nigeria. But unlike meatification in many developing countries, *local* actors and factors in Nigeria rather than those thousands of miles away play prominent roles. For example, there is a "near-complete absence of global fast-food chains".

Firstly, meat produced in Nigeria is not exported but consumed within the country. Secondly and more significantly, one needs to understand that there is an official ban of meat imports into Nigeria. This ban spawns "the emergence of a set of actors in the Nigerian meat sector: that is different from those in other parts of the global south".

Lead actor number one: Informal, undocumented trans-border meat traders and smugglers. They obtain meat from their West African neighbors, especially from Benin which has very porous borders with Nigeria.

Lead actor number two: Nomadic tribes such as the Fulani. They have a long culture of "moving live animals in and out of Nigeria and across West Africa". Over two million cattle annually are trekked or trucked into Nigeria without official documentation.

Number three: Open-air meat sellers in local markets. They play a starring role because of how meat is distributed and made available to consumers in Nigeria — *informally* rather than via organized, regulated meat producers and traders. These meat stalls "dominate the red meat retail sector accounting for around 85% of all trade, while supermarkets (that is, the global or multinational brands) are only responsible for 1% of the market share of meat sales".

Number four: Small local food vendors or bukaterias which almost always offer meat. A familiar sight across Nigeria, these vendors provide a food environment and food experience loved by Nigerians. Their prices are also affordable. They facilitate and serve as a pathway to meat consumption.

A bit more info:

- "Nigeria is at the heart of meat production and consumption in West Africa, and this is not any surprising considering its economic dominance within the sub-region. . . . With an estimated population of nearly 180 million people, expanding urban centers and a growing middle class, meat consumption is outpacing local production. . . . Nigeria currently controls "25% of livestock herds (cattle) in the (West-African) sub-region" and ranks as the leading livestock producer in Central and West Africa. However, . . . there is a shortfall of at least 25% in beef supply alone that must be met. . . . Nigeria's livestock holding for beef alone between 1993 and 2013 increased by about 30%, while the total livestock holding for four different categories, namely, cattle, sheep, goats, sheep, and chicken increased by over 300%."
- "Although this is not to say that meat sales from supermarket have not improved, . . . the culture of buying meat in a supermarket is new, and still quite strange to many Nigerians since most of the major supermarkets in Nigeria only entered the Nigerian market within the last two decades."
- "Although there are questions around the open market system's lack of measurement and scales (making cost/pricing a function of anyone's bargaining power) and the apparent poor hygienic conditions in which meat is processed, the commodity chain of meat in Nigeria reveals that these factors are yet to cause any significant shift in people's choice of where meat is purchased."
- "The bukaterias have a long history in Nigeria because food retailing has hardly ever taken a formal shape. The unstructured and informal model of business adopted by bukaterias follows from the fact that there is a vast pool of women whose participation in the economy of the country is restricted by a gendered division of labor underscored by the idea that women are home managers. So, many bukaterias operate from their home or nearby, on the street corners, or any such places where people can have access to them."
- "The bukaterias receive tremendous levels of patronage in Nigeria for many reasons, but the summary is that Nigerians get the food experience they want at the "Buka". For example, Nigerians typically would want an assortment of food and a wide range of soups, some of which they mix, an option that is not readily available in fast-food restaurants (either local or foreign) but has become the signature mark of bukaterias."

Osazuwa-Peters, Mac. "The Local Contexts of Meat Consumption: Analyzing Meatification in Nigeria." *Food, Culture & Society* (June 11, 2021): 1–19. doi: 10.1080/15528014.2021.1936788.



7. Income is not the key factor in Malaysians' choice of proteins

A study with a population sample size of 1,604 Malaysians comes up with data that counter the claim that it is chiefly the rise in income that leads people in developing countries to consume more animal-source protein.

Malaysia is indeed going through a nutrition transition — replacing traditional plant proteins with beef, pork, mutton, chickens, eggs, dairy — at a time when income in the country is climbing upward. But the study's authors find that although economic variables play a role, Malaysians' choice of protein sources is influenced not so much by income but by ethnicity, religion, education, and cultural forces.

Njisane, Yonela Zifikile, Felicitas Esnart Mukumbo, and Voster Muchenje. "An Outlook on Livestock Welfare Conditions in African Communities — A Review." *Asian-Australasian Journal of Animal Sciences* 33, no. 6 (June 1, 2020): 867–878. doi: 10.5713/ajas.19.0282.

EXPLANATORY NOTE:

- Academic studies are notoriously hard to find, read, and put into practical use by non-academics.
- Super-busy advocates cannot afford to spend a lot of time and effort to dig up, digest, and deploy academic research even though they recognize the value of academic studies in informing and improving their advocacy work.
- *Academic Studies Without Tears* aims to help advocates faced with this dilemma.
- Its target audience are leaders and funders of non-profit advocacy organizations addressing the many negative impacts of industrial animal agriculture in low- and middle-income countries.
- It uses a communication style – reminiscent of quiz or news items – that makes everything a breeze to read.
- Each issue focuses on a particular topic and includes 8 – 10 academic studies.
- It goes without saying that the academic studies featured are *not* the final word. They have flaws and limitations. They are just a tiny selection of perspectives and findings for advocates to consider, to whet their appetite. But every relevant data point and nugget of cogent information adds to one's store of knowledge and has the potential to spark new ideas.

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