

Industry Analysis

The Growing Appetite for Sustainable Foods

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- **Sustainable food: key to ending world hunger and coping with environmental challenges**
- **Consumer preferences, technology and policies must align with long-term objectives**
- **Banks can play a crucial role while enhancing relationships with conscious consumers**

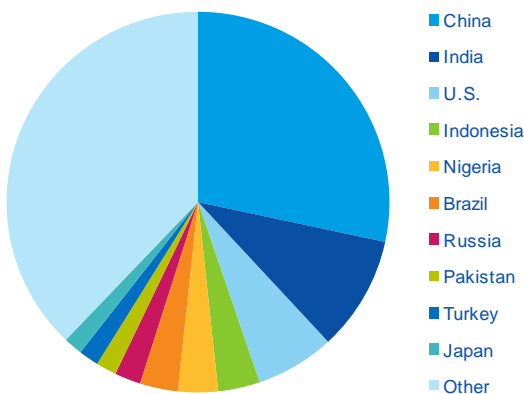
Introduction

Sustainable Development Goal 2.4: “By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality”

– UN-DESA

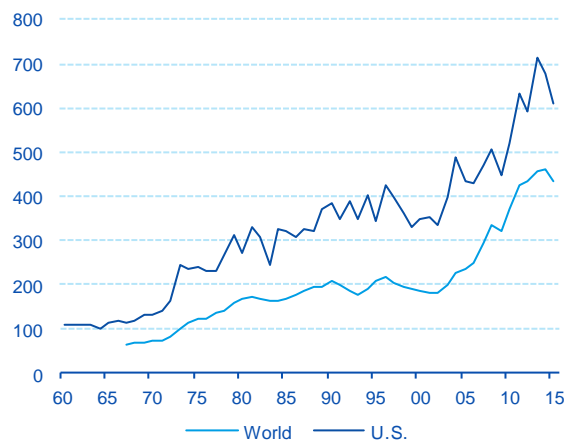
One of the most remarkable human achievements in our planet over the last 50 years has been the rapid increase in agricultural production, which has taken place at a much faster pace than population growth. However, millions of people still remain under the grueling realities of hunger, poverty and economic exclusion. In addition, despite amazing technological progress and a better understanding of the forces of nature, our planet has paid a high price for this achievement, as reflected by the levels of resource degradation and the risks of climate change. Moreover, some estimates suggest that agricultural production needs to increase between 70% globally and 100% in developing countries by 2050 in order to cope with population growth, which is expected to jump from 7.4 billion in 2016 to 9.7 billion by 2050.

Chart 1
World Agriculture, Value Added, Top Producers, US\$



Source: BBVA Research, Haver & the World Bank

Chart 2
Agriculture, Value Added per Capita, US\$



Sources: BBVA Research, Haver, U.N. & the World Bank

In addition to these secular trends, the agriculture sector is also driven by greater public awareness of challenges in the food ecosystem. A growing share of consumers, businesses, policymakers and academics are pushing toward more sustainable and environmentally responsible agricultural production, distribution and consumption processes. History and the experience of the U.S. Green Revolution show that this is possible, but only if both the public and private sectors are fully committed to reaching these goals. To a large extent, the keys to balancing food supply and demand in a sustainable manner are consumer preferences, technology and policy intervention.

Sustainable agriculture methods: crops, grazing and fishing

Sustainable agriculture is the production of food using techniques that protect environmental health and social welfare. Unfortunately, most of the food produced in the U.S. no longer comes from sustainable farms, and the ever increasing reliance on mechanized agriculture has had a big toll on resource degradation. For example, the amount of groundwater for irrigation has tripled since the 1950s, while the usage of pesticides and fertilizers leads to chemical runoff — the major source of pollution in our lakes and rivers. Moreover, as soil is eroded at a much faster pace than it is replenished, agriculture is one of the major sources of desertification. Methods for restoring the ecosystem vary in size and scope. For example, research shows that making good use of nitrogen and other agricultural additives before they leave the farm helps to reduce pollution of ecosystems and cut down on fossil fuel consumption. Meanwhile, planting certain crops that scavenge nitrogen prevents it from leaching into the groundwater and helps store it for later use by future crops.

Chart 3
U.S. Major Land Uses

Regions and States, 1,000 acres	Cropland	Grassland pasture & range	Forest	Special- use	Urban areas	Miscella- neous	Total
Northeast	12,967	4,627	66,774	11,214	12,537	3,272	111,390
Lake States	40,559	7,486	50,759	10,130	4,218	8,911	122,063
Corn Belt	91,018	16,390	34,264	9,411	8,102	5,394	164,579
Northern Plains	97,688	74,827	5,677	8,170	1,063	6,845	194,271
Appalachian	22,654	10,551	70,819	8,869	6,677	4,160	123,730
Southeast	12,483	10,288	75,150	9,698	8,887	6,815	123,320
Delta States	18,230	7,209	52,317	4,500	2,284	6,683	91,224
Southern Plains	46,955	120,442	24,779	7,951	5,382	5,989	211,497
Mountain	43,244	303,397	121,478	62,537	3,779	13,454	547,890
Pacific	22,110	57,040	74,021	36,821	7,239	6,610	203,840
AK & HI	231	1,476	95,354	144,181	394	128,523	370,160
U.S. Total	408,139	613,733	671,390	313,482	60,562	196,657	2,263,962
%	18.0%	27.1%	29.7%	13.8%	2.7%	8.7%	100.0%

Source: BBVA Research & USDA

Sustainable agriculture methods are not limited to crops, but can also be utilized in livestock grazing and fishing. Pastureland, rangeland, hayland, grazed forest and native pasture account for more than 40% of total private land and represent the most important watershed source in the country. These lands are essential in supporting water quality, carbon sequestration, wildlife and recreation activities. Lack of conservation knowledge and improper land management such as overgrazing, which eliminates hardy grasses and creates dry soil conditions, have had damaging consequences. The negative impacts of overgrazing include the disappearance of certain vegetative species, the erosion and compaction of rangeland soils and the loss of food and space for

native wildlife species. Improving rangelands can have myriad benefits, for example, the replenishment of vegetation can help store more water for communities in the West that are currently plagued by drought. The last few years have seen a strong impetus in supporting efficient land management such as allowing the grasslands to replenish before returning livestock to graze again. Proper management is probably the most cost-effective solution, relying on voluntary assistance and transferring knowledge, with technical and scientific support. Removing livestock from public lands altogether could also be an economically viable option with a limited impact on beef prices, as Western federal rangelands ultimately only account for 3% of all livestock feed.

Meanwhile, sustainable fishing practices center around the repopulation of fish species at healthy levels. The populations of some popular species have fallen by as much as 90%, and the World Wildlife Foundation estimates that the global fishing fleet is two to three times larger than what the oceans can sustainably support. The challenge is preventing overfishing without jeopardizing the millions of people who depend on the industry for their livelihood or preventing consumers from enjoying a major source of protein. The private sector has taken a lead on implementing sustainable fishing practices by clamping down on illegal and unregulated fishing. Google recently launched a program that can track the positions and fishing activity of over 200,000 shipping vessels at anytime, aiding in the detection of illegal fisheries. In addition, a group of large food retailers, including McDonald's and Birds Eye, signed a voluntary agreement last summer to protect a key Arctic region from industrial cod fishing. The public sector could certainly step up its game and prevent overfishing by eliminating subsidies that encourage more boats on the water. In addition, governments should actively refuse to participate in unfair Fisheries Partnerships Agreements, which allow foreign fleets to overfish in the oceans of emerging countries.

Consumer preferences

According to the UN, a third of the world's food goes to waste during production, post-harvest handling and storage, processing, distribution or consumption. In many countries, consumers often purchase more food than they can consume. Meanwhile, the desire to see pristine and aesthetically perfect food in supermarkets and restaurants creates a huge burden on producers and the middle man. In North America, each individual wastes an average of 200-250 pounds of food per year. According to the USDA, in 2010, 31% of total food produced (133 of the 430 billion pounds) went to waste, with a total value of \$162 billion. The three food groups with the highest share of food loss value are meat, poultry and fish (30%); vegetables (19%); and dairy products (17%).

Although a third of wasted food in the U.S. is recycled and recovered, the remainder is thrown away, creating other problems such as greenhouse emissions and higher food prices. In addition, land conflicts between suburban centers and farmers are common, and often result in farmers being forced to sell their land. Moreover, thousands of neighborhoods around the country lack fresh produce, creating "food deserts." The vast majority of these communities are low-income neighborhoods that are also relatively isolated from the rest of the city and farming life.

Reversing these trends will not be easy as it requires a paradigm shift in consumers' behavior. While eliminating food waste might be far-off, the public at large is now better informed about the food system and pays more attention to the food they consume. Over the years, there has been a growing shift toward organic food; recent polls suggest that almost half of all Americans actively try to include organic food in their diet. In addition, around 28% pay attention to where the food was produced, 16% buy locally-grown produce and 24% only buy produce while in season.

Chart 4
Survey of Consumer Attitudes, % of Respondents

	ALL	18-24	25-29	30-34	35-44	45-54	55-64	65+	City	Suburb	Rural
I worry about rising food prices	61	52	53	53	57	64	71	68	63	54	71
I always look to see where the food I buy was grown or produced	28	26	27	24	28	27	32	38	29	27	31
I am confident that the foods I normally eat will always be available when I want to buy them	31	27	29	29	37	23	37	40	34	32	27
I buy organic foods whenever possible	22	30	30	23	27	18	10	21	27	21	19
I only buy locally-grown produce	16	15	12	19	19	13	17	16	20	14	14
I only buy produce while it is "in season"	24	22	33	24	24	22	24	20	28	22	24
I am concerned about climate change	41	29	41	45	44	39	46	43	42	41	40

Source: BBVA Research & Sustainable America. Q: How well do each of these statements describe you? Please use the scale below where 1 means "Does not describe me at all" and 7 means "Describes me exactly." Showing 6 and 7 responses.

Advocates for sustainable agriculture actively promote local food systems. This rests on the assumption that local foods are healthier and provide greater freshness and better taste, while reducing transportation and marketing costs. If effective, this could increase the returns and thus viability of local farms, while contributing to the environment.

Chart 5
Survey of Where Consumers Buy Food (All That Apply), % of Respondents

	ALL	18-24	25-29	30-34	35-44	45-54	55-64	65+	City	Suburb	Rural
Grocery store	93	88	93	93	91	94	96	93	91	93	96
Natural/health/organic foods grocery store	21	25	25	28	21	21	13	16	26	22	13
Wholesalers	35	45	34	41	31	33	31	33	33	38	31
Discount store	26	32	20	28	27	27	26	18	28	26	25
Convenience store	10	18	13	15	10	9	5	3	14	9	8
Delivery	3	6	3	5	4	3	1	0	5	3	2
Farmers' market	25	20	26	30	24	25	27	28	23	25	29
Grow my own	13	12	10	16	13	13	12	13	8	10	23
Urban farm	2	1	1	1	4	1	2	1	2	1	3
Community supported	3	3	6	3	4	2	2	2	5	1	4
Other	3	1	2	2	3	2	5	6	3	3	2
None	0	1	0	1	0	0	0	0	0	0	0

Source: BBVA Research & Sustainable America

Some popular programs based on these principles include farmers markets and the farm-to-school program. The latter reaches more than 1,000 schools in almost all states and focuses on bringing a healthier diet to students while also supporting the local community. In many cases, these programs have been successful.

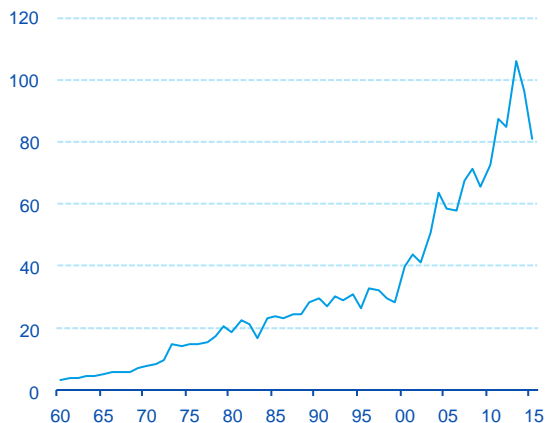
However, while grocery stores and restaurants are keen buyers of local products, other local institutions such as hospitals and brokers remain less interested. To a large extent, the limitations seem to reflect logistical restrictions, higher costs, inadequate or irregular supply and lack of awareness between producers and consumers. Therefore, consumers, producers and policymakers need to be more proactive in overcoming these challenges in order to boost the expansion of these programs and cover more populated regions.

Technological change

The challenges for agricultural technology (AgTech) are significant as we must produce more food in an environment of less arable land and lower quality of water resources, while reducing the impact of fertilizers and pest control. Signs of hope are vast, as the advances in renewable energy and biotechnology show, but more can and should be done.

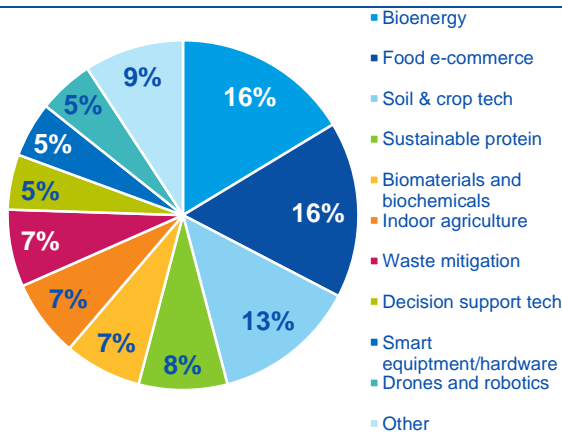
Over the past decade, private investment in agriculture R&D has grown at a faster pace than public R&D. The top five AgTech firms each invest over \$1 billion annually in R&D. AgTech has also recently become an area of focus for venture capital firms, with over 527 deals totaling over \$4.6 billion in investment—representing a more than 400% increase from 2013 levels. Prior to 2013, most investment in AgTech was flat and concentrated in biotech and seed genetics. For example, one of the best known but also controversial developments in AgTech has been the growth of genetically modified (GM) foods. Private investors are attracted to AgTech because of the room for growth along its value chain, from areas such as storage, transportation and waste mitigation to machinery, irrigation efficiency and robotics.

Chart 6
U.S. Labor Productivity: Agriculture, Forestry, Fishing & Hunting



Source: BBVA Research & Haver

Chart 7
AgTech Subsector Investment Breakdown, %



Source: BBVA Research & Tech Crunch

It would seem that the private sector has demonstrated more interest in maximizing the potential opportunities that new technologies offer. However, regardless of the limitations for public spending, fostering greater public investment is essential and can help develop indigenous crops that the private sector may not be interested in.

With assistance from molecular science, chemistry and DNA technology, these varieties could prove successful in better dealing with water scarcity, local pests and soil conditions than imported varieties. To take full advantage of sustainable AgTech, multinationals, entrepreneurs, financial institutions, policymakers, environmentalists and humanitarians must be brought together under a common green strategy capable of facing the challenges of tomorrow.

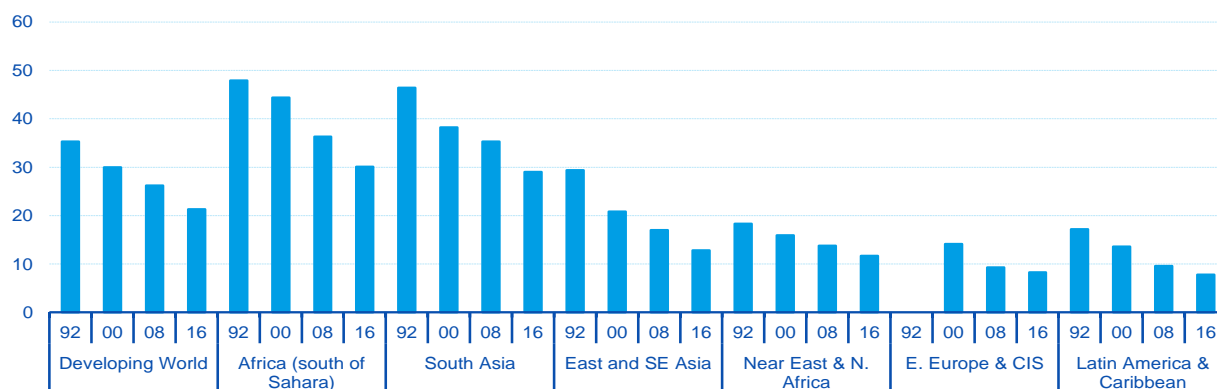
Policy intervention

However, it is not yet clear if these consumer and technology trends will continue and extend sufficiently to guarantee a major transformation. As a result, some analysts have suggested greater policy intervention, for example, mandating that a certain share of food consumption by local public institutions is derived from local producers. Policies could also be designed to encourage local businesses such as hotels and restaurants to increase their consumption of local foods.

Recently, food labeling has taken center stage in agriculture policy. Last month, the USDA finally updated its 2002 guidelines and released a list of proposed definitions for animal raising labels such as “grass-fed,” “free-range,” “raised without antibiotics” and others. These more stringent guidelines are a promising step towards achieving the type of widespread labeling on energy efficiency and carbon impact that exists in other industries.

Policy options also reach other levels of intervention such as immigration policy, given that migrant workers represent a major input in the agricultural and food services sectors. Despite the need for policy intervention, it is important to keep in mind that the food industry is a multi-billion dollar business with a very strong lobbying presence and that not all policies yield the greatest benefit to society. In some cases, subsidies and trade policies have had unintended consequences.

Chart 8
World Hunger Index



Source: BBVA Research & IFPRI

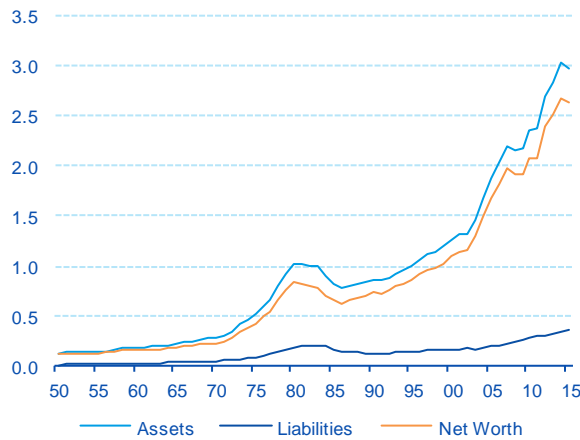
On a global level, as part of the Millennium Development Goals, UN member countries agreed in 2015 to the 2030 Agenda for Sustainable Development, which sets 17 Sustainable Development Goals and 169 targets. The second goal aims to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. This includes the target of ensuring sustainable food production systems and implementing resilient agricultural practices. By working towards this goal, countries can increase productivity and production, maintain ecosystems, strengthen their capacity for adaptation to climate change and natural disasters and progressively improve land and soil quality.

Around the world, a large number of countries continue experimenting with different programs which encourage greater farmer engagement and peer-to-peer learning. The number of success stories suggests vast opportunities, particularly in regions like Africa which experience greater levels of poverty and malnutrition. Depending on the extent to which these regions can gain ground and increase productivity and production in a sustainable manner, their sustainability goals will be attainable.

Role of banks

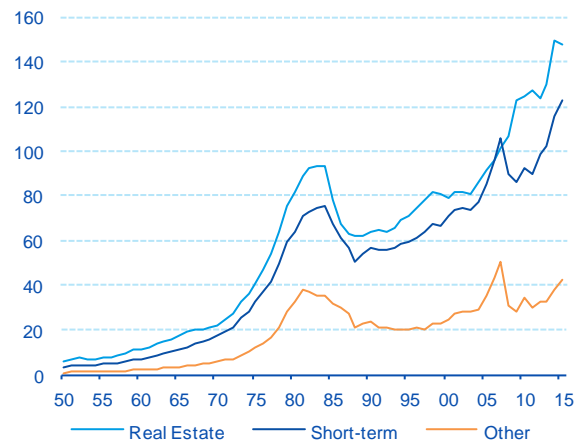
Providing lending and financing services to businesses in agriculture, farming and fishing has always been complex due to the production and collateral risks, as well as price volatility, inherent in the industry. Before the development of the futures market and consolidation, hedging high risk metrics was difficult and oftentimes resulted in volatile boom and bust cycles. And while direct financing to these businesses may be dominated by smaller rural banks and remain a niche segment for larger commercial banks, the opportunities for the financial industry extend well beyond basic agriculture needs. Supporting industries, such as chemicals, transportation, machinery and logistics, also represent an attractive market for lending.

Chart 9
U.S. Farm Business: Assets, Liabilities and Net Worth, US\$ trillion



Source: BBVA Research & Haver

Chart 10
U.S. Farm Business Loans, US\$ billion



Source: BBVA Research & Haver

Through engaging in more sustainable food financing, banks have a unique opportunity to become protagonists in the vast effort toward reducing world hunger and poverty. More and more consumers are assigning a high value to companies that exhibit greater social responsibility and take an active role in restoring the ecosystem. Therefore, banks will benefit not only from having a direct impact, but also by enhancing their relationships with organizations and consumers that share a common goal. Creating this kind of affinity with consumers is pivotal at a time when the public opinion on banks may not be at its highest, to say the least.

Bottom line

To a large extent, successfully accomplishing the feat of eliminating hunger while having sustainably-produced food lies in three key pillars: consumer preferences, technology and policy intervention. Empirical studies suggest that consumers are becoming more conscious about the consequences of their habits on the environment. As a result, a larger share of the population, particularly the younger cohorts, seem more willing to alter their consumption patterns to support firms that exhibit more environmentally friendly behavior. In addition, emerging innovations in AgTech support a growing shift toward economically viable farm operations, greater social justice and ecological responsibility. Finally, policy intervention is necessary in order to further increase consumer awareness and hold organizations accountable for their contribution toward a more sustainable ecosystem. For a financial institution, becoming a central player with both direct and indirect industry participants creates a huge opportunity, not only from the business side, but also as a way to make a positive contribution and reaffirm the organization's intentions to create a better world.

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