

Investing globally in the food and agricultural value chain

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The food and agricultural value chain has a massive economic, social and environmental footprint. This US\$5 trillion industry represents 10% of global consumer spending, 40% of employment and accounts for 70% of fresh water consumption.

The value chain covers production inputs from farmland to logistics, and ultimately also comprises the wholesale and retail of produced goods. Figure 1 provides an overview of the typical players and investment characteristics of each category in the value chain.

Apart from the obvious players, this value chain also comprises a wide range of speciality companies focusing on specific areas within the chain to increase productivity and quality and to reduce waste. Technology and the precise application thereof are playing an ever-increasing role in the food and agribusiness value chain.

An early example of cost-effective precision in farming was John Deere. They equipped their tractors and other mobile machines with global positioning system (GPS) sensors so that they could be located to within a few centimetres anywhere on earth. Such technology applications and targeted biological research are set for significant growth in the coming decades.

Investment opportunity

Since 2004, global investments in the food and agribusiness sector have grown more than threefold. Previously unavailable opportunities to invest in farmland and emerging markets are now readily accessible. Food and agribusiness companies on average have demonstrated higher total returns to shareholders (TRS) than many other sectors.

Certain sub-sectors such as United States (US) farmland have delivered even more impressive risk-adjusted returns over similar and even longer periods of time, while offering a significant diversification benefit to portfolios due to the low correlation of farmland to other

asset classes. Assets such as commercial farmland, which were historically privately held and not available as listed equities, are now more accessible to investors.

In the coming decades, farmers will need to find ways to cope with more climate shocks while roughly doubling the amount of food they produce.

Over the next few decades, the world's population will continue to grow, driven by developing markets coupled with increasing income per capita that will translate into higher caloric intake, i.e. more people with more money will want to consume richer food items such as meat (protein).

On the other hand, the world is facing a growing shortage of food supply that is primarily due to a decline in arable land and a water shortage, driven by overuse and climate change. Other factors, such as the reduction of waste throughout the food and agribusiness value chain and the application of smart technologies to improve productivity, present opportunities to address some of this shortfall of food supply versus demand.

Supply and demand trends

Two hundred years ago, a British scholar, Thomas Malthus, convinced English nobility that civilisation had surpassed the earth's carrying capacity and that famine was imminent. Since this first prediction

Figure 1: Characteristics of the food and agricultural value chain.

	INPUTS e.g. equipment, seeds, fertiliser, pesticides	FARMLAND	COMMODITIES AND TRADING	STORAGE /TRANSPORT /PROCESSING/ PACKAGING	WHOLESALE/RETAIL
OWNERSHIP	Mostly public companies, some private companies	Mostly private owner-operators. Some public/private funds	Public and private companies	Public and private companies	Mostly public companies
EXAMPLES OF KEY PLAYERS	John Deere, Monsanto, Yara, Mosaic, Bayer, Omnia	Family ownership, Listed REITS e.g. Farmland Partners	Bunge, Archer Daniels Midland, Amaggl, Raizen, Graininvest	Cargill, JBS, Tyson Foods, Richardson, Mondel	General Mills, Kraft, BRF, Nestle, Pioneer Foods, Tiger Brands
INVESTMENT RETURN PROFILES	Some cyclical	Stable (if diversified)	Highly cyclical	Some cyclical	Stable (if diversified)
					

of the world having a limited capacity to support its growing population, there have been many episodes of recurring concerns that the world has exceeded its carrying capacity.

However, Malthus underestimated mankind's ability to adapt and invent new solutions to solve the issue of resource constraints versus population growth. Global transportation, for example, allowed abundant harvests in one part of the world to satisfy the shortfalls in other parts of the world. Additionally, the industrial application of nitrogen introduced commercial fertiliser that massively increased the productivity of land.

Although significant productivity improvements over the past 50 years have enabled abundant food supply in certain parts of the world, feeding the global population has re-emerged as a critical issue due to the combination of increasing demand and increasing supply constraints.

Increase in demand

- In 1960, the world population was three billion. In the last 57 years more than four billion people have been added to the planet and today between 800 million and 1 billion people are starving.
- Population growth in developing countries is equivalent to adding the entire current US population every four to five years. If this trend continues, the world population will expand to 8.5 billion people by 2030 and swell to 10 billion by 2050.
- Gross domestic product (GDP) per capita is increasing rapidly in developing countries. This trend supports a growing demand for higher caloric intake and protein. If current trends continue, by 2050, caloric demand will increase by 70% and crop demand for human consumption and animal feed will increase by at least 100%. Protein consumption is set for continued growth in excess of non-protein consumption.

Increasing supply constraints

- Globally, over 20% of arable land is already degraded and new land added is almost always of a lower quality than land that is lost. Increasing urbanisation is also removing arable land from production.

Figure 2: Declining arable land supply and rising food demand.

(Source: UN Food and Admin Org)

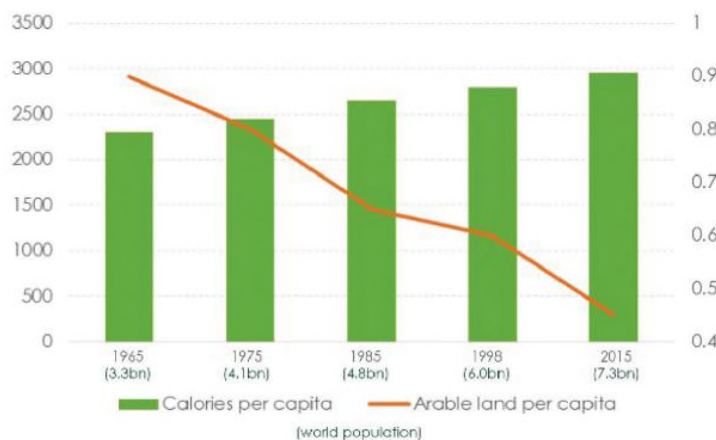
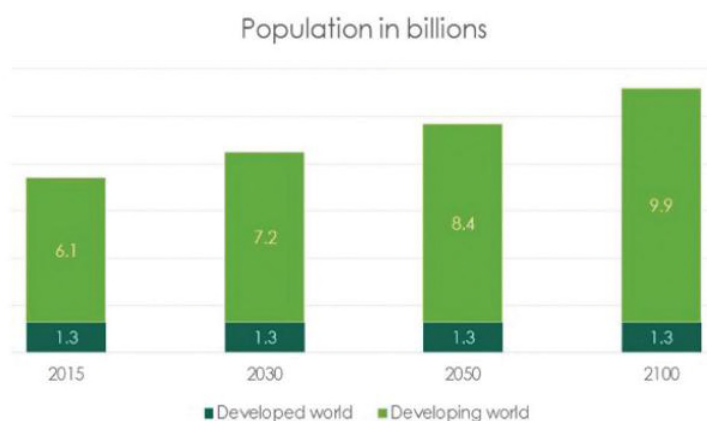


Figure 3: Growing world population fuelled by emerging economies.

(Source: UN Report: World Population Prospects, 2015 revision)



- The trend towards non-genetically modified, organic produce and local and free-range farming in developed countries requires more land and resources per calorie to produce than traditional commercial methods.
- The typical US diet requires two acres (2.5 acres = 1 hectare = 10 000 square meters) of farmland per person. If current trends continue, in 40 years there will be 0.3 acres of farmland available per person globally.
- Agriculture currently accounts for 70% of fresh water demand. It is estimated that by 2030, 40% of fresh water demand is unlikely to be met, meaning that harvests will come under increasing pressure.
- Rising demand is depleting global

crop inventories, with the global grain surplus having steadily declined from 120 days of consumption in 1985 to 90 days currently. The trend remains negative despite significant yield improvements.

- The average age of a typical US farmer is 59 years and there is a shortage of skills in agriculture reflected globally.

Helping farmers cope with climate

Climate change is already having a much greater effect on harvests. In 2010, Russia and the Ukraine experienced excessive heat waves, fires and serious droughts, causing wheat production in these countries to drop by 33% and 17% respectively. Cold and rainy weather in Canada resulted in a 14% decline in

harvest while excessive rain in Australia diminished production by 9%.

China – the largest wheat producer and consumer in the world – experienced a drought in its main wheat-growing eastern region. With the current El Niño effect impacting South Africa's agricultural industry, certain areas of the country have been declared disaster zones as crop failure, livestock mortality and unemployment rise.

Producers and food companies that embrace more stringent environmental and social standards, organic-certification requirements and traceability standards should be able to better position themselves in the face of evolving regulation, and continue to grow to take advantage of this trend.

In the coming decades, farmers will need to find ways to cope with more climate shocks while roughly doubling the amount of food they produce. Furthermore, they will need to accomplish this feat in a way that is sustainable for both the environment and their bottom line. This will require revolutionary innovation in all areas impacting farming.

Producing more protein

By 2020, emerging economies are expected to deliver more than half of global GDP growth, and over half the world's urban population will reside in these countries. Not only is the demand for food in emerging markets expected to rise significantly due to population and income growth, but these regions are also likely to adopt a more developed world diet, i.e. they are likely to consume more calories, protein and processed foods.

A projected surge in demand for protein in emerging markets, especially pork in China, would create opportunities for companies to grow in core production and supporting industries such as breeding, animal-health testing, feed and vaccines. Beef and other livestock production in Argentina and Brazil, for example, is expected to grow strongly to meet global demand.

Making feed conversion more efficient so that animals produce more meat without necessarily consuming more feed could be profitable for companies with unique intellectual property in additives such as probiotics, enzymes and acidifiers.

Shifting consumer preferences

In addition to greater demand for protein, there is a trend towards healthier diets. Consumers are becoming increasingly health conscious and place greater importance on environmental sustainability. While this is most notable in developed countries, this trend is gaining momentum in emerging markets and in response governments are tightening food production standards.

As a result, demand is rising for healthier functional foods (those that offer benefits beyond basic nutrition, such as lowering cholesterol), and for traceable and certified foods that are guaranteed to meet a certain level of safety and environmental or corporate social responsibility.

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A war on waste

Reducing waste in the agricultural value chain will also be a key factor to mitigate against the substantial shortfall between food production and demand. It is estimated that post-harvest waste amounts to 30% of production in developing countries, mostly due to poor engineering and agricultural practices, inadequate infrastructure and poor

storage facilities. Improved logistics, such as cold storage and transport, will be required to reduce this wastage and increase accessibility to food.

Furthermore, it is estimated that over 30% of food produced in the developed world goes to waste on retail shelves and in consumer homes. This waste can be ascribed to many factors such as strict sell-by dates, buy-one-get-one-free offers and consumers' demand for cosmetically perfect food.

In these developed markets, there are opportunities for innovation in extending food shelf life and in packaging to reduce waste downstream. Agricultural, logistical, processing and packaging technologies that raise productivity and reduce waste will become increasingly important.

New farmland

Bringing new farmland into production in South America, Africa and Eastern Europe will also be critical in avoiding a catastrophic shortfall in food supply should current trends continue. Current farmland productivity, however, needs to be protected and enhanced and, in this regard, US farmland remains important for global food production.

Only slightly behind China, the US is the world's second-largest producer of grains and oilseeds and the world's largest exporter. Given that the average age of the US farmer is 59 and there is demand from farmers for both expansion capital and risk diversification, an increasing proportion of US farmland is becoming investable through land-lease schemes.

Acquired farmland is held as direct investment by private funds such as sovereign wealth funds, pension funds and individual investors through pooled funds (e.g. LandFund Partners) or REIT structures (e.g. Farmland Partners). These mechanisms for attracting private capital to farmland will become ever more important for the preservation and growth of farmland globally. 🌱

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