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Farmland

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INVESTMENT MANAGEMENT

The global population is expected¹ to reach nearly 10 billion people in 2050, all of whom will need to eat. At the same time, levels of prosperity continue to rise around the world. These trends are creating enormous challenges, especially in relation to the use of available land on our planet. Investors face huge challenges in increasing agricultural productivity, using soil, water and resources in a sustainable manner and ensuring that this goes no longer at the expense of existing nature areas.

¹ Source: United Nations, World Population Prospects, 2017 Revision

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The agricultural sector is regularly in the spotlight these days. Whether this relates to healthy food, the climate, biodiversity or spatial planning: the agricultural sector plays a key role in several of the major issues currently facing our society. Yet this also creates opportunities alongside the many challenges. The transition to more sustainable, nature-inclusive farming requires a long-term outlook and cooperation across the entire food chain. Investments in farmland are a key part of this transition and well suited to combining financial return with sustainability goals.

Nevertheless, investments in farmland are still relatively rare in the portfolios of many European investors. This is perhaps understandable; farmland prices in many European countries are relatively high and expected revenues and returns therefore low. Yet when we look more broadly a much more varied picture of this asset class emerges. In particular in major agricultural countries, such as the US, Canada and Australia, we see that farmland is included in the portfolios of large pension funds and has generated an attractive rate of return for some time now. For a variety of reasons we believe that farmland could well be given a more prominent role in the investment portfolios of institutional investors in the future. This is on the one hand because of succession problems in an ageing sector and on the other hand due to interest from investors wishing to make a difference in food production and sustainability.

In this white paper we take a closer look at farmland as an asset class, describing both its general characteristics and long-term trends. We also specifically examine sustainability aspects and the different ways of investing in farmland. Our aim is to sketch a clearer picture of this multi-faceted asset class and help investors carefully weigh up the pros and cons of investing in farmland.



1 Farmland as an asset class

What are you investing in?

In practice, a number of different definitions are used for farmland as an asset class. In this white paper we focus on the physical investment in farmland and its cultivation. This means we view an olive grove as farmland, but not an olive oil producer. In the case of the latter, with far-reaching vertical integration, the business risk is dominant and not the farmland and its direct cultivation. This does not alter the fact that certain types of ancillary infrastructure, such as storage and cooling facilities, can form part of normal business operations in this asset class. Table 1 lists the main sub-categories of use within farmland.

Table 1 Sub-categories of use within farmland

Annual crops	Permanent crops	Livestock
<ul style="list-style-type: none">– crops with (semi-) annual rotation	<ul style="list-style-type: none">– Perennial crops (trees and shrubs)	<ul style="list-style-type: none">– Livestock with a land component for grazing
<ul style="list-style-type: none">– Examples: maize, wheat, soybeans, rapeseed, potatoes, rice, cotton, vegetables	<ul style="list-style-type: none">– Examples: almonds, macadamia nuts, apples, blueberries, kiwis, olives, avocados, citrus fruits, wine grapes	<ul style="list-style-type: none">– Livestock for dairy, meat and wool

- Annual crops have annual sowing or harvesting cycles, or in certain geographic zones even bi-annual cycles. Farmers make annual investment decisions and can decide which crops to grow each year or every six months, obviously depending on local conditions such as soil composition and climate. When applying sustainable agricultural practices, the aim is to cultivate the land continuously by planting several crops in succession, alongside or interspersed with one another in order to achieve the required diversity. Sheltering and protecting the soil using plants is essential for safeguarding soil quality, water drainage and biodiversity. More on this later in this paper.
- Permanent crops involve a long-term investment decision. Depending on the type of fruit or nut, it can take several years for an orchard to become fully productive. Investors therefore need to consider consumer preferences in the long term, both in terms of the type of fruit and nuts but also the individual varieties of a specific crop. Moreover, an investment in permanent crops can have a certain J curve when varieties are replaced or new trees or shrubs are planted. Trees may also become less productive at some point; almond trees, for instance, are replaced with new trees after about 25 years.
- Livestock is sometimes also included in this asset class, if it involves a significant land component. A poultry farm would not fall under this definition, but a dairy farm that includes land for cows to graze on would be.



In practice, many investors opt not to focus primarily on livestock as an investment as it is difficult to verify animal welfare, the operational and financial leverage is often higher and it involves a higher product concentration. We will focus mainly on annual and permanent crops in this white paper.

A global market with distinct local differences

Farmland can be found anywhere in the world, but local conditions such as weather, climate, soil composition and access to water are important factors for determining the types of crops and varieties cultivated in a specific region. These huge regional variations also partly explain the significant differences in the prices paid for farmland (see table 2).

Table 2 Average farmland prices

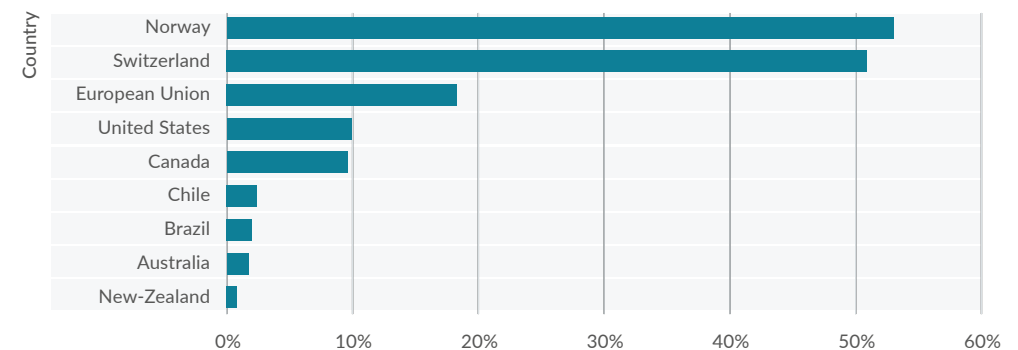
Country	Average price of farmland (USD per hectare)
– Netherlands	69,747
– United Kingdom	24,099
– New Zealand	23,332
– Poland	12,618
– United States	10,205
– France	7,064
– Romania	6,781
– Brazil	4,000
– Australia	2,304

Source: Savills Global Farmland Index 2019 (2018 data), land registry (2018 data)

As you can see, Dutch farmland is among the most expensive in the world. This is partly due to the very fertile soil and high productivity levels. Yet even when adjusted for productivity Dutch land remains relatively expensive. Local conditions, such as local customs or legislation, can have a huge impact on pricing. This means that the global farmland market cannot be viewed as an efficient investment market, which in turn presents investors with interesting opportunities. We list a number of examples below:

- Farmland prices are generally not determined by investors but by farmers. In those countries in which farmland is scarce, such as the Netherlands, prices can rocket as farmers don't view the acquisition of farmland through the lens of an investor.
- A potential option value for future development or construction may also be priced in. This is mainly in countries with a shortage of land for construction.
- Another complication is that certain countries, such as Canada, New Zealand and Brazil, but also closer to home in France, impose restrictions on foreign ownership.
- Western European farmers often depend on EU subsidies (see figure 1) and there is uncertainty as to whether these will continue in their current form in the long term.

Figure 1 Subsidies/aid to farmers as a percentage of total income



Source: OECD 2017 producer support estimates

These enormous local differences mean that it is important to retain a global perspective when investing in farmland. This allows investment in countries that enjoy a competitive advantage in a specific crop, with respect to production costs or quality or innovation. Combining this kind of top-down perspective with implementation via local specialists can in fact add significant value in this asset class.

Operational implementation

There are several ways of investing in farmland and different investors apply different approaches, often depending on the market and sub-category in which they invest.

The most passive approach for an investor and/or owner of a plot of land is investment via a lease model, in which the asset manager buys a plot of farmland and leases it to a local operator². In practice, this is most common for annual crops. We usually see this in markets with large numbers of professional operators and it is often a popular model in markets with

well-developed legal systems. After all, in a market that already has highly-efficient operators the added value of a more active model or additional investment in e.g. irrigation or machinery is relatively small. In the case of a lease model, the annual proceeds from crop sales only have an indirect effect on the direct annual return, via adjustments to the lease rates. The specific details of the lease agreement, such as its duration and terms and conditions, depend on the land and type of crop.

At the other end of the spectrum are asset managers that apply an own-and-operate approach. In this case, the asset manager hires or appoints an operator to run the farm. All the expenses and proceeds are directly for the account of the asset manager. The direct annual return is therefore more volatile than in the case of a lease model. At the same time, there is also greater upward potential deriving from investment in e.g. machinery, irrigation, drainage, storage, new varieties etc. Furthermore, there is no need to budget for a profit margin for the tenant farmer. In practice, this model is mainly used for investing in permanent crops. Permanent crops lend themselves less to a lease model as they can require large initial investments for planting or replanting with new varieties. There is therefore usually no incentive for tenant farmers to take on such investments themselves. In the case of annual crops, own-and-operate models are mainly applied in those segments of the market in which asset managers are able to improve levels of efficiency.

Many hybrid forms, in which expenses and revenues are shared between the asset manager and the operator, are also possible in addition to the pure lease model and pure own-and-operate model. In all these models it is important to examine the alignment between the asset manager and operator. This alignment is essential to enabling sustainable cultivation of the land and combating overexploitation.



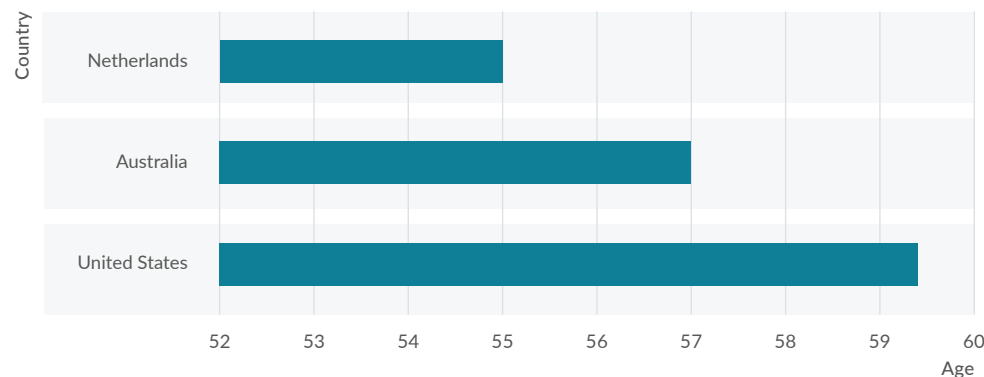
Investment market expected to grow

Although there is an enormous amount of farmland around the world, most of it is owned by farmers and the amount owned by institutional investors is still fairly small. It is estimated that only about 0.5%³ of the world's farmland is currently in the hands of institutional investors. Yet there are several reasons why we expect institutional ownership of farmland to grow in future:

Ageing farmers and exodus from rural areas

Firstly, the sector is ageing globally. Figure 2 illustrates this via the average age of farmers in the Netherlands, Australia and the US; other countries are seeing comparable trends. The average age of employees in these countries is 40-42.

Figure 2 average age of farmers in the Netherlands, Australia and the US



Source: Netherlands Statistics (CBS, 2017), ABS (2017-2018), USDA (2017) respectively

The ageing farmer population is causing succession issues. Farmers who wish to retire don't always have a successor to hand. Whereas it used to be common for one of the farmer's children to take over the farm, this is no longer a given in today's society. Many young people are no longer interested

in taking on a farm. There is a growing global trend towards urbanisation, with younger generations moving away from rural areas to big cities. This trend shows no sign of coming to an end, although there is hope for the new knowledge-driven generation. A knowledge revolution is taking place in the agricultural sector, just as it is in other sectors. New insights and techniques, many harking back to natural or ecological systems, are increasingly prevalent. Several studies have demonstrated a positive ratio between businesses having younger employees and them becoming more sustainable. The new, intrinsically climate-motivated generation will occupy an important role, with family ownership and emotional values being pushed further into the background. Farmers can of course sell their land to other farmers, but in this case the latter need to have access to bank loans or some other form of capital. Capital from institutional investors could provide a solution in such situations, including for those farmers interested in expanding but without access to capital.

Increased scale

The agricultural sector has undergone an increase in scale in the past few decades. While farms in Europe are usually still smaller than 100 hectares, the size of the average farm in countries such as the US and Canada is already much bigger and in Australia runs to as many as several thousand hectares. This trend is expected to persist. Moreover, it makes financial sense for those farmers who have invested heavily in machines, storage and equipment to expand further in order to use these resources to the full. The fact that farms are growing in size is also pushing up the cost of business succession. If one of the farmer's children takes over the business, it becomes even more expensive to buy out any other siblings. We therefore believe that increased scale will further boost demand for institutional capital. A large scale is financially attractive to investors as capital can then be put to use efficiently. Increased scale often conjures up images of enormous fields containing the same kind of crop (e.g. wheat or maize) – known as monoculture – stretching as far as the eye can see that quickly degrade the soil and reduce biodiversity. This is still fairly common, but isn't necessarily the norm. Modern insights and techniques are increasingly leading to large-scale sustainable cultivation. We look at this in more detail in section 6 (ESG).

3 HighQuest Consulting (2016): Agriculture: A New Asset Class Presents Opportunities for Institutional Investors

Technology

The agricultural sector is fast becoming a knowledge-driven sector, as is well illustrated by the many successful agritech start-ups in recent years. Precision agricultural techniques demand substantial levels of investment but yield sound rewards in the long term, both financially and in terms of sustainability due to the lower consumption of seeds, pesticides, fertilizer and agricultural diesel etc. Institutional capital can play an important role in this ongoing transformation.

Smaller and more transparent chain

The traditional agriculture chain is under growing pressure. On the one hand consumers increasingly want to know where the food on their plates comes from and how it was produced. On the other, distributors need large and reliable suppliers that can deliver stable quality, especially in new and more innovative crops and varieties. This can result in a mix of scale and sustainable production that institutional investors can capitalise on.

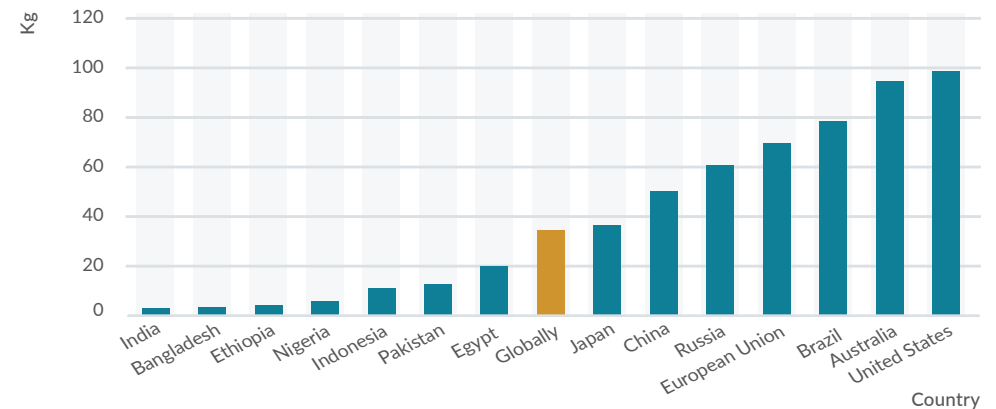
Although we believe these factors will lead to a flourishing investment market in farmland, local differences will continue to exist. Local politics and laws and legislation will play a part in addition to financial and economic factors.

2 Fundamental drivers

Growing global population and changing consumer habits

The ongoing growth in the global population is a dominant factor in the expected increase in demand for food. Yet changing consumer habits are at least as important. These primarily relate to the rise in prosperity and burgeoning middle class in emerging markets. While diets in many emerging markets used to be dominated by grains such as wheat and rice, as levels of prosperity increase we are seeing consumer habits converge with more Western standards. This means that more vegetables and fruit but also more meat are being added to the menu. Figure 3 depicts current meat consumption in a sample number of countries.

Figure 3: Meat consumption (kg per person per year) according to country



Source: OECD-FAO Agricultural Outlook 2017 Edition

As figure 3 shows, meat consumption in many emerging markets is still at much lower levels than those of Western countries. While consumption has already risen in countries such as China as a result of the growing prosperity, meat consumption in other Asian and African countries is still much lower. Meat consumption is also expected to increase in these countries, however.

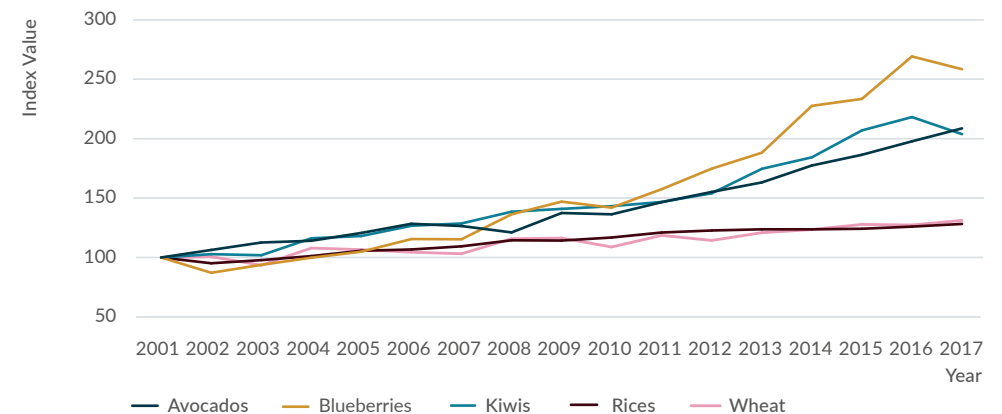
The replacement of grains with meat will place huge pressure on food supplies, as it takes several kilos of grain in the form of animal feed to produce one kilo of meat. Increased meat consumption will therefore push up demand for food in the form of grain.

The growing global population and changing consumer habits form a firm foundation for future demand for food. Improvements in productivity are not expected to be able to meet this growing demand alone. The increase in productivity since the 1960s has been accompanied by increased scale and a sharp upturn in the use of artificial fertilizers and pesticides, with major consequences on air, water, soil and life on earth. Biodiversity has plummeted. Further productivity growth will only be tolerated if it is not at the expense of an even larger ecological footprint. At the same time there are few options for expanding the amount of available farmland significantly, and where this is possible expansion often rightly encounters major ecological objections (for instance, turning forest into farmland). It is partly for these reasons that we believe farmland will retain its value and is in fact likely to increase in value, making it attractive to investors.



Another trend in consumer habits that we have observed is the growing focus on health. Permanent crops, including fruit and nuts, are known for their health benefits and profit from this trend via higher demand for many fruit and nut varieties, although this does not apply to all varieties. Niche crops such as avocados, blueberries and kiwis are becoming ever more popular and these markets are growing fast (see figure 4).

Figure 4 Production growth in avocados, blueberries and kiwis compared to rice and wheat, indexed, versus levels in 2001 (= 100)



Source: FAOSTAT, production figures

Such increasingly popular niche crops make potentially interesting investments, as their consumption is growing at a fast rate and at the same time their absolute consumption levels are often still low in many countries. As an example, annual consumption of blueberries in China is still just 4 grams per person per year, while this figure stands at 1.5 kilos in the US. Many types of fruit and nuts also only grow well in certain regions because of their climate. The US (California) produces about 80% of the world's almonds and only a handful of other countries, such as Australia, Spain and Portugal, are also capable of successfully cultivating this crop commercially. In contrast the consumption of established fruits such as apples and oranges, which is already at much higher levels, is growing at a much slower rate.

Nevertheless, we believe that overall the growing focus on health is positive for investments in permanent crops.

Producing more on less land and leaving a smaller ecological footprint

The UN's Food and Agriculture Organization (FAO) estimates that demand for food will rise by about 60% from today's levels by 2050. A number of measures are needed in order to be able to meet this demand for food:

- Increasing production where already possible using modern agricultural techniques
- Increasing production by adopting new technologies
- Combating the depletion of farmland, soil erosion and depletion of water supplies

Institutional investors can play an important part in all these measures:

Increasing production where already possible using modern agricultural techniques

Scientists use the term yield gap for this; this describes the additional production potential of farmland when it is managed as efficiently as is possible. Account is taken here of the specific climate, including precipitation levels in areas without irrigation options. Western countries such as the Netherlands and Germany only have a small yield gap, which means there are relatively few gains to be had here. Much less well developed countries still have substantial yield gaps, however, and production can be improved considerably using agricultural techniques that are already available.

Increasing production by adopting new technologies

New technology can also push up production levels, although the added potential of this is starting to flatten out. More controversial is the use of genetic modification (GMO), including gene-modifying techniques such as Crispr-Cas. These can be used to develop new, more productive varieties and plants that can be made resistant to disease and pests with a view to raising food production further. The advantages and disadvantages of these techniques need to be weighed carefully, especially when it comes to

well-being and biodiversity. Although these genetic modification techniques have the potential to increase food supplies, we do not expect there to be a sudden surplus of food; genetically-modified crops are still subject to certain natural restrictions, meaning there is a limit to the potential productivity gains.

Combating the degradation of farmland, soil erosion and depletion of water supplies

A sustainable increase in food production is only possible if there are measures to combat soil degradation, soil erosion, desertification, spillage of pesticides and the depletion of aquifers⁴ from which water is drawn. This requires a new nature-inclusive outlook for agriculture, a long-term perspective for the cultivation of farmland and a clear step-by-step plan. Institutional investors, long-term investors by their very nature, can make a significant contribution here.

⁴ Underground water-bearing strata from which water can be pumped

3 Return & risk

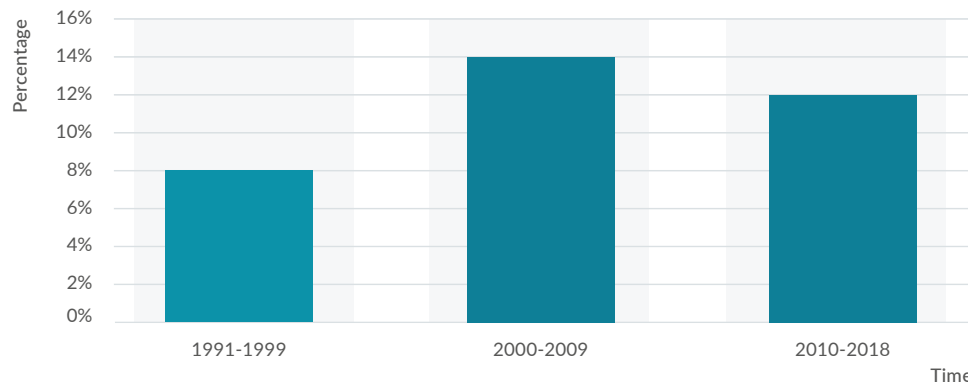
Historical return

As farmland is not yet a major institutional asset class, few performance data are available. Long-term return data are largely restricted to the US, where institutional investors have long invested in farmland. The NCREIF Farmland Index measures the performance of institutional investments in farmland and currently contains over USD11 billion in such investments. Figure 5 shows the annual return on this index over a number of periods since its inception (Q1 1991).

As the chart shows, a solid return has been earned on farmland over the past 25 years. In fact the asset class was among the best-performing asset classes over this period. This does not mean that the double-digit returns are representative of future results, however. The lower interest rates of the past few years have contributed to the positive increases in value but this contribution cannot be counted on in the near future.

The performance can be split into direct return, deriving from lease revenues or crop sales, and indirect return, deriving from the increase in the value of the land. This means the structure of the return is similar to that of an investment in real estate. Figure 6 shows the performance split into direct and indirect return for annual and permanent crops respectively in the US.

Figure 5 Historical average annual return on farmland in the relevant period in the US in US dollars

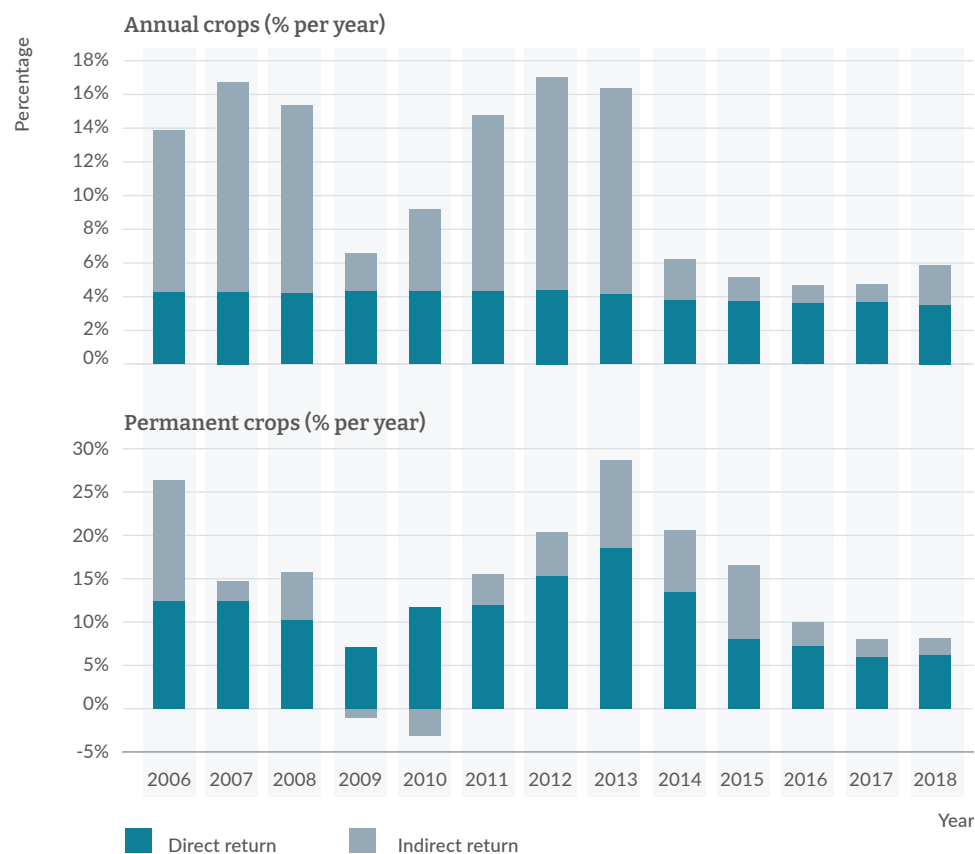


Source: NCREIF Farmland Index⁵

The value of your investment may fluctuate. Past performance provides no guarantee for the future.

5 The NCREIF Farmland Index does not take into account any fund-specific effects, such as fund fees and the use of leverage.

Figure 6 Performance split into direct and indirect return for annual and permanent crops respectively in the US in US dollars



Source: NCREIF Farmland Index per ultimo 2018

Figure 6 clearly depicts the difference between annual and permanent crops. The direct return on annual crops is usually lower but more stable than for permanent crops. Permanent crops can sometimes experience several successive years in which there is a mismatch between supply and demand. When demand for a specific fruit increases, it can take a while for larger supplies to reach the market, as newly-planted trees or shrubs do not always

immediately bear fruit. High direct returns can therefore be earned in the first few years after that. On the other hand, investment in permanent crops may temporarily generate zero revenues, such as in the case of new plants or the replacement of old orchards with new varieties. As part of the value of the investment in permanent crops lies in the trees or shrubs (which may have a restricted lifespan), the indirect return is usually also slightly lower than that on annual crops.

One appealing aspect of investing in farmland is that in addition to external factors the value of the land can also be increased by improving productivity. Moreover, the value of land is not subject to depreciation.

Main risks

Table 3 lists the main risk factors and their relevance to investments in farmland. We explain these risk factors in more detail below.

Table 3: main risk factors in investing in farmland

Risk factor	Relevance
– Political risk	High
– Liquidity risk	Average/high
– Interest rate risk	Average
– Specific risks (weather/climate, insects, disease)	Average
– Economic risk	Average (specific to agriculture) Low (economy in general)
– Vacancy risk	Low

Political risk

Farmland is a politically-sensitive asset class. The political risk involved is therefore higher than for many other asset classes. This doesn't just involve exceptional risks such as expropriation in certain emerging markets. We also see political risks in more developed countries, but here they generally

manifest themselves via taxation and laws and legislation relating to the acquisition process, such as restricting the options for foreign investors to acquire farmland.

Liquidity risk

Farmland is not a liquid asset class and investors need to take (very) low trading volumes into account when investing via funds. Yet the level of liquidity for individual farms is not necessarily that low in practice; certainly smaller farms often see enough interest from the local market. However, for larger investments one is more dependent on a smaller group of potential buyers with sufficient financial means. Other external factors may also affect the liquidity of individual farms.

Interest rate risk

The return on farmland normally has a negative correlation to interest rates. Higher interest rates have a negative impact on the return as the value can be viewed as the current value of future cashflows. A simultaneous increase in inflation can mitigate this effect. Land and crop prices have a positive correlation to inflation. Higher interest rates caused by higher inflation do therefore not necessarily have a negative impact on the return on farmland. Furthermore, leverage levels are generally very low.

Specific risks (weather/climate, insects, disease)

Individual farmland investments have a number of highly specific risk factors that we rarely see in other asset classes. Examples include the impact of weather, climate, plagues of insects and certain diseases. Many of these risks can be mitigated effectively by introducing sufficient diversification, both in terms of geography and crop type. Short-term weather effects, primarily affecting a specific year's harvest, will not necessarily have a major impact in a diversified portfolio. Moreover, if harvests are worse than expected in a major production region and supplies of a crop decline, this generally pushes up prices. Farmers in other regions therefore profit from this in turn. More long-term climate risks can be mitigated by taking into account the expected long-term effects of climate change on a specific region or crop. Access to water also explicitly needs to be included here. Furthermore, at an operational

level risks can be mitigated by aspects such as the choice of crop (e.g. varieties that are more resistant to certain diseases and mixed cultivation), investment in irrigation and drainage and improvements to soil quality and biomass.

Economic risk (economy in general)

Investments in farmland have a small exposure to general economic risks. Food is a primary necessity and demand for food is therefore largely immune to the business cycle.

Economic risk (specific to agriculture)

The prices and volumes of specific crops can fluctuate substantially from year to year. Many crop prices also depend on production levels, as higher supply levels usually push down prices while lower supply levels drive up prices. In addition to diversification, investors need to examine specific market shares in a certain crop in order to determine the economic risks. In the case of permanent crops, investors should also consider changing consumer preferences. These can trigger sharp increases or decreases in demand for a specific fruit/nut or variety.

Vacancy risk

Although vacancy risk is important in the case of real estate investments, for example, the risk is very low for farmland. Vacancies almost never occur in this asset class. A tenant farmer or operator can of course go bankrupt or cease operations, but there are usually enough other interested tenants or operators, often neighbouring farmers or operators, that can step in to ensure the harvest is not lost.

Investment in farmland viewed from a portfolio context

Many investors view investment in farmland as what is known as a real asset, just like real estate or infrastructure. The asset class shares important characteristics with real estate, as can be seen from table 4. Both asset classes invest in land and buildings and the return comprises revenues and capital growth. The valuation of individual properties is conducted in a similar manner. The main difference between farmland and real estate can be found in the underlying risk and return drivers.

Table 4: investments in farmland versus real estate

	Farmland	Real Estate
What are you investing in?	Land + any crop value and buildings to a limited extent	Land + value of building
Source of return	Lease/sale of harvest + capital growth	Rental income + capital growth
Risk profile of average institutional investor	Core/Core+ ('land-rich' investments)	Core/Core+ (stable, existing buildings)
Principal sectors	Large diversity of crops	Offices, retail, residential, logistics
Regions (countries)	Global (approx. 5-10)	Global (approx. 10-20)
Main long-term return drivers	Productivity growth, climate, consumer habits, food prices	Economic growth, population growth, urbanisation

Investment in farmland is sometimes erroneously compared to investment in commodities, in particular agri commodities that are often included in commonly-used commodity indices and products. Yet this type of comparison falls short and the differences listed below demonstrate the fundamentally-different characteristics of the investments:

Table 5 main differences between investing in farmland and in commodities

Investment in farmland	Investment in commodities
– Hard underlying assets	Derivatives
– Annual revenues	No revenues
– Can contribute to increasing food supplies	Potentially contributes to driving up food prices
– Short-term price volatility mainly affects annual yields	Short-term price volatility affects value of entire investment
– Investment with a positive carry (yields and productivity growth)	Investment with a generally negative carry (roll yield)

From an asset and liability matching perspective it is worth noting that an investment in an as yet undeveloped orchard displays interesting similarities to long-term real interest rate contracts. The investment is made in the first year, after which revenues or cashflows are generated that generally adjust themselves to global price levels from about year 3 to year 30 (depending on growth and the productive lifespan of the orchard).

Low correlation to other asset classes

As a result of the stable underlying value and other risk/return drivers, farmland in the US enjoys a relatively low or even negative correlation to other asset classes, such as equities or bonds, while there is a (modest) positive correlation to inflation. From a diversification perspective, an farmland investment can therefore be an interesting proposition for inclusion in a broader investment portfolio.

Another attractive aspect of a well-diversified investment in farmland is that there is often a very small correlation between revenues from different types of crops. After all, the market for almonds or wine grapes has little to do with those for wheat or soya beans. A high level of diversification can therefore considerably reduce the risk of worse-than-expected harvests in a given year or disappointing long-term consumer trends. This risk can be further reduced by diversifying across several different geographic regions.

4 What are the options for investing in farmland?

Current investment options

Just as for many other asset classes, you can invest in farmland via funds or mandates offered by specialist managers/asset managers. Funds offer the advantage of allowing you to construct a diversified portfolio containing investments in different countries and crops. Mandates offer greater flexibility. Moreover, mandates are available from a much lower minimum investment than is the case for many other illiquid asset classes, given the sometimes relatively small size of the individual investments. However, it is important to ensure that each individual investment contains sufficient scale for cultivation. In addition, if these are discretionary mandates – i.e. the investor maintains discretion on each underlying investment – it is possible to exert much more influence over the final composition of the portfolio and over aspects such as sustainability, which can be of above-average importance to investors in this asset class.

As farmland has yet to become a large established investment market, the number of funds on offer is relatively small. Moreover, their levels of professionalism, terms and conditions and sustainability policies vary greatly. It is therefore also important to conduct a critical and thorough due diligence process before investing in this asset class.

Local expertise of great importance

Farmland is a very local market, and one in which in our experience local specialists are much better at seeking out investments than large global investors in search of large transactions. In addition to easier access to deals, knowledge of the local market of course also plays a role with a view to avoiding the acquisition of a sub-standard plot of land or collaborating with the wrong partners.

5 ESG / Responsible Investment

Investing in sustainable, nature-inclusive agriculture

The agricultural sector is essential to ensuring that we can continue to feed all those extra mouths in the future as well. At the same time, however, the agricultural sector accounts for a significant portion of greenhouse gas emissions around the world (for farmland this mainly involves methane and nitrogen dioxide), uses large quantities of water and adversely affects biodiversity. An investment in farmland does not in itself contribute directly to sustainability. However, as a source of natural capital farmland does contain enormous potential for achieving common climate goals. An active approach to investing in farmland can contribute to sustainability goals in a number of areas:

1. Reducing greenhouse gas emissions and combating climate change
2. Improving biodiversity
3. Using water more sustainably

Reducing greenhouse gas emissions

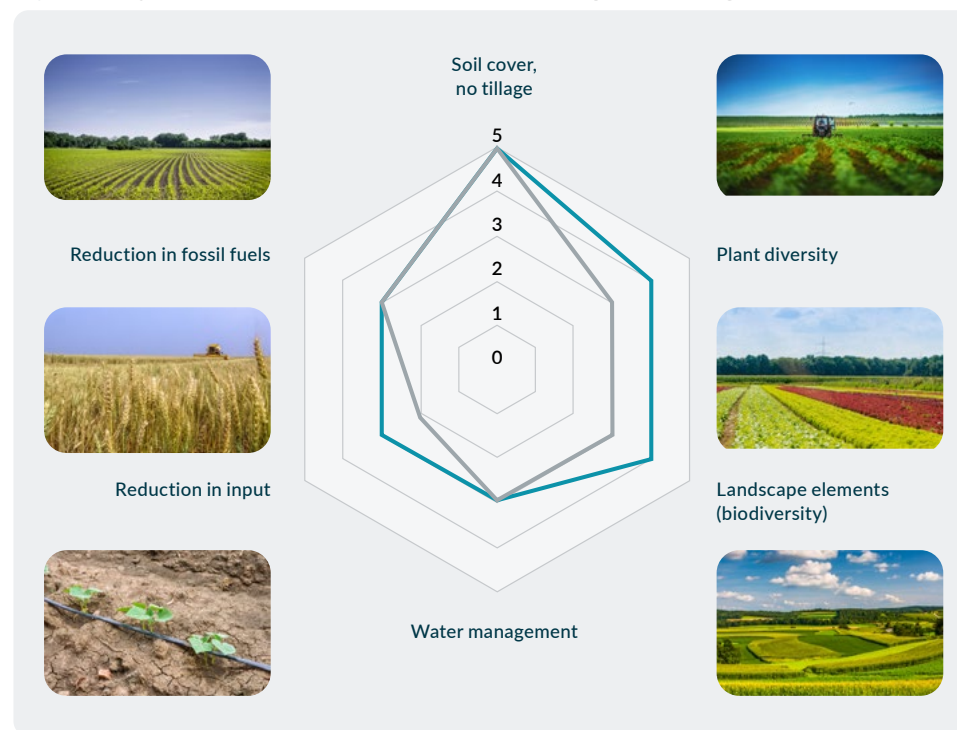
One of the most important ways of combating climate change is to handle our natural capital more carefully, i.e. the land and soil for crop cultivation. The importance of forests in absorbing CO₂ is well known. The capacity of plants and crops to absorb CO₂ in the soil is less widely known but just as important. This capacity has shrunk due to soil degradation, partly caused by climate change but certainly also by the intensive and one-sided agricultural methods of the past century. Combating soil degradation is an end in itself, but more importantly it serves several purposes. On the one hand maintaining soil fertility is important to preserving food security. Fertile, healthy soil is beneficial to plant growth and the production of crops. It also makes plants stronger, making them more resistant to diseases and other ailments. On the other hand, proper soil management can lead to higher amounts of CO₂ being stored in the soil, while fertile and covered soil retains more water and can improve biodiversity. Nature-inclusive agriculture can make substantial contributions to all these goals.

Nature-inclusive agriculture

There is a growing focus on nature-inclusive agriculture around the world and many different parties are setting to work on this in an ever larger number of regions. Nature-inclusive agriculture is in fact farming with biodiversity, a form of agricultural recycling which uses processes and practices aimed at having the smallest possible impact on the surrounding nature and which helps nature by creating different types of habitats for flora and fauna and uses the power of nature to recover or regenerate. This includes flowering field edges, landscape elements, green manure, no-till farming, reducing heavy machinery and reducing the use of pesticides and artificial fertilizers. The applied practices depend greatly on environmental factors, the type of crop, regulations (subsidies) and the experience and intrinsic motivation of individual farmers. No-till farming is a growing theme within crop farming in particular. This (regenerative) practice is the subject of much debate around the world.

No-till farming involves keeping the soil covered with a layer of surface residue or green manure at all times. The next step is minimum tillage (as the name implies, little to no tillage), in which the soil is disturbed as little as possible. Another important step is the introduction of enough variety in crops and the retention of plant residues from the previous harvest. These steps can help to reverse the trend of CO₂ from the soil ending up in the atmosphere and mean that CO₂ can once again be stored in the soil. Finally, no-till farming involves reducing substances such as artificial fertilizer and pesticides. The problem with all these substances is that they disrupt organisms in the soil and therefore permanently weaken the plants. Precision agricultural technologies can reduce these effects, which in turn can lead to a reduction in the use of artificial fertilizer and fossil fuels (diesel). The terms nature-inclusive agriculture, sustainable agriculture, regenerative agriculture, organic agriculture, holistic agriculture, agricultural recycling and non-till farming are often used interchangeably. They do not all mean exactly the same thing but do share a number of key characteristics as shown in the figure on the next page.

Figure 7 Key characteristics of nature-inclusive or regenerative agriculture



A great deal of research is being conducted into the impact of nature-inclusive agriculture, for instance by universities and research institutes in the Netherlands. The results are impressive. Easy-to-implement, subsidised or potentially reciprocal practices such as green cover and tree edges are already applied on a large scale. Yet more radical integrated approaches such as no-till farming are still fairly rare in practice. One relevant factor here is the ageing farmer population mentioned earlier and the status quo in the sector. With the aid of new techniques, an enthusiastic new generation of farmers, the right financial incentives and cooperation across the whole chain, it is possible to trigger a revolution in thinking and acting in the short term. By chain we in fact mean the suppliers of seeds and plants, the manufacturers of substances, farmers, factories, wholesalers and grocery stores right up to consumers.

It is also interesting to see the nature capital of land increasingly being mentioned in the context of ESG. This is also related to the fact that several sources of revenue can be created from land ownership other than just food. Companies want to invest in nature capital in order to be able to achieve their climate goals and seek nature-based solutions to compensate for the portion of their production that cannot yet be conducted in a carbon-neutral manner (examples include heavy industry or aviation). In this respect it is interesting to see whether CO₂ storage in the soil can be used in emission rights systems (carbon credits). And finally, it remains to be seen whether consumers will want to contribute to sustainably-produced food and whether fair prices will be paid.

Improving biodiversity

Biodiversity is under pressure all around the world, especially in rural areas. Deforestation, monocultures, the use of pesticides and artificial fertilizers and other non-sustainable soil management practices are the reasons behind this. Nature-inclusive agriculture reduces the need for artificial fertilizers and pesticides and can lead to improvements to organisms in the soil and even savings on costs in the long term. Switching and mixing crops, where possible

in strips, via mixed cultivation or simply crop rotation, are also important to biodiversity. More radical variants of crop rotation (e.g. wheat one year and barley the next) are strip cropping and mixed cropping (simultaneous planting of plants that form a strong bond with each other, such as grains and lupin beans/legumes for carbon sequestration or grains and leguminous crops for nitrogen sequestration). The depletion of biodiversity can be combated by planting trees along field edges, creating nature corridors, drainage ditches and ponds etc. Several countries already work with biodiversity credits or biodiversity offsets with a view to encouraging these trends.

Using water more sustainably

Climate change is creating challenges with respect to water management and supplies. Nature-inclusive agricultural practices can lead to healthier soil that retains water better. Technology can also be used for more targeted irrigation that prevents spillage and as mentioned above also reduces the amount of pesticides etc. that ends up in the drainage system.

Investors can make a genuine difference

Investors in farmland can exert a relatively large amount of influence and genuinely make a difference when it comes to sustainability. While investors in liquid markets are facing difficulties in eliminating highly harmful practices such as deforestation by palm oil plantations from their portfolios, investors in agricultural funds are much closer to the action and can therefore wield greater influence. An investor opting for direct implementation in conjunction with local partners rather than a fund investment can define a fully-customised policy and detailed criteria, for instance in the lease agreement. Many measures aimed at improving sustainability pay for themselves in the long term. While other measures, such as reserving strips of land for trees and shrubs in order to improve biodiversity, may not generate additional return in the short term, they do contribute to crop resilience and ultimately benefit the farmer in the long term.



6 Conclusion

This white paper examines the principal features of investments in farmland. Farmland is still a relatively immature asset class, but a number of factors are prompting an ever larger group of investors to consider this asset class. At the same time, there is a growing need for knowledge and capital in a sector that is open to institutional investors.

We have also described the challenges we currently face in the world. New methods and insights are needed if we are to increase food production significantly in a more sustainable, nature-inclusive manner. Institutional investors can contribute directly to this and have a measurable impact.

When considering whether to invest in farmland, investors first need to decide on the objectives and basic principles of any investment. The agricultural market is both a global market and a very local market. Local expertise is of paramount importance.

The aim of this white paper is to help investors carefully weigh a possible allocation to farmland. Please do not hesitate to contact us if you have any further questions or require more information.

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