JUNE 2015 | WWW.AGRIINVESTOR.COM

PEI Alternative Insight

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global agri-investment intelligence

ALMANAC 2015

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EDITOR'S LETTER

A pie with many pieces

At first glance, agriculture and agribusiness investment may seem like a very small niche within the alternatives market, and that's fair enough: allocations to the sector comprise a small part of institutional portfolios – and most organisations lack dedicated agri specialists, relying instead on a more generalist real assets portfolio manager.

But not only is agriculture one of the oldest asset classes – farmland has been held by the world's oldest institutions and elites for hundreds of years – it is also incredibly diverse and made up of many sub-sectors.

Agri investment's first iterations were in the relatively passive form of buying land and leasing it to farmers. In the US, this is a well-established investment model many institutional investors are familiar with. The US timberland investment market is arguably even more established after pension funds started buying forestland in the 1980s.

Today, investors have many potential routes for gaining exposure to agriculture's macro story – of growing global populations, increasing demand for protein and healthy food amid limited global natural resources. Taking into account different geographies and channels within the vast agricultural supply chain, investors can quite literally invest anywhere from farm to fork.

This of course makes for a complex outlook for the growing number of investors and managers entering the asset class for the first time or seeking to broaden their exposure. Where in the agri value chain should they invest? What types of risk-return profiles are most suitable to a particular institution's strategy?

Our inaugural *Agri Almanac* helps address these questions by highlighting a number of agri's most interesting sub-sectors, including timberland (p. 8), agtech (p. 15), infrastructure (p. 26) and water investment (p. 20). Industry experts also provide snapshots on key topics including beef farming (p. 5), dairy (p. 11), agriculture debt (p. 18) and Asian plantations (p. 23).

Increasing education and understanding of agriculture and its various iterations among the investment community is essential for the sector to grow. Thus it's with great pleasure we bring you this special overview of agri investment today.

Happy reading!

Louisa Burwood-Taylor

Louisa Burwood-Taylor

About us

Agri Investor is the dedicated source of insight and intelligence for private investment in agribusiness and agriculture globally. It is relevant to institutional investors, asset managers, advisors and operators focused on agri-investment.

In our definition of agri we include farmland, timberland, agriculture and food technology, food processing, storage, water and all agribusinesses in the value chain.

Our online news coverage delivers fresh reporting on the firms, the people, the deals and the data that are driving these communities and also showcase hand-selected, third-party commentary and research from industry thought leaders.

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WHAT DO YOU THINK? HAVE YOUR SAY

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PEI Alternative Insight

About our publisher, PEI
Agri Investor is published by PEI, the only global B2B information group focused exclusively on private equity, private real estate, private debt and infrastructure. As these four asset classes continue to grow in scale and significance – for investors, fund managers, financial practitioners and other service industries globally – PEI is positioned to provide unparalleled business knowledge and intelligence to these communities.

Formed in London in November 2001, when a team of managers bought out a group of assets in an MBO from financial media group Euromoney Institutional Investor PLC, PEI has enjoyed more than 12 years of growth. Owned entirely by people who work in the business and with offices in London, New York and Hong Kong, we publish globally recognised magazines and news websites, manage what is probably the most extensive set of databases dedicated to alternative assets, run more than 30 market-leading conferences globally and publish a large library of specialist books and directories.

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MARKET OVERVIEW

A guide to agri investing's sub-sectors

How to get exposure to agriculture

FARMLAND

"They aren't making it anymore"

Farmland investing is one of the more traditional ways of accessing the agriculture sector, with a range of investment vehicles offering exposure to farmland globally across row crops, livestock, permanent crops and dairy. It can be done passively, through buy-and-lease funds, where the landowner rents out the land to a tenant farmer. Returns are primarily derived from rental yields and the capital appreciation of the land, although you can build in some exposure to the performance of operations through crop shares or other agreements with the tenant. Buy-and-lease feels a lot like a real estate play.

An own-and-operate vehicle offers investors a more active investment by giving them exposure to the farm's operations and commodity prices, as well as the underlying land. This investment moves into the private equity domain due to the operating business portion. Farmland investing can also be described as investment into primary production.

AGRIBUSINESS

From farm to fork

An increasing number of private equity firms – some of which have dedicated food and agriculture funds – now focus on investing in the agricultural supply chain. This mainly involves investment into midstream assets such as food processing companies and more upstream into consumer-facing food businesses. Agricultural inputs including fertilisers, machinery, technology, animal health products and seed production are also prevalent in agribusiness-focused private equity funds. In emerging markets, private equity firms are also involved in agricultural infrastructure including cold chain logistics and storage. There is a blurred line on occasion with some private equity firms including land and primary production in their definition, but there are about 18 agribusiness-focused private equity funds globally that focus purely on other parts of the supply chain. And at least five of the world's largest private equity firms have some growing exposure to agribusiness.

AGTECH

A venture capital play

The venture capital industry's interest in the agriculture sector has gathered substantial pace. It focuses predominantly on agriculture technology, itself a relatively diverse sub-sector of the agricultural asset class. The definition of agtech includes all technologies surrounding machinery such as drones, seeds and genetics, chemical synthetic and biological fertilisers, agriculture data collection and analysis, cold storage, mobile technology related to agriculture, food technology including protein replacements and flavourings, water and irrigation technologies. A move towards precision agriculture has underlined many of the inventions and start-ups as farmers look to use limited resources more sparingly. New agricultural markets such as medical cannabis production has also caught the attention of the venture capital and private investment market. In 2014, there were 271 unique investors/venture capital funds operating in this sector although some questions have been raised about whether an agtech bubble is emerging in the sector.

MARKET OVERVIEW

WATER

Whiskey is for drinking; water is for fighting over

While there are only a few investment firms offering pure investment exposure to water, this sub-sector is a hot topic of conversation among the agri investing elite, not least because it's a big limiting factor for many of the world's largest agricultural markets. There are two dedicated investment firms offering water investments on the listed market and in water rights or entitlements. And there are a range of others offering exposure to water through the acquisition of water-rich farmland. Some agtech companies are also focused on water attracting the attention of the venture capital community.

TIMBERLAND

Seeing the wood for the trees

One of agri's oldest sub-sectors, investing into timberland is nothing new and is a relatively established asset class for the US pension fund industry. Investment funds with a 10-15 year life are the most typical vehicle for timberland investment and some asset managers are on their fifth or sixth fund. They offer exposure across US forestland and increasingly in other markets globally such as Australia, Asia, Northern Europe and more recently Ireland. The timberland investment market is also expanding to reach growing industries such as low carbon energy production and some investment firms believe products such as wood pellets will be increasingly in demand in Asia. Plantations offering other timber by-products such as oud oil and palm oil are also very relevant and typically based in Asia-Pacific. There are around 40 timberland investment firms globally.

VERTICAL INTEGRATION

Capturing extra value

This is the integration of assets through different parts of the agricultural supply chain, mainly used to describe investment firms that own primary production assets and some primary processing assets. Increasing numbers of investment firms in developed markets are offering this integrated strategy as a means to pick up some extra returns past the farm gate. In emerging markets, most primary production investment projects will automatically need to invest in processing or other midstream assets in the absence of existing infrastructure. Equally it can also provide another revenue stream as other local producers send produce for processing. Vertical integration has also increased in importance as food safety standards gather pace in emerging markets such as China.

SLM PARTNERS

Red meat: investing in grass-based cattle and sheep production

There is a low-cost alternative to producing beef and sheepmeat that can mitigate climate risks in countries like Australia and provide appealing investment returns, argues **Paul McMahon**, managing partner, SLM Partners.

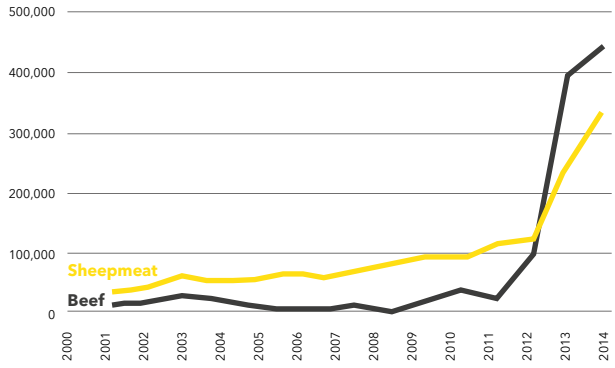
Over the past decade, billions of dollars of institutional capital have flowed into farmland. Most has gone into row crops or permanent crops. However, investors are now looking to livestock as a source of diversification and potentially higher returns. Meat is where global demand is growing most strongly. Prices are at all-time highs: for example, the Eastern Young Cattle Indicator in Australia set a new record of A$4.58 ($3.7; $3.2) per kg in April 2015. And there are opportunities to deploy capital to improve grassland management and enhance returns.

WHY MEAT?

The story about Asia's growing demand for meat is well known. Incomes are rising, dietary preferences are changing and people are eating more meat as they join the middle class. The effects can be seen in the recent explosion of Chinese beef imports. China imported 800,000 tonnes of beef and sheepmeat in 2014, compared to less than 150,000 tonnes five years ago. A nation that was for decades self-sufficient is increasingly turning to global markets to meet its appetite.

On the other hand, supply is constrained because of droughts (in the USA), disease (parts of Brazil) and conversion of pasture to other uses (dairy in New Zealand). As a result, red meat prices have reached record highs in recent years. And according to the latest projections from the OECD and FAO, prices are likely to remain high for the next decade – in marked contrast to the commodity cereals grown on most arable land.

CHINA RED MEAT IMPORTS (TONNES)



Source: USDA, FAO, Global Trade Atlas, Rabobank

Herd of 4,000 cattle moving on SLM property in Australia

HOW TO INVEST

The macro story for red meat is positive. But how should this meat be produced? And what is the best way to invest in this trend?

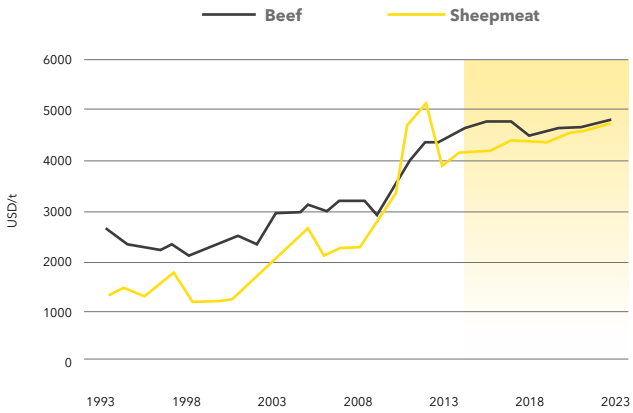
One option is to raise animals in confinement on concentrated feeds – primarily soybeans, maize or other cereals. About 40 percent of all the cereals grown in the world now go to feed animals in this way; 85 percent of soybeans are processed into meal for animals.

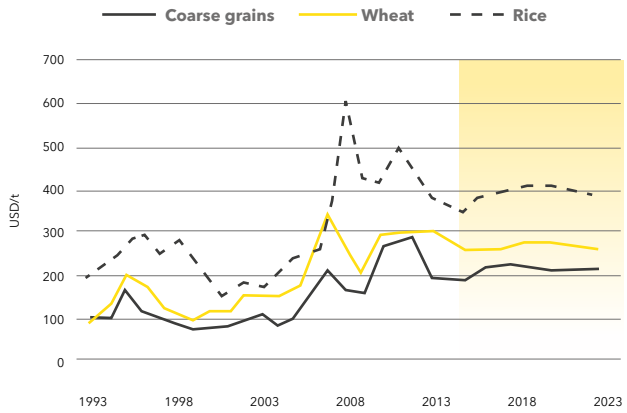
But this is a precarious business model. Animal producers are intermediaries, caught between feed prices that they can't control and meat prices that they must accept. Price-takers to the power of two, they suffer from volatile earnings. For example, Purdue University calculated that the US hog industry lost $4 billion in 2012 when the rising price of maize and soybeans pummelled margins. Cattle feedlots and chicken producers faced a similar storm. The most important driver of profits is often skill at hedging markets – which makes it an unattractive play for an investor who wants the security of real assets.

There is a different way, especially for red meat – raising animals on pasture. Grasslands cover 3.5 billion hectares, or 26 percent of the planet's ice-free landmass. This is where grazing ruminants, such as cattle and sheep, belong. Indeed, grasslands and grazing animals have co-evolved and both require each other to function properly. In regions with extensive grasslands, an appropriate climate, good infrastructure and competitive land prices – unskewed by lifestyle buyers, for example – grass-based systems can be the lowest-cost form of meat production.

SLM PARTNERS

OECD-FAO PRICE PROJECTIONS FOR FOOD COMMODITIES





Source: OECD-FAO Agricultural Outlook 2013-24

The challenge is dealing with climate variability. Native grasslands are usually found in areas of low or intermittent rainfall – if they were wetter, they would probably be forest. Dry periods combined with poor management can degrade pastures. Either production collapses, or farmers are forced to buy expensive feed for the animals, which puts them back on the high-input, high-cost treadmill they were trying to avoid.

THE OPPORTUNITY TO IMPROVE MANAGEMENT

However, with the right management, these problems can be overcome. Careful investment in infrastructure – especially stockwater and fencing – together with innovative forms of rotational grazing – a process known as 'holistic planned grazing' where animals are moved in large mobs – can ensure that pastures get the right amount of animal impact and then sufficient time to recover. This builds soil fertility, increases grass productivity and improves animal health – allowing stocking rates to double or triple. These grazing systems also give the farmer greater visibility into the amount of grass available, allowing animal numbers to be adjusted accordingly. The result is a more resilient system.

Grass-based cattle and sheep operations, when properly managed, are the lowest cost producers of red meat. Once the land has been acquired and properly developed, there should be little need for feed, fertilisers, chemicals or other inputs. Machinery can be kept to a minimum. The primary asset is the land and efforts can be focused on increasing the quality and the value of the land through the management of livestock.

CONSUMER APPEAL

At the other end of the supply chain, there is increasing consumer recognition of the health benefits of grass-based meat, which is higher in omega-3 fatty acids, conjugated linoleic acid and antioxidant vitamins. For example, a new Pasturefed Cattle Assurance Scheme launched in Australia in 2013 has seen rapid take-up and is already paying premiums of up to 10 percent to participating farmers. Demand for grass-fed beef and lamb in North America greatly exceeds domestic supply, leading to even higher price premiums.

There is also the opportunity to tell a positive environmental story. Red meat has got bad press recently, as multiple studies point to the impacts of current production models – land degradation, greenhouse gas emissions, water pollution, antibiotic over-use, competition with food crops. But livestock on native grasslands, when managed properly, can regenerate soils, put carbon in the ground, fix water cycles and close nutrient loops. The animals shouldn't need drugs, because they are healthier, and they don't compete with food crops, as people can't eat grass. It is another reason why consumers are prepared to pay premiums for pasture-raised meat.

Producing meat in a way that takes out many of the input costs, achieves higher output prices and increases the value of the underlying asset (the land) – this is the sort of opportunity that investors may want to look at. ■

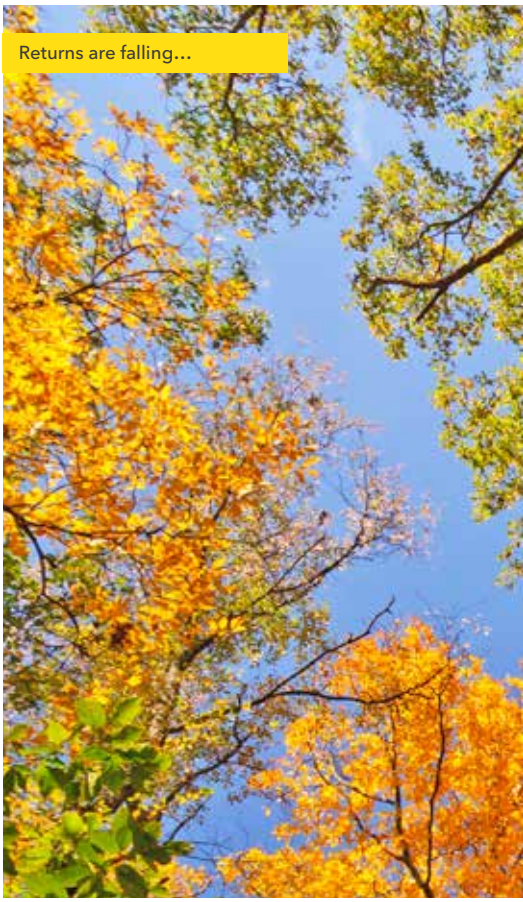
SLM Partners has raised A$105 million for a fund that implements this sort of strategy with beef cattle in Australia. The fund has acquired 480,000 hectares (1.2 million acres) of land so far. The goal of the fund is to double carrying capacity on acquired land, while halving the costs of production. After two years of full operations, the initial results are promising. SLM Partners expects to hold a final close of this fund by Q3 2015.

We are also developing an investment strategy for southern Chile, which is ideally suited to large-scale sheep production. In recent years, the price per kilo of sheepmeat has converged with the price of beef for the first time. There is also potential for a second revenue from wool, increasing diversification. There are a number of case studies in Chile where changed grazing practices and improved genetics have doubled or tripled productivity and profitability.

TIMBERLAND

What next for US timberland investment?

Timberland can be seen as a relatively new investment strategy, but in the US,pension funds have been investing since the 1980s. **Nora Zhou** plots the changes the sector has seen, and takes a look at what return profiles and structures are doing.


Returns are falling...

Forests cover around 30 percent of the world's land area and in North America, the most-established timberland investment market, that rises to a third.

Across much of North America, the era of timberland ownership by big integrated forest companies, whose core business is to produce lumber, paper, candles or tissue paper, is long gone. Those companies started to make way for institutional investors to own the real assets in the 1980s as soon as "they realised they didn't need to own timberland anyone to be profitable in their core business: making end products", says Tony Cascio, senior vice president at global timberland fund manager Resource Management Services (RMS).

In turn, institutional investors realised that timberland could diversify their portfolios and provide them with a good inflation hedge, steady returns and the ability to "store on the stump": leave trees to grow – in height and in value – when demand is low. The 1986 Tax Reform Act, which allowed forestry management expenses, property taxes and interest to be deducted from a landowner's ordinary income, also helped promote the asset class as an alternative to stocks and bonds and the market for timberland investment management organisations (TIMOs) was born.

A large number of institutional investors, from pension funds, private equity funds, university endowments and insurance companies have now been investing in timberland for 30 years and the market has expanded since, arguably becoming more sophisticated over the last 10 years.

"If you go back to the early 1980s it was all US investors," says Tom Johnson, managing director of Timberland Investment Resources (TIR), an Atlanta-based TIMO with $1 billion under management. "Early investors out in Europe starting looking at the asset class in the late 1990s or early 2000s, but large European pension funds didn't get involved until around 2005."

ATP, the Kr750 billion ($114 billion; €100 billion) Danish pension fund, Europe's largest, didn't start looking at timber until 2005 while the largest pension fund in the US, the $305 billion California Public Employees' Retirement System (CalPERS), started investing in timber around 1985.

While timberland is still seen by many institutions as a relatively new and unknown asset class, it has already been through various iterations and developments over the course of its 30-year history as an investment class with the introduction of new markets, investor bases and end products.

> ONE OF THE BIGGEST ADVANTAGES OF THE US MARKET IS THAT A LARGE PORTION OF THE WOOD GROWN HERE IS USED HERE, AND NOT DEPENDENT ON EXPORTS.
> **David Zell, Timbervest**

Around the time when European investors started coming to the US market "the complexion of the asset class changed", says Johnson. "Particularly, there has been an expansion of investing offshore as well," he adds. Other global markets such as Australia,

Latin America, New Zealand and parts of Asia have started to grow in popularity where fund managers argue great sunshine and quicker growing periods can lead to higher returns.

GLOBAL COMPETITION

David Zell, chief operating officer of Timbervest, the fund manager with $1.2 billion of assets under management, is not convinced.

"One of the biggest advantages of the US market is that a large portion of the wood grown here is used here, whereas most other timber producing countries like Brazil and New Zealand are export-dependent," he says. "If you produce the material in the same place that the bulk is being used, there is lower risk." The US also has the "best infrastructure of any large timber producing country", especially roads, which lowers investment costs and risk, he adds.

The increase in geographical opportunities has helped to increase the timberland fund manager universe, argues Marc Cardillo, managing director of hard assets research at investment consultancy Cambridge Associates.

Compared to other alternative markets such as private equity, energy and real estate, "it's still a small universe", he adds. While this can be positive and make it easier for institutional investors to have a good knowledge of all options available – an impossible feat in other asset classes – global timber fund managers tend to have short track records making them much harder to assess than their more experienced US counterparts.

Understanding the local environment for a timberland investment, as with the agricultural asset class as a whole, is essential. While the organic growth of timber is appealing compared to other real assets that don't grow such as metals and real estate, timber is arguably more affected by local conditions. Weather patterns, geographical characteristics, soil quality, fire potential, construction and the local economy are all variables in a tree's growth and performance as an asset.

"It's true that some of things really depend on the local market," says Timbervest's Zell. "What we have seen coming out of the recession is that not all parts of the country have come out of it at the same rate. A lot of the land is in small communities which have their own ups and downs, so the market is locally dependent, but also nationally and internationally dependent too."

RETURNS

Timberland return expectations have fallen 2 percent over the last 10 years to a nominal 8 percent annual return, according to managers, many of whom blame the fall on low interests in the wake of the global financial crisis.

TIMBERLAND

"I think all real asset classes, not just timberland, have reduced their return expectations because of the decline of real rates," says TIR's Johnson.

Cascio from RMS attributes growing investor numbers and sophistication to the falling return landscape.

"Investors are more sophisticated. They know more and similarly, sellers of timberland are also more sophisticated. They know what they have and what the return potential is," Cascio tells Agri Investor.

Commentators have also blamed high value land purchases during the housing boom before the financial crisis for weak returns, complaining that the sector has not recovered as strongly as anticipated.

But timberland values have increased since 2012, according to data from Timber Mart-South, a data company, promoting increased supply and a wave of transactions at the end of 2014 and the start of this year. This does not necessarily spell good news for returns.

Forestry intelligence service RISI produced a market report in February that pointed to mixed sentiment among fund managers. "Many are confident, a few are bearish and some are in between, one TIMO executive expects a 'really good year' while another sees 'a cloudy picture'. A third suggests a slowdown in 2015 as the pipeline, especially in the US West, was drained in 2014, reads the report.

Wood's strength is its versatility

PRODUCT RANGE

Fund managers in the positive camp point to naturally increasing demand for wood products but also to the creation of new wood-based markets, namely wood pellets.

Timbervest believes wood pellets are the next big trend for the US timber market as demand spreads from the northeast of the US, where houses, schools and hospitals are heated using pellets, to Asia.

According to consultant Hawkins Wright, demand for utility-grade wood pellets is expected to grow at a compound annual rate of 21 percent from 2014 to 2020 due to the conversion of coal-fired power generation to co-fired or dedicated biomass plants in northern Europe, South Korea and Japan. And there is plenty of room for export growth as the UK alone consumed 73 percent of US wood pellet exports in 2014, according to the US Energy Information Administration. Asia consumed just 3 percent of exports in 2014 by comparison.

Timbervest has already started to position its portfolio to take advantage of this demand, arguing that the investment case is even stronger with the ongoing expansion of the Panama Canal. This will provide an easier trade route for wood pellets to Asia and help timberland prices in south and Gulf Coast regions of the US to improve, chief executive Joel Shapiro and chief investment officer William Bowden argue.

Cambridge Associates' Cardillo pointed to another timberland investment strategy of interest; those with a conservation component. Transactions like this, which involve mitigating the impact of construction and industry on natural resources, are more complicated for investors but often less competitive, he says. "We also like the aspect of getting a portion of the initial capital back from the sale of a conservation easement earlier in the life of the investment than is typically the case in a more traditional timber investment."

INVESTMENT STRUCTURE

Although investments in timberland don't all start with fund managers planting trees in the ground, it does take investors a long time to see returns. The typical holding period for timber is 10-to-15 years which many investors are comfortable with.

But according to information provided by Hancock Timber Resource Group, it can take 10 to 80 years for trees to reach merchantability, creating some debate as to the suitability of the private equity fund structure used by most managers.

"I don't know if that's ideal," says Cardillo. "I think it is better suited for traditional private asset classes where over the course of the 10-year fund the sponsor buys a company or a property, executes a specific business plan over a three-to-five year period to enhance value and then sells it. That buy-fix-sell dynamic doesn't necessarily exist for a typical timber investment."

RMS' Cascio agrees. "We think that having a term that's 10 to 15 years is somewhat arbitrary and doesn't necessarily fit the long-term nature of timberland." RMS has started to strongly believe that an open-ended, evergreen structure might be a better fit for some investors in this asset class where they can determine when they would like to sell their interest in timberland or even add to it through time.

"Depending on the nature of how conservative they are or how flexible they are allowed to be in their thinking, I don't think there will necessarily be a specific type of investor that prefers the new structure," he says.

Funds are not always necessary anyway, he adds.

"Some investors will always prefer to be a separate account investor if they are larger and will not need to be in any sort of fund structure. Instead they can buy and own directly." ■

CRAIGMORE FARMING

The milk story

Global consumption growth figures show milk outpacing grains, creating an appealing investment opportunity. But investors must be aware of the risks involved, argues **Nick Tapp**, chairman at Craigmore Farming.

Agriculture is facing unprecedented growth in demand for food, from both rising populations and a global shift to protein-rich diets as incomes rise. The traditional response of finding and farming more land to satisfy demand is no longer possible – we are farming almost all the land there is to farm. So we have to farm our farms more effectively, making more efficient use of sunshine and water, particularly on the best soils. And to do this requires investment.

Agriculture is a capital intensive industry, requiring substantial investment in land, machinery, seed, fertilisers and livestock before a penny is received in income, and often against a backdrop of wildly fluctuating global commodity prices. So it should be no surprise that the investment community has found other sectors easier to understand and more rewarding over the latter part of the 20th century.

But the industry is accessible and the inherent complexity and heterogeneity can be addressed to allow confident deployment of capital into most sectors of what is effectively an inflation-proof real asset, with annually increasing productivity, and an income stream. Within agri's various sub-sectors, dairy can be particularly rewarding.

DAIRY SUPPLY AND DEMAND

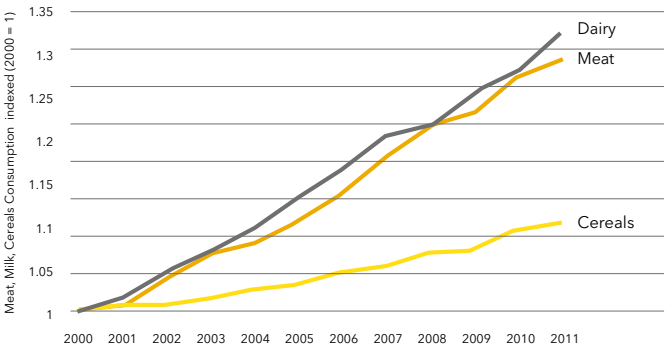
Consumption of protein, both meat and milk, over the last 60 years and more, has enjoyed the double driver of demand growth and has seen dairy consumption grow faster than that for grains, according to Food and Agriculture Organisation statistics. That growth has accelerated over the past 15 years and China remains a particularly key market for dairy with imports up 40 percent over the past five years, according to Global Trade Information Services. And global demand across all markets is growing at some 2 percent a year, according to Dutch lender Rabobank.

To meet that demand, the major milk producing and exporting countries have responded to price signals and most have increased their output. But the challenge facing all producers is a volatile commodity market that reacts to global surpluses and shortfalls. To accommodate this volatility, producers have to manage their cost of production and this is where dairy becomes interesting; not all producers are on the same playing field – indeed some are not in a field at all.

The great majority of the world's dairy cattle spend most or all of their time in sheds, feeding principally on grains and protein crops that are grown elsewhere, harvested, stored and delivered to those sheds. The minority enjoy a grass-based diet and spend much of their time grazing in fields – these cattle are in New Zealand, Ireland, England and a few other places, where it is possible to grow large volumes of cheap, high quality rye grass. This grass-based grazing system of dairy farming delivers a substantial cost of production advantage and one which does not vary with the price of grain.

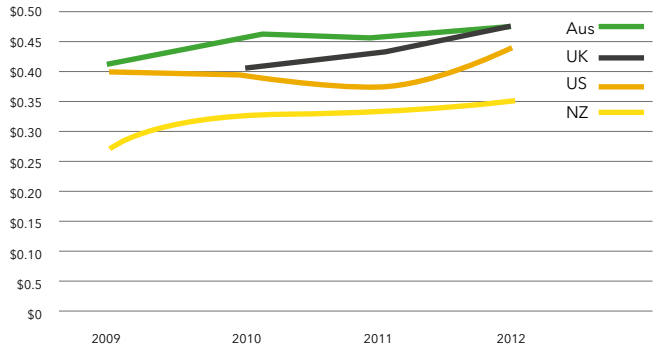
This cost of production advantage can be seen in the growth of total production from the major exporting countries of the

GLOBAL CONSUMPTION OF MEAT, MILK AND CEREALS IN THE LAST DECADE



Source: FAOStat

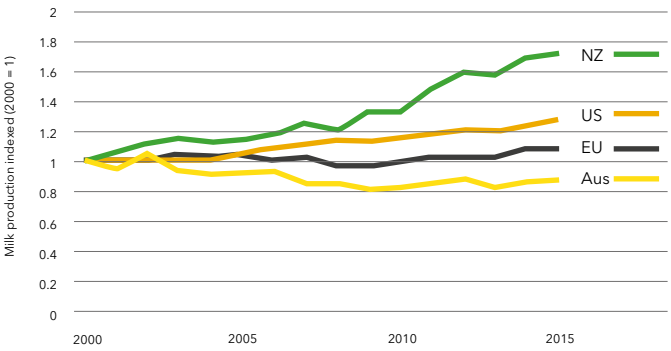
US, NZ, AUS, UK COSTS PER LITRE OF MILK (IN USD)



Source: Source: DairyCo, Abares, USDA, DairyNZ

CRAIGMORE FARMING

MILK PRODUCTION IN EU, NZ, US AND AUS 2000 - 2015



Source: Source: USDA

world. Industry growth has followed in countries where there is that advantage, with New Zealand the significant 'out-performer', and the US holding market share.

NEW ZEALAND

All farm investments face the same four significant areas of risk. Three of these sit beyond the farm gate and must be addressed by the investor building a farm portfolio. The first is political risk, weighing more heavily on the ownership and occupation of rural land in many countries than for most other investment assets. When the challenges of under-invested infrastructure and the difficulties of doing business in remote areas is added to the mix, there is real merit in investment in a jusrisduction with low political risk. New Zealand has a Westminster-style government, strong rule of law and recognition of property rights, and it recognises the value of overseas investment in enhancing the productive potential of a number of industries – including farmland.

The second area of risk is weather. Weather variability – usually centred around rainfall but occasionally also extremes of temperature – is the most substantial factor affecting the physical productivity of farmland. New Zealand enjoys a benign, temperate and maritime climate, with few extreme or disruptive events to impact farm production. Much of the South Island also benefits from cheap and readily-available water for irrigation; a substantial factor in reducing the risk of variable rainfall or drought.

The third area of risk is commodity prices which can be volatile and uncertain. But in New Zealand, the ability to grow the cheapest of feed ingredients rye grass – due to kind weather and lots of available water – eliminates much of this risk. As the global low cost producer, the New Zealand dairy industry operates with considerable competitive advantages.

The final challenge to overcome is very firmly back on the farm and ultimately makes the difference between real performance and a modest outcome: the quality of the operational management.

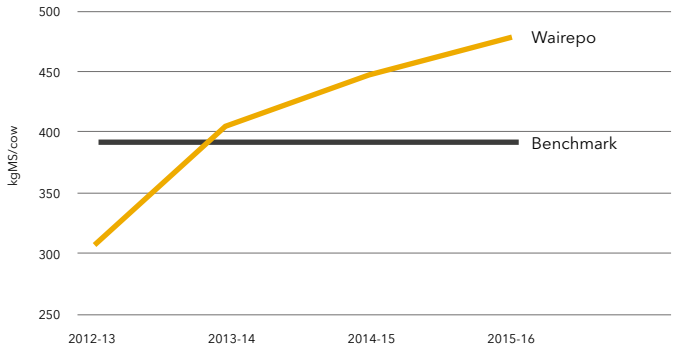
"Successful farm management is about making twenty small decisions every day…and getting nineteen right".

Every farm sector requires very great attention to detail and a long term view on farm productivity and sustainability. Farming does not lend itself to central 'command and control' structures; delegation of a wide range of everyday decisions to committed, incentivised and aligned operational managers is essential to deliver the potential of any farm – see the graphs below for a 'new' farm converted to dairy.

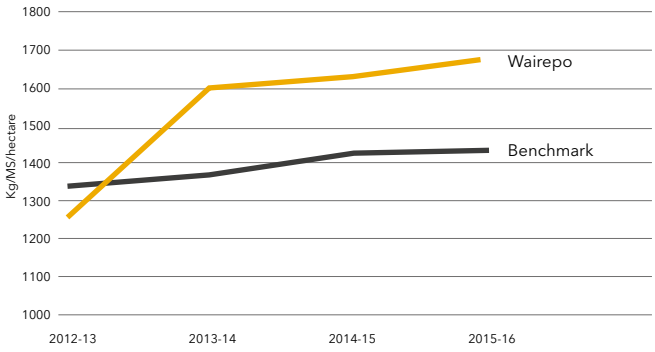
Agriculture investors should be seeking out managers with considerable local knowledge, in structures which offer excellent alignment, incentive and a culture of creative, well-informed self-analysis. This is not always easy to find. ■

CRAIGMORE WAIREPO PRODUCTION & FORECAST 2014-16

PER COW VS. REGIONAL BENCHMARK



PER COW VS. REGIONAL BENCHMARK



Source: Source: Craigmore Farming Partnership

Investing in New Zealand dairy farming – by securing high quality, productive farms

– with reliable rainfall and readily available water for irrigation

– to deliver global low cost milk

– to growing markets

– with best in class aligned management

CRAIGMORE FARMING

"Successful farm management is about making 20 small decisions every day and getting 19 right"

FUNDRAISING

Making hay: some of the industry's largest fundraising efforts

TIAA-CREF GLOBAL AGRICULTURE

Biggest farmland fund

Size: $2 billion

This 2013-vintage vehicle was the first to employ a co-investment/club deal structure, via a limited liability company, away from the typical 10-year limited partnership private equity fund model employed by many farmland investment firms. The vehicle's structure represents a desire from investors to hold on to well-performing assets for longer. It is also one of few farmland funds that is invested across multiple countries. TIAA-CREF is currently marketing its second vehicle which is targeting more than $2 billion and a similar investment strategy. Both largely employ buy-and-lease investment strategies across different global regions.

Geographic focus: *Australia, Brazil and the US.*

LPs: *AP Fonden 2, the British Columbia Investment Management Corporation and the Caisse de dépôt et placement du Québec.*

PAINE & PARTNERS CAPITAL FUND IV

Biggest agribusiness private equity fund

Size: $893 million

The largest-ever private equity fund to focus solely on food and agribusiness companies, Paine & Partners closed in January 2015. It will invest mainly into midstream assets such as food processing, agricultural inputs such as seeds, fertilisers and animal health, and technology such as drip irrigation.

Geographic focus: *North America*

LPs: *New Mexico Public Employees Retirement Board*

BTG PACTUAL BRAZIL TIMBERLAND FUND I

Biggest timberland fund

Size: $860 million

A first for the Brazilian investment bank, this Brazilian timber fund is one of few fund offerings in Brazil and surpassed its $750 million target after attracting commitments from institutional investors. The fundraising process was around 18 months and included road-showing the fund to both local and international investors. It is one of the largest timber funds on record.

Geographic focus: *Brazil*

PLANET LABS

Biggest agtech investment

Size: $118 million

The satellite company's Series C round of funding was one of the largest agtech-related venture capital raises on record. Taken past its $93 million target by the International Finance Corporation, PlanetLabs is seen as a leading data and information source for economic development, and the round attracted commitments from a range of venture capital firms.

Geographic focus: *global*

Investors: *Data Collective, IFC, Yuri Milner, Founders Fund, Innovation Endeavours, Felicis Ventures and more.*

BLACK RIVER FOOD FUND 2

Biggest emerging market fund

Size: $700 million

The biggest emerging market agribusiness fund according to EMPEA records, this is Black River's second pure private equity fund related to food and agri; it holds no land assets. Food processing and supply chain management companies are in its remit. At the same the Cargill subsidiary closed the Black River Agriculture Fund 2, an own-and-operate farmland fund, on $587 million. That fund does invest in primary production assets such as dairy and meat production in both emerging and developed markets.

Geographic focus: *Asia*

LPs: *PGGM*

ACM PERMANENT CROPS FUND

First vertically-integrated fund

Size: $250 million

Closing ahead of its $200 million target, ACM is one of few funds that focus on vertical integration by purchasing primary production/farmland assets and other assets further up the value chain. The fund aims to capture value beyond the farmgate through simple midstream processing assets. It will either acquire existing processing plants or invest into building new ones.

Geographic focus: *California, US*

LPs: *Washington State Investment Board, University of Oregon, Aether Investment Partners, Maine Public Employees Retirement System.*

A bubble that won't burst

Agriculture technology has captured the imagination of the venture capital community, particularly amid growing hype about precision agriculture tools such as drones. And it still has some way to go, writes **Demitri Diakantonis**.

As the global population grows, there is pressure on farmers globally to be more productive with the limited amount of agricultural land available to them. And as the global population reaches 9 billion by 2050, according to the World Bank's famous statistic, some argue the amount of farmable land is in decline due to real estate development, water limitations and land degradation.

The need to feed more people on less land, and in a less harmful way, presents an opportunity for technology companies and entrepreneurs to step up and solve the many issues laid at the feet of the farmer.

"The underlying imperative for us to produce more food for a growing population with less land and less water is now widely accepted," says Michael Dean, co-founder of online fundraising platform AgFunder. "The only way we are going to do that is through technology and the venture capital that has been at the forefront of recognising that."

This realisation has led to the emergence of precision agriculture, which enables farmers to optimise spending and get the most out of their land. Precision ag has transformed in recent years from simple GPS in tractors to sensor technologies, weather technology, mobile applications and satellite data providers. These all aim to allow farmers to take a closer look at their productivity and make decisions. Some in the industry now call it decision ag.

"The world has forever changed," says Jesse Vollmar, the chief executive and co-founder of Michigan-based farming data mobile application developer FarmLogs. "We now live in the information age and decisions can be made using data instead of gut instinct alone."

FarmLogs has developed a mobile application that tracks farming activity, from weather to inventory to expenses, in one platform. "Mobile apps enable the delivery of information to the farmer in a way that is intuitive and actionable," says Vollmar.

Venture capitalists embraced the company at its latest Series B round of funding, when it raised $10 million from a group of firms including Hyde Park Venture Partners, a firm focused on software start-ups in the Midwest.

"The sky is the limit for yield maximisation and cost management," says Guy Turner, director at Hyde Park.

FarmLogs is just one company offering a farm management system, according to AgFunder, which reported that at least six of the agtech companies raising capital last year had competing technology in this space.

Of course, there are more precision ag companies in the market. Ag Funder estimates there were 70 deals, raising $276 million, in 2014 from 89 unique investors. This includes software, hardware, robotics and lastly drones – the area that attracted the most investment.

Precision agriculture is just part of the agtech sector, accounting for 30 percent of deals and 12 percent of invested capital during 2014.

AGRICULTURE TECHNOLOGY

Agri through the lens

But there are concerns in some circles that the large number of companies offering similar farm management are the early signs of an emerging agtech bubble.

Speaking at the Milken Institute global conference in April, Scott Jacobs, chief executive and co-founder of San Francisco-based investment firm Generate Capital, raised the issue:

"If it follows the same pattern which it followed before, which is a bunch of IT retreads like me trying to invest in a hard asset infrastructure incumbent-led world, it has disaster written all over it. It's very hard to imagine a small amount of money going to a small team of a few people, that within a small amount of time turns into big revenue."

And investors have been piling money into other agtech sectors, such as biotechnology, seed and soil technology, bioenergy, indoor agriculture and food technology.

Some $1 billion was raised by agtech during the first quarter of 2015, nearly half the $2.36 billion raised in total in 2014, according to AgFunder. Over half of the deals and 20 percent of the capital were Series A or seed rounds of capital raising, which points to the huge growth potential of the sector, according to AgFunder's Dean.

"PRETTY MUCH ALL TECHNOLOGIES WITHIN AGTECH ARE GROWING AND THERE IS A RECOGNITION THAT INVESTMENT IN THESE TECHNOLOGIES IS GOING TO BE IMPORTANT IN THE LONG RUN AS MORE AND MORE FARMERS ADOPT THEM."
Michael Dean

"I think this year's [venture capital] activity in agtech will continue to be just as robust as last year," says Dean. "Pretty much all technologies within agtech are growing and there is a recognition that investment in these technologies is going to be important in the long run as more and more farmers adopt them."

Matija Zulj, founder of knowledge-based farming application Agrivi, agrees: "I believe that at the moment there is still enough open space and that a bubble will not appear for few more years. Many farmers are just starting to embrace technology and there is a lot of space for growth. The penetration of agtech is still low and the market is embracing the technology so there is still plenty of room for more market growth and demand which will avoid a bubble."

Dean and Zulj instead point to consolidation in the sector and the creation of

larger, stand-alone leaders. "There will be five to eight global leaders in this space," says Zulj. "This is not a monopolistic market. Like in any vertical industry, there will be a few clear market leaders."

The drone sector is another that has attracted a huge amount of investment – $98 million during the first quarter of 2015 – and has much further to go, according to the Association for Unmanned Vehicle Systems. The group projects that the drone industry could be worth as much as $140 billion over the next decade, with most of the growth coming from precision ag.

Regulatory changes will also help the sub-sector. From November, the Federal Aviation Administration will allow companies to fly drones commercially on a case-by-case basis with a permit. This means that widespread agricultural data can be captured for the first time; great news for tech start-ups that have been limited to pilot programmes.

The venture capital industry is well aware of the potential of drones. Drone maker 3D Robotics was recently able to expand the size of its Series C round of capital raising from $50 million to $64 million after a new investor came on board at the last minute.

"Most farmers know they need some kind of aerial imagery because you can save massive amounts of water and energy," said Zachary Bogue, co-managing partner at Data Collective, a Californian venture capital firm.

Bogue is even more interested in satellite imagery providers, another sub-sector of agtech with huge potential, and led a $70 million Series C round for Planet Labs, a San Francisco-based satellite imaging company. Planet Labs later increased the round to $118 million after the International Finance Corp led a top-up.

While the sudden boom of any industry rings alarm bells after the dotcom bubble, estimates suggest only 1 percent of farmers globally use data technology, so there is still a long way to go until this market is saturated. ■

"THIS IS NOT A MONOPOLISTIC MARKET. LIKE IN ANY VERTICAL INDUSTRY, THERE WILL BE A FEW CLEAR MARKET LEADERS."
Matija Zulj

HIGH TIMES AHEAD

It is not just drone makers that have been receiving attention. Cannabis-related technology companies have also attracted capital from the venture capital community.

Moves to legalise the use of cannabis medically and recreationally across the US, and other parts of the world, are cause for excitement, industry insiders argue. And a private equity company dedicated to funding the fledgling legal industry – Privateer Holdings – raised as much as $75 million earlier this year.

Privateer has the high profile backing of Peter Thiel, founder of PayPal and investor in other tech giants such as Facebook and Spotify, and has collaborated with the family of Bob Markey to create a cannabis brand, Marley Natural. US rapper Snoop Dogg has also invested in the sector, taking part in a $10 million Series A round of financing for cannabis delivery company Eaze.

"The demand for marijuana has picked up pretty significantly in the last year and we think that trajectory is going to increase," says Matt Karnes, the founder of cannabis-focused research firm GreenWave Advisors.

"We are seeing institutions start to take an interest in the sector so it will be interesting to see how that will play out. They are starting to warm up to the sector," he adds.

Eaze is not the only online cannabis delivery company that has been looking to raise capital. San Francisco online cannabis delivery service Flow Kana is looking to raise $3 million to $5 million to develop its site which matches cannabis farmers with consumers and has raised $400,000 from a small group of angel investors so far.

There are concerns that some cannabis-related services are too early to a market that has yet to be federally legal or regulated. And the reputational risk for some institutional investors might be too much to bear.

But with a black market projected to be worth over $100 billion and regulatory relaxation on the way, this sector is in for some high times.

AMERRA CAPITAL

AMERRA Capital talks agriculture debt

Agribusiness debt is a very rare investment niche that AMERRA Capital has been pursuing for seven years across three funds. Recently the firm has moved into private equity investment and counts one of Brazil's largest grain traders Fiagril as its portfolio company. Here **Craig Tashjian,** partner at the firm, describes the wealth of opportunity in his niche.

How and why did you start offering private investors access to agribusiness debt?

When we approached the market with our debt strategy in 2008-09, alternative debt capital was a very new idea. Not only was agriculture a fragmented industry, but the idea of agriculture alternative debt was unique and even remains so today. During investor pitches, we were often asked: "can you prove it?" While many investors required an asset management track record, others sought new strategies and early-stage managers in differentiated alternative markets.

Now our agriculture debt performance characteristics have been put through over six years of data crunching, displaying little-to-no correlation with other major asset classes and low volatility statistics. We find these criteria match well with institutional investors holding defined cash liability budgets, such as pensions, endowments, foundations and insurance companies. Our debt strategy throws off quarterly cash distributions which matches their cash liabilities well. Those investors also like the very low or non-correlated nature of agriculture debt.

How and why did you evolve to start offering both debt and private equity investments in agri?

Since 2009, we've invested over $2.5 billion in over 100 companies. Almost 100 percent of our origination is sourced on a direct basis and oftentimes through an historical banking or AMERRA relationship. As alternative debt capital became a normal fundraising exercise for our clients, we started to receive private equity opportunities from our debt clients due to our privileged trusted advisory status. Our team know the portfolio companies and peer groups well, allowing us to be strategic partners. Frankly, it was market demand causing us to react so we view the private equity strategy as a natural evolution for AMERRA.

SINCE 2009, WE'VE INVESTED OVER $2.5 BILLION IN OVER 100 COMPANIES.
Craig Tashjian, AMERRA Capital

Moving onto the supply side -- the issuers -- how would you describe the demand there?

We have found debt market demand from portfolio companies to be very robust. The bank capital adequacy requirements of other regulated institutions fall through much of the economic framework of Basel III. These credit constraints, which are often combined with emerging markets, present challenges for global agriculture and put stress on the cost of capital. So this limits agribusiness access to the public debt and equity markets.

With this in mind, it has been quite natural for AMERRA to evolve into providing private equity. Our trusted and strategic relationship with portfolio companies creates an abundance of private deal origination.

We manage the debt and equity positions as separate teams and it is not our goal to provide both debt and equity to the same issuer, although that could happen. What we like to emphasise is that we are not a generalist buyout firm entering the agri space; we are agribusiness professionals sensing demand for capital, across the spectrum of debt and equity.

What do you look for in a portfolio company?

Many of our investment themes revolve around a lack of human capital, unlocking infrastructure bottlenecks and consolidation.

In many markets, inefficient logistics due to under-investment in infrastructure presents tremendous value creation. The ability to transport, store and/or condition goods is a fundamental requisite for an effective agribusiness. Deploying capital in such assets can provide interesting long-term cashflows and investor IRRs.

Superior management is always an essential and identifying them in the highly private agribusiness world consumes time. After decades of providing debt and PE to the industry, we are able to evaluate and establish superior management teams. We seek to build on and complement management, often times by adding strategic advice, finding resources and knowing where to go for solutions.

Finally, much of the agriculture world is highly fragmented. Applying good management, with innovation and capital offers ample opportunity for consolidation economics.

In which geographies do you operate?

We operate across the Americas and Europe. ■

AMERRA

Customized Agricultural Investing

AMERRA Capital Management, LLC is a New York based agribusiness investment manager with over $1 billion in assets under management. AMERRA deploys capital through both private equity and debt strategies. AMERRA acts as a boutique merchant bank supporting growth-oriented agribusinesses which are often family controlled.

AMERRA also provides a full spectrum of customized debt capital products ranging from senior secured to junior debt investments including various forms of working capital, land transformation and CAPEX programs.

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WATER

Water: the growing and necessary investment

A parts of the world face the worst drought in their history, managing water supply is top of mind for regulators globally. The private investment market has a role to play in this development, writes **Louisa Burwood-Taylor**

Gold at the end of the rainbow?

Investing into water is nothing new. Asset management firms Water Asset Management and BlueSky Water Partners have been at it since 2006 and 2012 respectively. But awareness of the need to regulate and control water usage for agriculture is growing quickly, particularly against the backdrop of the worst drought in history in California and fears about the impact of the returning El Nino weather system in Asia-Pacific.

Earlier this year, the United Nations highlighted the importance of forests, wetlands and grasslands in the conservation of water and sustainable water management at its World Water Day in March. It also highlighted the huge amount of water needed to produce food; just two steaks need 15,000 litres of water.

So how are private capital investors both contributing to and taking advantage of this scenario?

WATER RIGHTS AND WATER MANAGEMENT

Water Asset Management recently closed a $100 million private equity fund that buys water-rich farmland, leases it out to farming operating partners and then helps develop the property's water resources so that extra water can be sold to other consumers. This development includes improving efficiencies, establishing conveyance or re-permitting water rights.

"Our downside is an agriculture land leasing return," said Matthew Diserio, president of Water AM. "Our upside comes from a monetisation event from the developed water resources which we sell on."

The fund, Water Property Investors, was sold to a mix of institutional investors from state pension funds to funds of funds to endowments and also to high net worth individuals, according to Diserio. Overall, the company has transacted on $1 billion of direct water investments and the interest is only increasing, he added.

"There has been increasing recognition by allocators that water is an essential resource that requires a substantial amount of capital every year but that also has outstanding return and economic characteristics. There's lots of inefficiency in the water industry and mostly because it's not an extremely well-understood industry and it's capital intensive. But that's the opportunity: by providing capital and industry competence, we are in a unique position to generate returns by providing solutions."

> THERE'S LOTS OF INEFFICIENCY IN THE WATER INDUSTRY AND MOSTLY BECAUSE IT'S NOT AN EXTREMELY WELL-UNDERSTOOD INDUSTRY AND IT'S CAPITAL INTENSIVE. BUT THAT'S THE OPPORTUNITY.
>
> **Matthew Diserio**

Water Asset Management also offers investors exposure to the space through its two open-ended public equity funds, which currently manage $400 million between them. These are global funds investing into the listed equity of regulated water utilities, concessions, related infrastructure, wastewater companies and more.

The fund's exposure to emerging markets has been as high as 40 percent at times and Diserio believes there is a big opportunity to improve the systems in these countries and create an impact.

"We love the fact that the water industry both generates exceptional long-dated inflation protected returns and at same time, we think is the single highest impact industry in the world," he said. "We think water investing

WATER

is responsible investing."

WATER INFRASTRUCTURE

Mining tycoon Andrew Forrest has recently started working on a huge-scale water infrastructure project in Australia through his company Minderoo Group. The project, which aims to redistribute the resources throughout the country and replenish its aquifers faster and in greater volumes, will need a huge amount of capital and Forrest is planning to appeal to Chinese investors for investment over several billion dollars.

Forrest has ties with various Chinese entities from his 15 years of dealing iron ore, and last year established the ASA 100, a Chinese-Australian agriculture and food safety initiative including participation from COFCO, the Chinese state-owned food processing conglomerate. Forrest and Minderoo are currently assessing pitches from Australian universities to provide research for the project; some 60 universities pitched and at least 10 are expected to be chosen with at least one from every Australian region. Forrest is also understood to have pitched the project to attendees of the Boao Forum for Asia in March.

Australian alternatives manager Blue Sky Water Partners has recently introduced a new fund offering exposure to water infrastructure as well as water rights. The firm is currently pre-marketing a A$300 million fund that will invest across water rights, mid-tier agriculture infrastructure assets and agribusiness private equity. A large number of the infrastructure assets in the portfolio are expected to be water-related such as water transmission networks. These could include pumping stations, storage reservoirs, distribution and some water treatment.

Australia's recent federal budget promised drought assistance funding to farmers and also agreed to deduct spending on water facilities from July 2016 tax bills in an effort to help farmers prepare for tough weather conditions ahead. Dams, tanks, bores, irrigation channels, pumps, water towers are all covered under the initiative. While this is good news for farmers, irrigation machinery providers, pipeline manufacturers and more, it's not likely to have any meaningful impact on Blue Sky's Water Fund or Strategic Australian Agriculture Fund, according to Kim Morison. It could have some applications for the firm's water utilities business though, he added.

WATER TECHNOLOGY AND CONSERVATION

Increasingly dramatic global weather systems are encouraging entrepreneurs the world over to come up with technologies to help combat the risk of water shortage, or at least improve water usage efficiency in farming.

One company currently raising capital is SWIIM, a Californian hardware and software company that enables farmers

WATER

Channelling water and revenue

to closely monitor their usage and sell unwanted water rights back into the market. "It is similar to energy initiatives that enable consumers to sell energy back to the grid when using solar panels and so on," said Kevin France, chief executive, at SWIIM.

SWIIM is currently raising $3.5 million in Series A funding through online fundraising platform AgFunder.

In Europe, Hungarian agtech company Water&Soil has created a liquid solution that can be applied to soil to maintain its humidity resulting in more efficient use of available water. The company is seeking investments of $10 million to roll out the product's distribution globally.

"We can save up to 50 percent of irrigated water and extend between one and two times the amount of time that crops can survive without irrigation [such as during drought]," director Richard Vattay told *Agri Investor*.

Most water technology companies focus on how to conserve water, but there are also some pure agriculture projects that aim to do this including the recent winner of Morgan Stanley's Sustainable Investing Challenge. A project called Blue Forest pitched an investment idea to increase the amount of water available to utilities companies through pro-active forestry management. This proactive management would stop forests overgrowing, which improves their ability to retain water. Snow disappears much more quickly in an overcrowded forest, for example.

For each acre of managed forestland, Blue Forest predicts that they can generate 125 gallons of water which they could effectively sell to water utility companies and hydropower plants.

Blue Forest, a group of students from Haas School of Business at the University of California, predicted that there is a $1.6 billion addressable market in the western US for these services.

INCREASINGLY DRAMATIC GLOBAL WEATHER SYSTEMS ARE ENCOURAGING TECH ENTREPRENEURS TO HELP COMBAT THE RISK OF WATER SHORTAGE, OR AT LEAST IMPROVE WATER USAGE EFFICIENCY IN FARMING.

Matthew Diserio

There are also other initiatives including water temperature regulation. New laws in the US regulating the temperature of wastewater from industry will soon create a water temperature mitigation credit market for investors to get exposure to. This is part of a wider ecological restoration investment movement that include the mitigation of damage to wetlands or endangered species in the country.

"The water temperature credits market has the potential to create and trade $5 billion of credits," Dave Chen, principal at Equilibrium Capital told *Agri Investor*. "Non-governmental organisations are developing some of the first sets of credits now and that's where it should be. These first pilot projects are critical in that they prove out the market, and they develop the important market tools needed for scale, such as price discovery and risk pricing that sets the base for secondary transactions [and private sector involvement]."

Investment firms could mitigate the impact of wastewater that is heating up local waterways but implementing cooling measures as simple as growing trees along a river bank to provide shade.

Most of the water-related investment opportunities and technologies available have one common challenge; they are difficult to understand at first glance and require deep research into the behaviour of water and how it can be monitored.

Water is also an emotive topic; asset management firms must tread carefully to avoid appearing to take advantage of a crisis in much of the world, an investment consultant told *Agri Investor*.

But Diserio argues, however, that regulating and pricing the resource to its fullest value is the best way to ensure the supply of sustainable long term water and sanitation supply globally.

"Water has historically been underpriced relative to its delivered value and it has been taken for granted. If it is priced more appropriately and therefore no longer taken for granted, innovation and efficiency in the system will flourish," he said. ■

ASIA PLANTATION CAPITAL

Agarwood has been used for its beautiful smell for centuries.

Wood of the gods

Agarwood, a byproduct of the aquilaria tree, provides a diversified return profile for investors. But sustainable plantation management is essential, says **John Berry**, business development director at Asia Plantation Capital

When one thinks of forestry, or plantations in general, one of the first things that spring to mind is palm oil. There are, of course, many types of plantations producing many different types of forestry products, such as teak, rubber and coconut. Few people, however, recognise the name of one of the most valuable natural products on the planet: the aquilaria tree and its highly-prized resinous wood known as agarwood.

Agarwood has a rich history in culture and religion dating back thousands of years. The wood is mentioned many times in the Old and New Testaments, the Holy Koran, and various other religious texts. It has been known by many names, derived from the various cultures where the use of agarwood was, and still is, prevalent.

> THEREFORE GOD, YOUR GOD, HAS ANOINTED YOU WITH THE OIL OF JOY ABOVE YOUR FELLOWS. ALL YOUR GARMENTS ARE FRAGRANT WITH MYRRH AND ALOES AND CASSIA.
>
> **Book of Psalms**

"Therefore God, your God, has anointed you with the oil of joy above your fellows. All your garments are fragrant with myrrh and aloes and cassia."– Book of Psalms

Today it is commonly known as agarwood, oud or gaharu, but has also been called aloes, aloeswood or eaglewood, and is called chen xiang in China. The term oud or oudh comes from the Arabic word for wood and is commonly used to describe one of its most highly prized by-products, oud oil. Gaharu comes from the Sanskrit word aguru, which means 'heavy wood', as high quality agarwood will sink in water due to the weight of the resin it contains. The valuable aloes of biblical times were noted by the Greek historian Herodotus, the 'father of history', who said, "Aloeswood was worth its weight in gold."

ASIA PLANTATION CAPITAL

John Berry

ALOESWOOD WAS WORTH ITS WEIGHT IN GOLD."
Herodotus

The fragrant agarwood has long been, and is still today, used in the production of incense sticks. According to records, Dongguan City (in Guangdong Province, China), was a thriving agarwood trading centre, transporting products from Southeast Asia to the Middle East 400 years ago. The city of Hong Kong (Xiang Gang in Chinese), means 'Fragrant Harbour', and derived its name from the fragrant woods – in particular agarwood – that were used by the incense manufacturers based in the area.

The aquilaria tree, the largest and most important source of agarwood, is indigenous to the subtropical regions of Asia. Its territory stretches from India through to Thailand, eastwards to Papua New Guinea, and as far north as Southern China. The wood is normally white, soft and does not have a scent. In the wild, agarwood is produced when the tree is affected by certain external factors. These could be anything from lightning strikes to grazing animals, or from insect attacks to microbial invasion. In defence of these 'injuries', the tree reacts by producing a fragrant discoloured resin within the heart of the tree, often called 'heartwood'.

Due to its immense value and scarcity, indiscriminate logging has decimated wild stocks of the various species of aquilaria and they are now all listed as 'endangered' under CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora). With demand for agarwood far exceeding the supply from wild sources, prices for both the wood and the oil have been pushed higher.

This is where Asia Plantation Capital (APC) has come on to the scene. Established officially in 2008 (but operating privately since 2002), the company lives and breathes sustainability, renewability and environmental awareness. APC is the owner and operator of a diverse range of commercial plantations and farming businesses across the globe, as well as an operator and manager of projects for third parties and is the market leader in sustainably grown aquilaria trees and the production of agarwood and oud oil.

In the wild, less than 10 percent of the trees produce agarwood. As the only way to determine if the tree has produced agarwood is to cut it down, the majority of illegally harvested trees are left to rot. On a properly-managed planation, every tree will produce agarwood. Once the trees have grown to a certain height and girth (usually at around five years of age), they can be 'inoculated' with an organic compound that replicates the 'injuries' that may occur in nature. This process stimulates the trees' defence mechanisms and agarwood is produced.

Harvesting can proceed from the end of the seventh year onwards, up to the 15th year, depending on various market strategies. The trees produce a variety of valuable products, using the oud oil in the fragrance industry and traditional Chinese medicine, through to wood chips and even steeping the leaves for the production of teas.

There is no official market pricing system for agarwood products and much of the independent data available reflects only a fraction of the actual trade volume. Estimates suggest the market size to be between $6 billion and $15 billion per annum. The price of high quality oud oil can vary anywhere from $15,000 to $80,000 per kilogram, while agarwood chips may sell for several hundred to several thousand dollars per kilogram. Data sourced from www.traffic.org states that oud oil prices appreciated at over 300 percent from 1993 to 2003 and has continued to grow at between 12 percent to 16 percent per annum since.

Estimated returns on agarwood investment range from mid-to-high teens per annum depending on when the trees are harvested, and whether the wood is distilled into oud oil or not.

Agarwood is of immense value and the wood and the oil derived from it have become an integral part of the lives of human beings through the course of history. Its importance cannot be overstated and Asia Plantation Capital's involvement fulfills many of the requirements for an alternative investment that embraces the triple bottom line; people, planet and profit. ■

India's emerging story

India's agriculture sector is crying out for capital to help with a wide range of inefficiencies in the supply chain. Private equity capital has already identified the appealing niche of agri infrastructure, namely in storage, writes **Siddarth Poddar**.

As much as India's story is about industrialisation and the consolidation of its position as an information technology hub in the global economy, much of India's economic growth and standing is based on the sound health of its agricultural sector.

India remains primarily an agrarian economy, with two-thirds of Indian households depending on the sector as the primary means of their livelihood. Today, India is among the largest producers as well as consumers of several different kinds of food grains, milk, sugar and spices. All of these make agriculture an exciting investment proposition for many.

Agriculture and agribusiness provide a compelling growth story, primarily as a result of increasing disposable incomes in the country and a rapidly growing population. Rajesh Srivastava, chairman and managing director of Rabo Equity Advisors, a private equity firm, tells Agri Investor that "at a macro level, food and agribusiness is a great opportunity".

"There are several big opportunities in this space since a large number of sub-sectors are expected to register double-digit growth over next five years," he says. "Productivity being a driver should see all inputs-related sub-sectors attract attention and similarly the changing demographics will propel all processing-related sub-sectors to attract investments." Srivastava is currently fundraising the firm's second agribusiness fund.

India will need more, and better quality, food which will drive increased private equity activity in the sector. Within this large sector, he says, some sub-sectors have a stronger value proposition than others, but largely speaking, "deal flow is strong and the pie is becoming bigger".

One of the agriculture's sub-sectors that is expected to grow rapidly and has been raising private equity capital in recent months is infrastructure. Storage, including dry warehousing and cold storage facilities, is a particularly attractive investment and in need of capital, sources argue.

Stories abound about the amount of agricultural produce that perishes and goes to waste before it reaches the consumer each year. Estimates suggest that around 40 percent of all fruit and vegetables spoils and doesn't make it to market. In a country with poor transport infrastructure, the importance of proper warehousing facilities assumes an even greater significance.

"CONSIDERING THE DIRECT AND INDIRECT INFLUENCE OF AGRIBUSINESS NOT ONLY ON GDP BUT ALSO ON THE SOCIAL FABRIC, THERE ARE MANY FISCAL AND POLICY DRIVEN INCENTIVES OFFERED BY THE GOVERNMENT."

Rajesh Srivastava..

A man reads a newspaper outside a warehouse in Kerala

INFRASTRUCTURE IN INDIA

INFRASTRUCTURE IN INDIA

"There is a solid growth story," another senior private equity industry professional in India tells *Agri Investor*. "As a country, we are short of agri-warehousing space and much of the space we have needs modernising," he says, adding that the requirement is "humongous" and that government policy circles realise the potential for private investment to help.

Private equity-backed warehousing companies that are currently ramping up their capital base to execute growth plans include Sohan Lal Commodity Management, National Collateral Management Services and Temasek-backed StarAgri Warehousing and Collateral Management.

But then not all demand leads to private equity opportunity. "I have my doubts whether this is a 25 percent internal rate of return business. I would think this it's a 15-16 percent return on equity business," the professional says. In his view, warehousing is a more interesting investment opportunity for sector-focused PE investors who are looking for longer-term fund deployment and have longer-term capital appreciation aspirations.

The warehousing industry is also very fragmented, according to Rabo's Srivastava, whose fund is invested in NCMS, the commodity and risk management service provider. The investment opportunity is definitely becoming larger and demand for warehousing is going to increase further, he says, but "while there is growth across the industry, we still need good deals".

"I've been looking at many transactions, but have not found a compelling case so far," the investor from the large generalist private equity fund says. And one big reason for this is the timing; it is too early to invest in the agri-warehousing sector because it is largely an unorganised sector. Moreover, he says, "the incremental benefit a consumer will get in choosing warehouse A over warehouse B is really quite limited".

He also raises questions about the sector's profitability. If someone has an old warehouse in the middle of the city and if an investor or a company wants to build a new one there, the cost of the latter could be up to 10 times more than that of the former.

> AS A COUNTRY, WE ARE SHORT OF AGRI-WAREHOUSING SPACE AND MUCH OF THE SPACE WE HAVE NEEDS MODERNISING. THE REQUIREMENT IS HUMUNGOUS.

Furthermore, as a private equity investor, he would typically want to see either economies of scale or economies of scope, or both. But currently, economies of scales in the warehousing sector are not very apparent.

A very large part of the activity is decentralised and a large part of the clientele do not really care if a company has 10 warehouses or 15 because more warehouses do not necessarily lead to much of a value add – except of course, for smaller expenses such as corporate branding. As for economies of scope, he believes they are relatively small because the clientele is not sophisticated enough. "Today, any consumer – be it a food producer, trader or wholesaler – is chiefly concerned about the storage of products and not any other additional services. At least not yet," says the professional.

Therefore he believes that at this point in time, the case for a 25 percent return per annum has still not been made. He does feel, however, that the move is likely to happen, potentially in three to four years.

But Srivastava is still positive about the sector, particularly the strong government support for the agriculture sector at large, including specific initiatives for the agri-warehousing and storage sectors.

"Considering the direct and indirect influence of agribusiness not only on GDP but also on the social fabric, there are many fiscal and policy-driven incentives offered by the government," according to Srivastava. These include subsidies for equipment and tax breaks on warehouses and other infrastructure.

Warehousing companies are also branching into the finance sector by setting up non-banking financial companies (NBFCs). StarAgri, for instance, has set up an NBFC that will be another source of credit for farmers from StarAgri's own balance sheet – in addition to the collateral management services it already provides, according to Amith Agarwal, co-founder and chief executive of StarAgri. The new NBFC will offer finance against agri assets, finance for agri-equipment, machinery and tools, working capital and semi-urban and rural loans against properties. The NBFC helps bring a large number of Indian farmers into the mainstream financial system through organised credit disbursal and priority sector lending and allows them to avoid paying very high rates of interest for money they borrow.

Another warehousing company to have set up its own NBFC is Sohan Lal Commodity Management, which established Kissandhan in March 2014, and has already disbursed agriculture loans worth more than Rs1.3 billion ($20.5m; €17.9m). Kissandhan provides financing solutions to farmers against storage receipts of agriculture commodities.

As the agri-warehousing sector in India grows, one can expect more companies to venture into agriculture finance through the setting up of NBFCs associated with their warehousing and storage businesses. If they do so, then we could see the "economies of scope" that will make the sector even more interesting for private equity investors. ■

DATA ROOM

(Opaque) returns analysed

Finding reliable data to measure and compare farmland investment returns has historically been tough due to a lack of organised farmer surveys or data sharing mechanisms in much of the world. Simplifying and standardising data sets for analysis has also been challenging leaving many investment professionals unsure of which headline figures to look for in their global comparison of the asset class.

But technologies are emerging that try and bring together publicly available data for investment professionals to use to assess the asset class more thoroughly, such as Map of Agriculture, a soon-to-launch farmland data platform launched by dairy fund manager Craigmore.

Map of Agriculture recommends using four main data sets to analyse the potential returns of a certain geography and commodity type.

1. **Production levels** – review the change in production levels over time, which can be impacted by improved fertility, soil conditions and weather events.
2. **Earnings before interest and tax (EBIT)** – this measure profitability and is influenced by production levels, input costs, offtake pricing and external inputs such as subsidies.
3. **Operational returns** – here you can compare the profitability of a farm in relation to its total asset value effectively creating a return on assets figure.
4. **Total enterprise assets** – this show the change in value over time and incorporate farmland values and operational returns.

Here MOA have provided some headline figures to provide comparison between beef farmland in Australia, corn farming in the US, dairy farming in New Zealand and grains in the UK between 2003 and 2011.

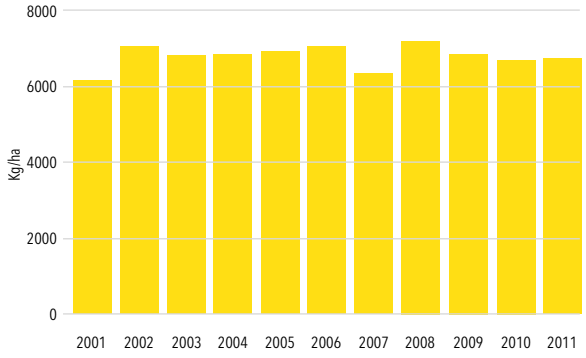
A RARE AGRI COMPARISON

2003-2011

Sector	Country	Average Operational Returns %	Total Assets		Source
			% Change	CAGR%	
Beef	Australia	0.6%	64.2%	6.4%	AUS MLA, Map of Agriculture
Maize	USA	6.5%	112.1%	9.9%	USDA, Map of Agriculture
Dairy	New Zealand	7.3%	117.3%	10.2%	NZL MPI, Map of Agriculture
Grains	UK	1.5%	76.2%	7.3%	FADN, Map of Agriculture

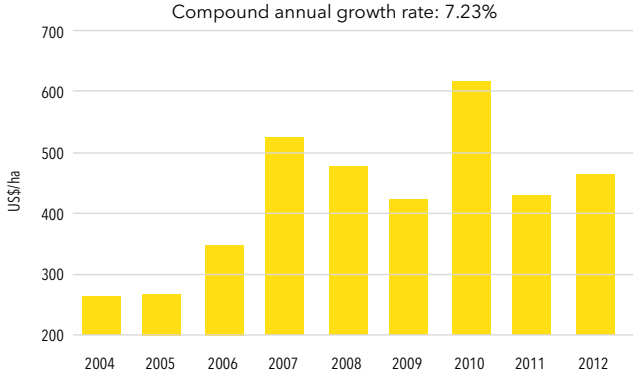
Source: Map of Agriculture

EAST ENGLAND GRAINS PRODUCTION LEVELS



Source: Map of Agriculture

IOWA MAIZE EARNINGS BEFORE INTEREST AND TAX (EBIT)



Source: Map of Agriculture

DATA ROOM

BRUCE SHERRICK, DIRECTOR, TIAA-CREF CENTER FOR FARMLAND RESEARCH

Why are farmland production returns so hard to find?

I think it's a really great question and a fundamental one. It is so difficult primarily because so many operations are idiosyncratic or heterogeneous, so one has to start at the level of the individual operation to know what returns actually are, and how they behave through time. And unless there is a well-developed governmental survey system or other collecting mechanism, farmland data requires participation at the farmer level, which is hard to encourage like with any small business. And, to get the scale needed to assess the sector as a whole can be difficult to do for the purposes of evaluating individual investments.

As a result, you often get a disaggregated set of returns from a few small operations to come up with a summary measure of what returns might be across an entire region.

Hopefully, though, with the financialisation of the sector, and the creation of more funds that can report their returns, and with the advances accompanying the development of new data technologies, a more measured index can be created.

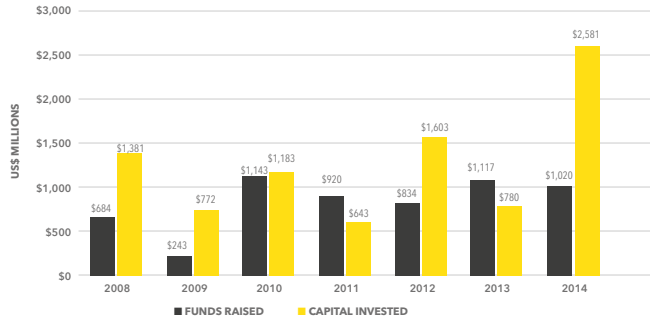
Where are the best data?

In the US without a doubt. It is certainly not exhaustive, but the USDA has made an enormous investment into collecting data through surveys and common reporting standards. These don't even exist in developed agricultural markets like Western Europe, the UK or Brazil. Major lenders like Rabobank might have some information, but they don't need to make it public. Farm management and record keeping systems likewise hold great promise, but again are generally serving a different purpose and less available to those not participating in the system.

EMERGING DEMAND

As private equity investments into emerging market agribusinesses grew, 62 percent of the LPs surveyed by EMPEA said they would increase their exposure to the sector. Half eyed increased agribusiness commitments to each emerging market region. These figures exceed the demand for clean tech, energy/utilities and industrials, and put demand for agri-related investments closer to that for financial assets, according to EMPEA.

EMERGING MARKET AGRIBUSINESS FUNDRAISING AND DEALS



Source: EMPEA

M&A MOUNTING

The highly anticipated merger between agribusiness giants Syngenta and Monsanto skews M&A volumes for 2015 year to date but puts the year on course to massively outpace 2014. Further pending deals in Asia look set to give the year's agribusiness M&A volumes a further boost.

Announcement Date by Year	Asia (ex Japan)		Australasia		Europe		Latin America		North America		Others		Globally	
	Deal Value ($m)	No.	Deal Value ($m)	No.	Deal Value ($m)	No.	Deal Value ($m)	No.	Deal Value ($m)	No.	Deal Value ($m)	No.	Deal Value ($m)	No.
2010	1,702	118	3,173	34	1,085	188	777	22	496	53	66	21	7,298	436
2011	2,471	147	1,290	39	1,121	233	1,581	24	641	50	57	27	7,161	521
2012	3,347	105	1,227	38	1,156	204	961	35	2,235	53	196	40	9,658	479
2013	3,410	107	1,642	45	1,534	159	323	32	2,881	63	757	45	10,576	454
2014	8,044	94	2,806	47	6,437	191	628	36	3,830	72	39	41	22,088	484
2015 YTD	878	18	283	11	44,599	50	456	9	34	21	300	20	46,553	131

Source: Dealogic

RECENT 2015 NEWS

Another look

selected stories on Agri Investor

EDITOR LETTER:

AFRICA'S UNDERCAPITALISED AGRI INFRA SECTOR

Private equity investors in Africa should look at improving farming infrastructure.

African private equity is a hot topic lately. Fund raisings have already collected $2.45 billion this year, nearly at the $2.49 billion amassed during the whole in 2014, according to *Private Equity International*.

And half the LPs surveyed by the African Private Equity and Venture Capital Association (AVCA) said they plan to increase their PE investment in Africa over the next three years.

As the least cultivated land mass in the world, private equity managers cannot ignore Africa's agricultural potential – but many have focused on the consumer angle rather than improving the environment for producers and distribution, where there is a lot to be done and plenty of scope for investment into what I would define as agricultural infrastructure.

Some market professionals argue that any agricultural infrastructure investment needs to come from the agricultural producers themselves, and if we look at small scale projects like one backed by Phoenix Africa in Sierra Leone, where the firm has added a rice milling operation onto their primary rice production project Lion Mountains – those milling operations look likely to bring in as much cash, if not more, than the sale of its own rice.

The operation is also providing a market for local farmers to sell their produce into, a market that for many did not exist previously and a major reason why so much food in Africa is spoiled.

Some banking and private equity sources, however, think that infrastructure investment is needed on a much larger scale to boost African agriculture. And it needs to come from governments.

"We would love some more roads," Avril Stassen, senior partner at Agri-Vie, a food- and agribusiness-focused African private equity fund, told me on the sidelines of AVCA's conference in London last week.

Arnold Ekpe, chairman of Atlas Mara, the London-listed African bank, echoed the need for major investment in large-scale infrastructure. "You cannot talk about agriculture as an isolated sector," Ekpe noted. "It needs infrastructure and power."

Of course this is true, and the private sector is playing a role in these large projects such as road building, telecommunications expansion and renewable energy, according to my colleagues at Infrastructure Investor.

But there is still a huge need, and with it investment potential, to provide farmers with more basic, improved supply chain infrastructure.

Take India, where similar challenges surrounding roads and electricity supply remain, but where the private sector is increasingly engaging with farming infrastructure. We have recently reported on three post-harvest logistics, warehousing, cold storage and collateral management companies seeking private capital, two of which are already backed by private investors including Singaporean sovereign wealth fund Temasek.

"Basic infrastructure is not something we can ignore," said Vasanata Madhavi, general manager at Origo India, a post-harvest solutions company that helps educate farmers about commodity pricing and markets. "But we have private players like Monsanto entering the agri sector and working on improving the sector's infrastructure with services like crop and weather intelligence and so infrastructure, where the farmer is the end customer, is improving every day."

In fact, many professionals from the private investment industry in India tell me about the huge potential for investment into this fragmented part of the value chain between farmer and market.

In Africa, some supermarket chains might have their own logistics operations, or outsource some transport to another firm, but any firm out there will only service one part of the chain, sources tell me. Few of these firms, if any, have the complete chain covered from warehousing to cold storage to natural temperature transport and so on. Equally, outgrower schemes that effectively provide post-harvest solutions are few and far between as Tropical Farms' MD Adrian Simpson told me last week.

So there must be huge potential to invest in these operations, fill gaps in the market and effectively improve post-harvest efficiency, at the same time as larger scale infrastructure improvements.

Yes, India is seen as a more appealing investment destination than many countries in Africa due to an easier investment framework and better regulations, but for investors already comfortable with the idea of Africa as a destination, as increasing numbers seem to be, there is a segment of the agricultural value chain ripe for investment.

RECENT 2015 NEWS

EXCLUSIVE

WSIB APPROVES $300 MILLION COMMITMENT TO TEAYS RIVER

The $105bn Washington State Investment Board has approved a $300m commitment to the row- and permanent-crop farmland management company, taking the pension's agri exposure to $1.1bn.

The $105 billion Washington State Investment Board (WSIB) approved a $300 million commitment to Teays River Investments, a row and permanent crop farmland management company, at a board meeting last week, according to Liz Mendizabal, a spokesperson for the pension fund.

This is the latest investment for Teays River which recently received a $200 million commitment from the $12.75 billion Maine Public Employees' Retirement System (MainePERS).

This new commitment takes WSIB's agri exposure to $1.1 billion across five investments representing a large portion of its $1.4 billion tangible assets programme, which was launched in 2008.

Last year WSIB committed $250 million to US Farming Realty Trust III, a commodity row-crop farmland fund managed by International Farming Corporation; $50 million to ACM Permanent Crops, a vertically integrated permanent crops fund which closed on $250 million earlier this year and $250 million to a separate account investment with Wood Creek Capital Management, a real assets manager based in Connecticut, to invest into between seven and 10 agriculture-related midstream assets.

The pension fund's tangible asset portfolio invests in non-financial assets with a focus in four main industries: minerals and mining, energy, agriculture and society essentials, according to its website.

Teays River was established in 2009 initially as a private equity fund with investment from TIAA-CREF, Teacher Retirement System of Texas and Swedish pension AP Fonden 2 totalling $903 million. But it was re-structured into a company to reflect the long-term investment wishes of the investors and is now a co-investment structure. The company invests in land, operations, logistics, facilities and processing associated with farming operations.

BDO: SUPERFUNDS MORE CONCERNED ABOUT AGRI FUND MANAGEMENT THAN LIQUIDITY

The lack of investable agriculture investment products was the main reason MySuper funds gave for staying away from the sector in a recent report commissioned by accounting firm BDO.

Although often blamed for the lack of interest from Australian superannuation funds, lack of liquidity and the long-term nature of agriculture investments were not the main concerns of the pensions surveyed in a recent report from BDO, the accounting firm.

The superfund industry's three-month reporting period has often been blamed for lacking investment into agriculture – typically a long-term and relatively illiquid play compared to more traditional asset classes – but this was low down on the list of reasons the funds gave for not investing into agriculture.

"Notably, the short-term versus long-term focus is not perceived to be a highly relevant consideration for having low investment in agriculture," reads the BDO report. "One interpretation of the response to this statement is that superannuation funds do not have an overly short-term focus."

Instead, the lack of investable agriculture investment products was the biggest reason for staying away from the sector. This was followed by a lack of asset managers in the market, limited listed agri opportunities, the disproportionate increase in the management expense ratio (MER) and a lack of information about investing into the sector.

Statement	Average response on scale of 1-7 where 1 is strongly disagree and 7 is strongly agree
The expected level of return is too low	4.4
There is a lack of asset managers who cover agricultural investments	5.4
There is a lack of information regarding investment in the industry	4.8
There is a lack of investable products	5.7
Our superannuation fund takes a short term return focus while agricultural investments require a long term return focus	1.9
Agricultural returns are too volatile	4.6
There are limited listed agricultural investment opportunities	5
Agricultural investments do not provide adequate dividend returns	3.8
The average rates of return is too low	4
The initial investment cost is too high	4.2
Agricultural investments disproportionately increase the Management expense ratio (MER)	4.9