

AGRI

KPMG

The voice of Ireland's farming industry
IRISH FARMERS JOURNAL

Summer 2016

BUSINESS

An Irish Farmers Journal report in association with KPMG

**OVERCOMING
UNCERTAINTY
IN A FRAGILE
WORLD**





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FOREWORD

Eoin
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Agribusiness editor,
Irish Farmers Journal



David
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Partner-in-charge for
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After almost a decade of euphoric growth, soaring prices and buoyant demand for agri-food commodities, the last couple of years have seen a change in pace in the global agribusiness sector, with more heavily supplied markets, more cautious consumption forecasts, and therefore lower prices.

But the agribusiness sector retains plenty of potential for profitable growth and development. The new economic conditions have placed a renewed premium on efficiency, innovation and creativity.

The *Irish Farmers Journal* is again delighted to partner with KPMG in producing the global agribusiness survey and report, which looks at challenges, competitive advantages and opportunities facing agribusinesses around the world.

This year's survey offers a unique overview of the state of global agribusiness at the start of 2016, drawing on the expertise of KPMG's global network and the extensive travel by the *Irish Farmers Journal* team to provide an informed perspective on agribusinesses around the world.

In the following sections, we present the results of our analysis, outline what Irish agribusinesses can do to compete and draw some conclusions as to the implications for all those involved in the sector. We hope you enjoy reading it.

Agribusiness is a global industry. The performance of Irish agribusiness is influenced by many factors, both domestic and international.

In this, our fourth annual *Irish Farmers Journal*/KPMG agribusiness report, we decided to take the temperature of the global agribusiness sector.

Building on the domestic survey which we have undertaken for the past three years, we used our global KPMG Food & Agri network to survey a wide range of major global agribusiness.

The results were fascinating, and we have used the survey output as the basis for this report. It is particularly interesting to note that, while there are differences between regions, agribusinesses around the world face many similar challenges.

I would like to take this opportunity to thank my KPMG colleagues around the globe for their help in conducting this survey. We look forward to repeating the survey in future years, and await with interest the changes in sentiment and views that will inevitably occur.

In the meantime, I hope you will find that this report gives a real sense of where Irish agribusiness stands in comparison to our international peers and, most importantly, where we need to focus our collective resources to drive change and improvement.



This year's survey offers a unique overview of the state of global agribusiness

While there are differences between regions, agribusinesses around the world face many similar challenges

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At the heart of business in Ireland



THE WORLD IS INDEED NOT FLAT

Justin
McCarthy

Editor,
Irish Farmers Journal



A lot has changed in the world since this time last year. The business cycles for farming and the wider economy are once again running in contrary directions. While the past two years have seen the Irish economy expand at the fastest rate in Europe, the same period has brought mixed fortunes for farmers.

The current mix of falling commodity prices, geo-political uncertainty, particularly in the UK, along with overall anaemic economic growth in many developed and now emerging economies is putting stress on the food supply chain. In this report, we highlight the opportunities, challenges and risks for the sector.

For many, 2016 will be much tougher than it was in 2015, but we must not lose sight that our industry has an excellent long-term opportunity ahead of it.

The combination of falling commodity prices and adverse movements in exchange rates is likely to provide the greatest challenge to Irish agribusinesses and farmers in the coming period. In today's world, Irish agribusinesses and farmers are influenced by international trends, opportunities and threats. Most markets, domestic or otherwise, are influenced by the effect of wider global events. Therefore, businesses must bring an international outlook to their activities. This will help them survive and thrive in the long term.

Many countries are now developing long-term strategies for their farming sectors, with

an eye on building export opportunities. Last year, Ireland set its target, under Foodwise 2025, to grow agri-food exports by 70% to €19bn over the next 10 years.

But, as outlined in this report, the world is becoming increasingly internationalised. This poses one of the greatest challenges to a country like Ireland, exporting 90% of its agricultural output. Therefore, we will have to ensure Ireland remains competitive by improving our productivity as fast as some of our main competitors have.

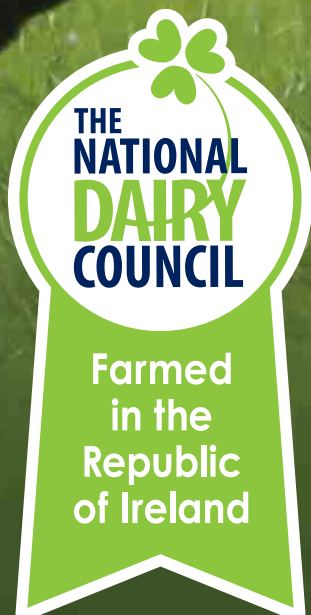
International trade agreements, be they focused on export subsidies, market access or domestic support, look set to be the game changer on setting the relative competitiveness of a country or region.

Driven by the changed consumer, every agribusiness we surveyed is now firmly focused on sustainability

While there are many differences between countries surveyed in this report, there are a striking number of similarities. Driven by the changed consumer, every agribusiness we surveyed is now firmly focused on sustainability. Origin Green has established itself as the leader in this field globally, but now it must capitalise on its authenticity.

Furthermore, food security, climate change and the challenges of global population growth are core political and economic challenges inescapably linked to the dynamics of agriculture and food production. The world is indeed not flat when it comes to food production. The EU must decide what it wants. If that is a secure supply of safe and quality food for its people, then it must support that.

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and local co-ops is good for
employment, good for the
economy, good for all of us.

Words: Cathal McDonagh, KPMG

TAKING THE PULSE

The 2016 *Irish Farmers Journal*/KPMG survey takes a global view of the challenges and opportunities facing agribusinesses around the world

As we are now firmly competing on a global stage, exporting 90% of the food we produce, this year's *Irish Farmers Journal*/KPMG survey broadens its horizons and takes on a global view. With thanks to the help of KPMG's global agribusiness network, the survey takes in the views of 83 companies from 16 countries around the world.

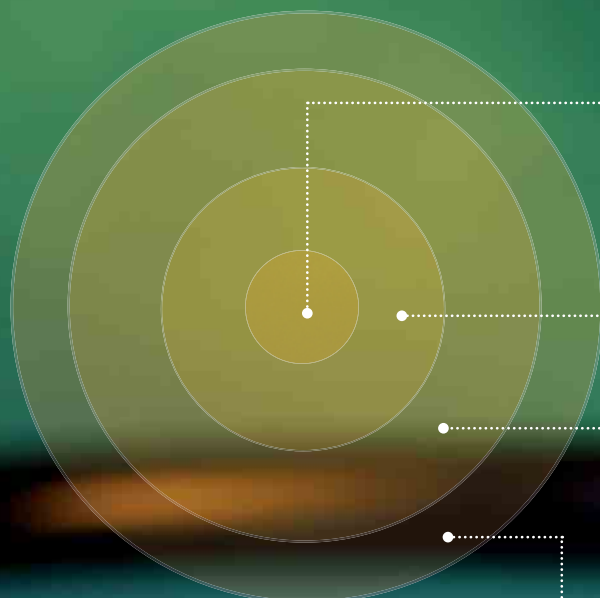
Our survey includes views from a broad range of agribusinesses including some of the largest agribusiness companies in major exporting countries, who may compete with Irish agribusinesses. The survey also includes companies operating in net importing countries and companies in a number of sectors including dairy, meat, grain, sugar, ethanol and horticulture.

Our survey collates the views of key decision-makers in the agribusiness sector across a wide range of topics including economic outlook, investment plans, acquisition activity and key challenges, both internal and external.

The questions posed were designed to highlight emerging trends. We also sought to provide an insight into the importance of research and development activity, product innovation and sustainability initiatives to companies in the sector.

Our survey was based on a questionnaire prepared by KPMG and the *Irish Farmers Journal* and completed by participants in early 2016. The results are encouraging and continue to demonstrate a confidence in the sector. However, challenges exist in relation to the need to innovate, access to finance, and the recruitment and retention of key personnel. Companies need to reflect on how to address these challenges.





Business

91% of companies expect to grow in 2016. Of these, 60% felt their company would grow between 1% and 4%, while 29% expected to grow at more than 5%.

Local economy

79% of companies expected less than 3% growth this year in their local economies., while 39% of companies expected no growth.

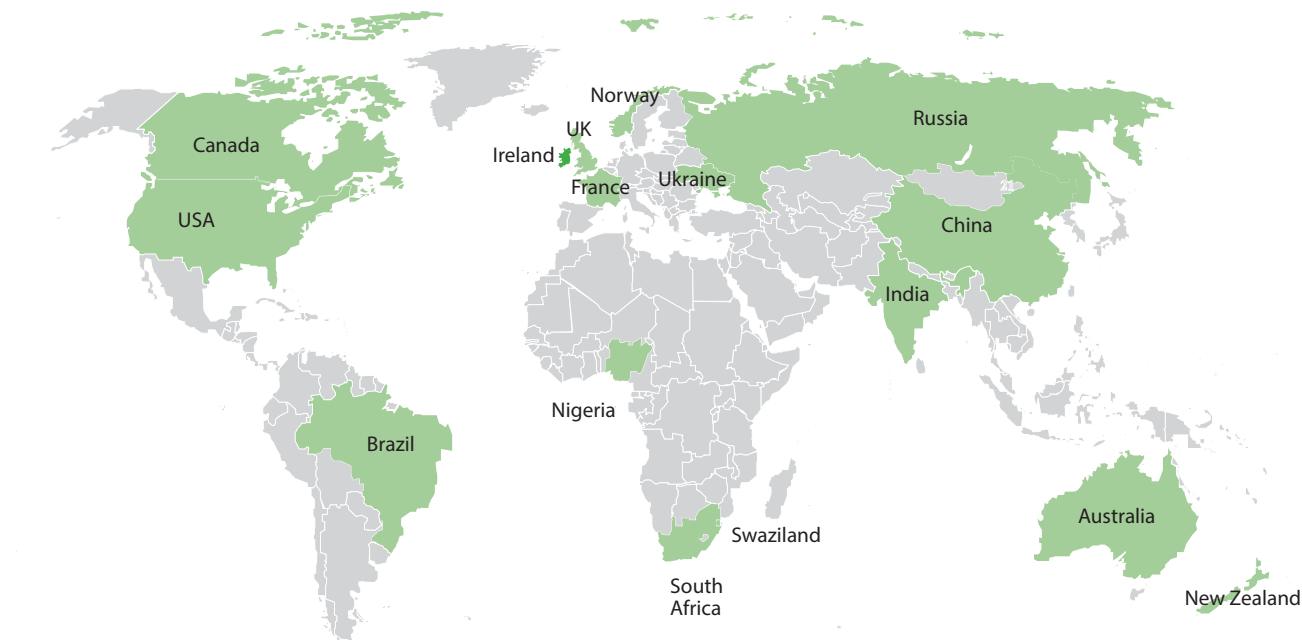
Sector

85% of companies expected growth in the agribusiness sector in their respective countries. 55% of respondents expected less than 3% growth.

Global economy

68% of companies expected the global economy to grow by 1-3% this year. 23% expected it to grow more than 3%. However, 9% did not expect to see any growth in the global economy in 2016.

COUNTRIES THAT TOOK PART



BUSINESS GROWTH DRIVERS



1
Expansion into
new markets



2
An increase in
consumer demand



3
Innovation



4
Expansion in
existing markets



5
Mergers and
acquisitions



6
Emerging
markets



7
Government
regulation



8
Sustainability
initiatives

Other factors mentioned include a ban on food imports (for instance by Russian companies), climate and domestic currency devaluation

Comment

With 91% of companies surveyed seeking to grow their business in 2016, the key growth driver identified by most companies was expansion into new markets. An increase in consumer demand around the world was also identified as an important driver of growth in 2016.

Innovation also features high on the agenda, but interestingly expansion within existing markets ranks higher in priority than growth in emerging markets. This is perhaps reflective of the challenges many emerging economies have faced in the last 12 months.

While sustainability was identified as important, businesses surveyed do not see it as a prerequisite to growth in 2016. Interestingly the Russian companies we surveyed expect the continuation of the trade embargo on Western food products to facilitate business growth in 2016.

Methodology

The research for the survey was conducted by a combined team from the *Irish Farmers Journal* and KPMG and was based on a representative sample of agribusinesses from around the world.

The survey, which consisted of a broad range of questions on agribusiness-related topics, was completed

by senior management of 83 agribusinesses around the world. The survey was broken into nine sections. The first two sections focused on projected business growth and planned investment.

The following sections dealt with innovation and sustainability. Competitiveness was a key focus of the survey where we asked questions around

labour, market access, government support and infrastructure. Finally, we asked businesses their views on the future outlook for the sector.

We would like to thank all the respondents for taking the time to complete the *AgriBusiness* survey, and we hope you find our results informative and insightful.

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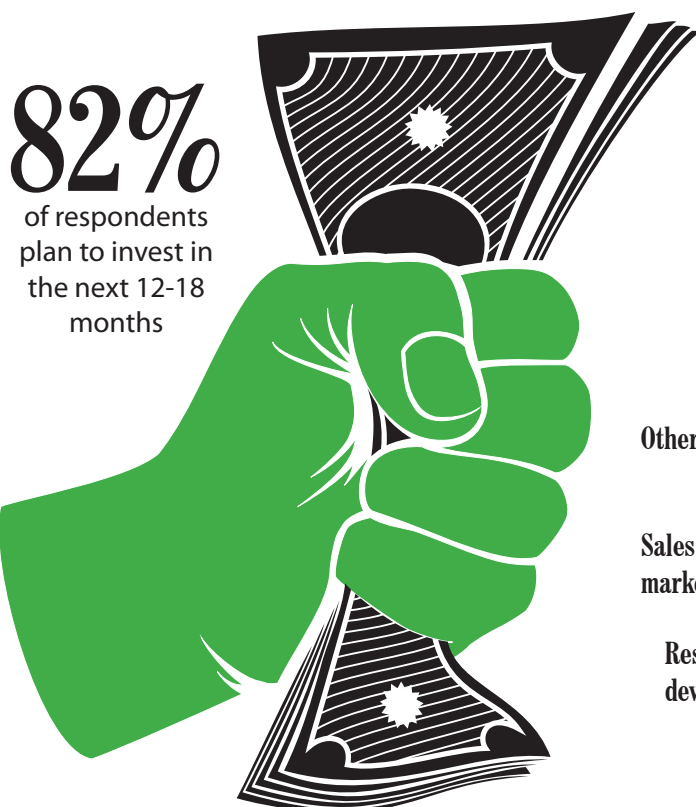
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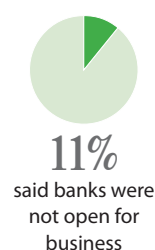
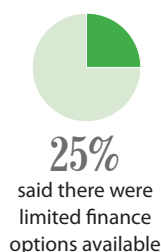
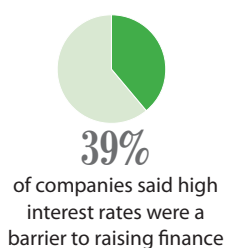
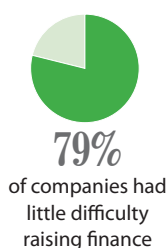
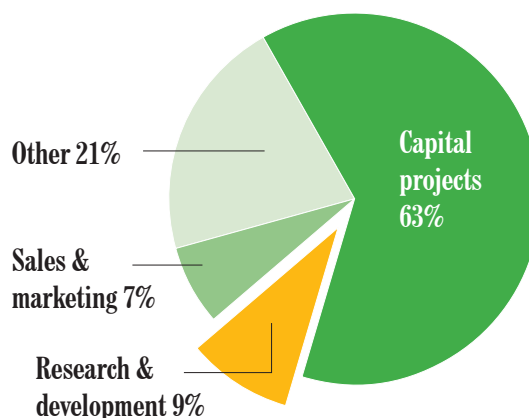
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INVESTMENT AND FINANCE

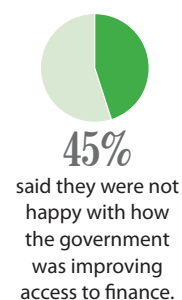
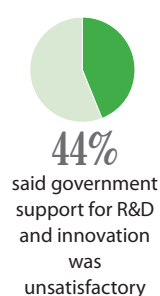
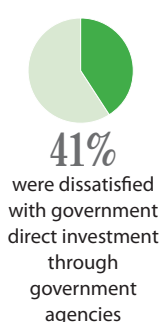
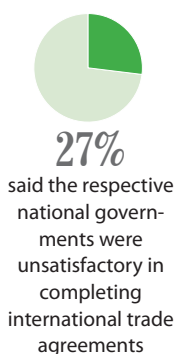
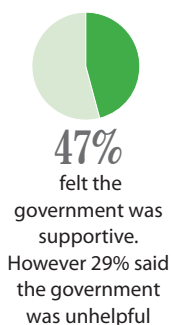


WHAT BUSINESSES WILL INVEST IN



There was a relatively low level of planned investment in the key area of R&D. Of the companies that invested in R&D in the past, only 34% took advantage of the available tax credits.

GOVERNMENT SUPPORT



Comment

Across the world there was a divergence of views of how supportive respective governments were. Almost a third said the government in their country was unhelpful where they wanted reduced bureaucracy, tax structures to support innovation and even application of regulations across regions. Irish companies wanted speedier negotiations and implementation of free trade agreements at EU level.



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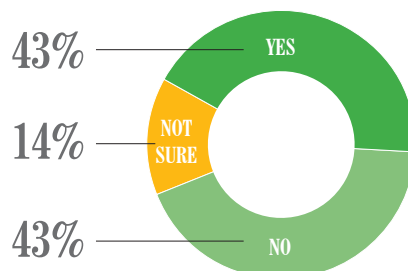
LABOUR

42%

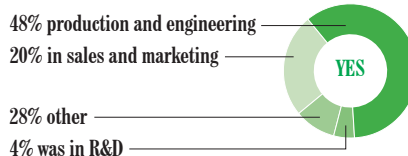
of the additional people employed will be focussed on export markets



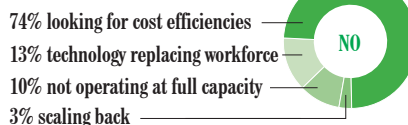
DO YOU EXPECT TO GROW YOUR WORKFORCE IN THE NEXT 12 MONTHS?



WHAT AREAS DO YOU EXPECT TO INVEST IN?



WHY ARE YOU NOT INVESTING IN YOUR WORKFORCE?



BIGGEST CHALLENGES FOR AGRIBUSINESS TODAY

EXTERNAL

Price volatility 55%

Overcoming difficult economic conditions 28%

Regulation 9%

Scale of competitors 8%

INTERNAL

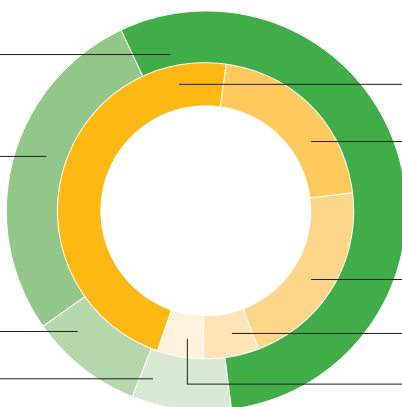
Financing 47%

Recruiting and retaining key employees 21%

Innovation 21%

Security of supply 6%

Food safety and integrity 5%



Comment

As we can see, many of the challenges faced by agribusinesses were common across countries. By far the largest challenge was volatility, followed closely by access to funding. Unsurprisingly,

the second largest external challenge to businesses surveyed was overcoming the difficult economic conditions that persist in the world today. Innovation was seen as a key internal challenge for businesses along with employee retention.

LOOKING AHEAD

One of the key trends emerging in the global agribusiness sector is the backward integration towards the primary producer. This can be seen where companies are keen to remove links from the supply chain to gain efficiencies.

Companies are also very interested in selling direct to the consumer, with e-commerce facilitating this trend. The emerging markets of China, the Middle East and Africa remain the regions with the greatest growth opportunities.



83%

have or are interested in changing their product portfolios in response to changes in consumers

FUTURE CONSUMER

78%

have or are interested in moving back-stream towards the primary producer

87%

have or are interested in collecting more data on consumers

83%

have or are interested in selling more direct to the consumer

63%

believe consumers are more keen to buy locally produced food

LOCAL



60%

believe being considered a local producer is important for the identity of the business

SUGAR



44%

said a sugar tax should not be placed on food with a high sugar content, whereas 22% agree it should

FAT



50%

said a fat tax should not be placed on foods with a high fat content; whereas 18% agree it should

REGULATION



57%

said that we do not need more regulation; whereas 22% agree we do

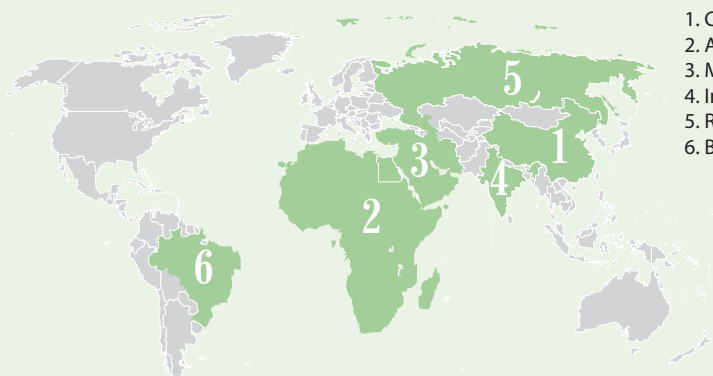
TRADE



69%

believe we need freer trade between regions; whereas 12% do not agree there should be

AREAS THAT PROVIDE THE LARGEST GROWTH OPPORTUNITY (IN ORDER)



1. China
2. Africa
3. Middle East
4. India
5. Russia
6. Brazil

BIGGEST CHALLENGES FACING AGRIBUSINESS OVER THE NEXT DECADE

1 Price volatility

2 Trade agreements

3 Water supply & quality

4 New technology

5 Changing consumers

6 Food safety

7 Climate change

Section one

Uncertainty is the only certainty

Back in June 2014, who would have thought a barrel of Brent crude oil could fall from its price at the time of more than \$110/barrel in the space of just 18 months to a price of less than \$28/barrel as we saw at the start of this year.

The dramatic plunge in the oil market has spurred a wave of uncertainty in the global economy not seen since the financial crisis. The first cracks of uncertainty appeared in August 2015, when the Chinese stock market plunged 8.5% in a single day – its biggest fall since 2007.

The rout in China, or Black Monday as it became known, sent tremors across the globe that triggered massive sell-offs in European and US markets. More than £60bn in equity value was wiped off the London FTSE alone.

While markets slowly recovered some of the losses over the following months, the event left many investors wondering was this the start of a new phase of crisis in the global economy. Markets reached December in a relatively stable condition but the turn of the year brought on a new wave of turmoil.

Another set of weaker than expected economic and manufacturing data from China, coupled with oil prices dropping to a 13-year low, once again sent investors scrambling for cover. The FTSE in London entered definitive bear market territory after falling 20% from its peak in April 2015.

As economic growth in China slowed and other emerging economies stopped growing altogether, markets began to question where the global demand was going to come from, particularly as the European economy continued to stall.

This feeling of uncertainty that persists among global policymakers and business leaders has facilitated the significant volatility we have seen for much of the year to date.

In the first part of this year's report, we examine how the current uncertainty in the global economy is affecting trade. We assess how the transitioning of the Chinese economy away from heavy infrastructure investment towards greater domestic consumption has brought to an end the decade-long commodity supercycle.

We look at how Russia, following the trade embargo it placed on western food imports in 2014, is again trying to expand its agriculture sector in a bid to feed its population of more than 143m people.

We also look specifically at the US dairy sector and how it has managed to insulate itself and its dairy farmer suppliers better than most from the outside volatility in the global markets. Despite global dairy markets being on their knees, US farmers have managed their risk from the volatility in a way European or New Zealand farmers have been unable to do thanks to a number of supports from the US government.

And from a political perspective, the report examines the uncertainty created on our own shores here in Ireland as we edge closer to the UK referendum on its membership of the European Union. The upcoming vote has left the business sector in the UK, Ireland and continental Europe in a position of considerable uncertainty as to what a Brexit could mean for trade.



DEATH OF COMMODITIES

With the collapse of oil, heavy metals and soft commodities, the decade-long commodity supercycle now appears to be over. Where to from here?

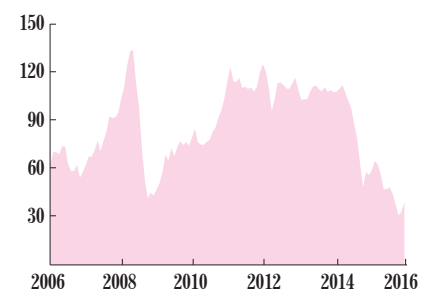
From the late 1990s until the 2008 financial crisis, most commodities experienced double-digit annual real-price growth, a period known as the commodity “supercycle”. The price of oil rose 1,062%, copper rose 487% and corn rose 240% as growing emerging market demand finally caught up with years of underinvestment in various commodity markets.

Not so long ago, a “peak everything” situation was predicted to arise, where it no longer mattered whether the growth curve was rising or falling and that severe shortages were expected in a wide range of commodities. This supercycle was not driven by exploding demand growth, but by supply constraints, such as weather events affecting the yield of corn or soyabean.

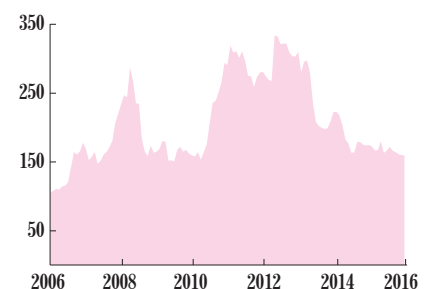
So why do commodity cycles exist? Simply put, it takes time. It takes roughly 15 to 20 years to construct an aluminium smelter, and get it up and running, or to dig and develop a potash, copper or gold mine and then extract, refine, and market the ore.

Similarly, oil rigs require years of exploration before any drilling actually occurs. Even then, drilling typically takes place once prices have begun to rally, which incentivises producers to increase output. Interestingly, it may now be oil demand, rather than oil production, which has peaked and will decline, particularly now that shale has emerged as an additional viable source of supply.

BRENT OIL (\$/TONNE)



CORN (\$/TONNE)

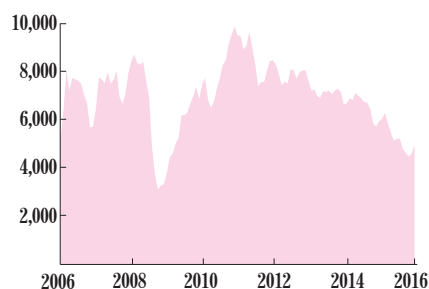


Furthermore, with commodities largely priced in dollars, a stronger dollar depresses those prices, which is particularly true for commodities with large production costs in non-dollar currencies.

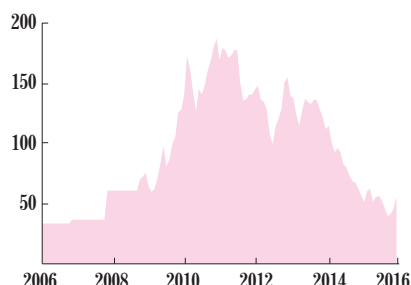
Record levels

Global stocks of oil reached record levels in excess of 3bn barrels in the last year, according to the International Energy Agency, while the US department of agriculture cannot put an accurate figure

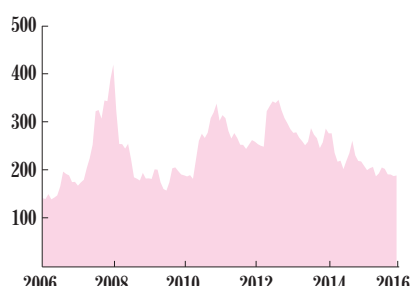
COPPER (\$/TONNE)



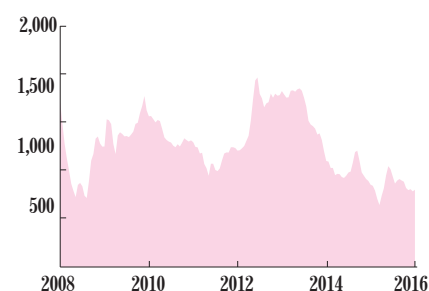
IRON ORE (\$/TONNE)



WHEAT (\$/TONNE)



GDT/DAIRY (\$/TONNE)



on the amount of grain it thinks US grain farmers may have stored away in silos.

Unfortunately, this expanded global capacity has come online at a time when demand growth from emerging markets is waning, particularly from China.

While the Russian and Brazilian economies (two emerging countries that have helped power global economic growth in recent years) are now in recession, China is still growing economically, albeit at a lower level.

The China phenomenon

In 1700, Britain had a population of 9m and it took 155 years for it to double its GDP, during the industrial revolution.

Roll on to 1983, when China had a population of 1bn, it took as little as 12 years for it to double its GDP. This was 12 times faster, and at 100 times the scale of what happened in the UK. The result was that 400m people were lifted out of poverty in 12 years.

Back in 1979, if you travelled south from Beijing along a rickety old railway line one of your last stops before reaching Hong Kong would have been a sleepy little market town called Sham Chun Hui.

With a population of about 30,000 people, the primary industry in this market town was always fishing. Each day, fleets of fishing ships would trawl the waters of the Pearl River Delta, with the resulting catch sent on for sale in the busy markets of Hong Kong.

The following year, in 1980, the Chinese government established Sham Chun Hui and its surrounding area as a special economic zone (SEC) – a new policy in China aimed at implementing more free-market economics within designated areas of the country.

Today, the once-sleepy fishing town is known as Shenzhen, a city home to an estimated 12.5m people and one of the economic powerhouses of modern China. It is a megacity that has sprung up almost overnight. Where once the masts of ships littered the skyline, today it is the steel and glass of high-rise buildings and skyscrapers that dominate the horizon.

What the city of Shenzhen encapsulates perfectly is the almost relentless economic and infrastructural expansion of China in the last 30 years. You had a nation of 1.3bn people industrialising at a pace not seen before in history.

China's appetite for oil, coal, steel and other natural resources powered a commodity bull market that has lasted almost two decades.

Agricultural commodities were no exception with Chinese demand for grains, oilseeds and milk powders fuelling a boom in global farming. The Chinese dragon was all-consuming and it boosted a fragile global economy through the difficult years post the financial crisis. For example, milk powder imports to China rose by 110% between 2010 and 2014, with a massive 40% surge in 2013.

In response to the raw material

40%

amount by which Chinese dairy powder imports rose between 2013 and 2014



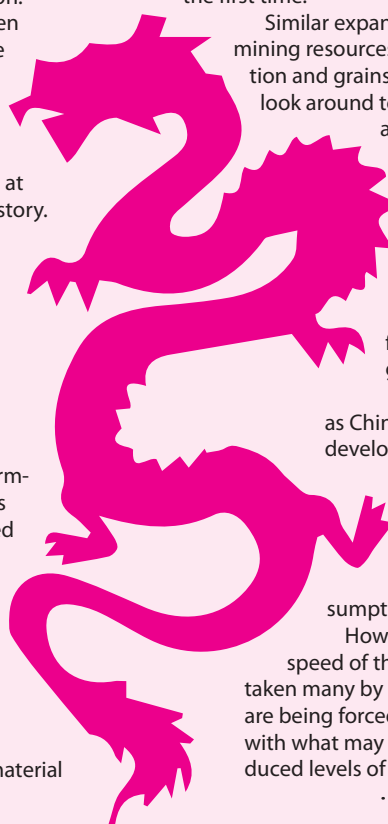
In 1979 the little fishing village of Sham Chun Hui had a population of 30,000. China designated it as an SEC a year later. Now known as Shenzhen, it has a population of 12.5m and has become an economic powerhouse.

demand from China and other emerging economies, commodity producers around the world invested billions in capital projects and capacity expansion. In the oil sector, prices in excess of \$140/barrel back in 2008 created the incentive for the emergence of shale oil drillers in the US. With production up by a third to 9m barrels per day, the US is now practically self-sufficient in oil production (85%) for the first time.

Similar expansion occurred in mining resources, metals production and grains processing. If you look around today, you will see a world economy awash with oil, coal, natural gas, industrial metals, corn, wheat and milk, thanks to all this added capacity which has fuelled huge supply growth.

Demand is abating as China moves from its development phase to a more Western-like model of growth based on service industries and household consumption.

However it seems the speed of the downturn has taken many by surprise. Producers are being forced to come to terms with what may be permanently reduced levels of ongoing demand.



Transitioning

From the outside, it may seem like China is in crisis, but what is actually occurring is a transitioning of the Chinese economy.

The Chinese economy is moving away from one of heavy infrastructural investment that has facilitated its demand for steel, copper, iron ore and other raw materials to an economy of greater domestic consumption. The economy in China is evolving and its needs are changing.

This economic evolution is very much part of a greater strategy from Beijing, which is to move towards a domestically focused economy. More than ever, its policies will always be in the interests of China at the expense of western commodity producers.

For instance, China's manufacturing industry is now moving from simply assembling a series of components produced in other countries to be exported again to a manufacturing sector where more finished products are created from scratch.

On top of this, China has itself now become a major exporter of commodities such as steel and aluminium. Steel prices have plummeted in the last 18 months as exports of Chinese manufactured steel (China manufactures roughly half the 1.6bn tonnes of steel produced annually) doubled to almost 90m tonnes and flooded international markets to create a supply glut.

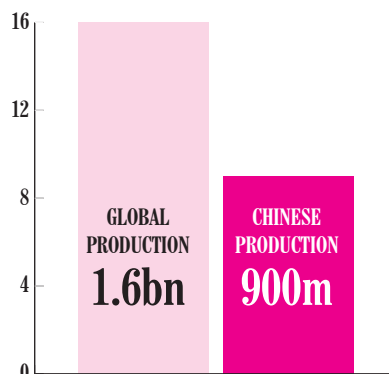
Strengthening of the dollar

While demand for global commodities has wavered since peak prices in 2011, the final nail in the coffin of the commodity supercycle was hammered in last December, when the US Federal Reserve raised interest rates for the first time in almost a decade.

Despite only a marginal increase, with rates moving 25 basis points to a range between 0.25% and 0.5%, this switch to a tightening fiscal policy has served to send the value of the US dollar soaring in the last 18 months.

Since June 2015, the signs of a lift in US interest rates before the end of 2015 were carefully marked out by Federal Reserve chair Janet Yellen. As a result, a

MANUFACTURED STEEL (TONNES)



94m

acres of corn to be planted by US grain farmers in 2016

85%

oil self-sufficiency in the US for the first time

bullish US dollar appreciated by almost 25% against a basket of currencies in the last year, as markets prepared for a return to positive interest rates in the US once again. The appreciating dollar and the increase in interest rates only added to the woes of global commodity markets.

Firstly, the impact of this lift in interest rates helped push investors away from commodities and into paper assets, such as bonds.

Secondly, with most commodities priced in dollars, the surge in the cur-

rency's value affected the purchasing power of global commodities buyers and further dragged on commodity prices. We have seen how US grain exports have been significantly dampened due to the bullish dollar this year. The weak export data reported on a weekly basis then only serves to weigh further on grain prices.

Relative costs of production

And finally, with many commodity firms operating in emerging economies, the costs of production – be it drilling for oil, exploring for gas, producing metal or harvesting grain – in local currencies will fall relative to sales in US dollars. This has the effect of keeping previously unprofitable commodity producers in business and helps maintain the supply glut in global stocks.

In Russia, despite the collapse in oil prices, producers increased output and reported strong profits last year thanks to the weakness of the Russian ruble, which has almost halved in value against the US dollar in the past two years.

Similarly, Brazilian grain farmers are also enjoying the tailwinds of a weak domestic currency despite global prices for wheat, corn and soya all being on the floor compared with this time two years ago. The Brazilian real has plunged almost 40% in value against the dollar in the last two years as the Brazilian economy entered recession.

Despite the fall in global grain prices, Brazilian growers are still making a return on their crops as any grain exports from Brazil are traded in dollars. So there is no incentive for farmers to cut sowings in one of the world's largest grain-producing regions.

In an era of low grain prices, a reduction in crop sowings would be expected from US grain farmers or certainly a move into different, more profitable crops right now.

However, a recent survey by the USDA showed that US grain farmers intend to plant almost 94m acres of corn this year – the third highest planted area since World War II. The attitude of US growers appears to be plant corn and plenty of it with prices so low.

Comment

The ending of the commodity supercycle is plainly very bad news for resource-rich countries. For already industrialised countries such as Ireland, it should make little or no difference. However, exporting 90% of our agricultural production, we are not insulated from these negative forces.

For example, north Africa is one of the biggest markets for enriched dairy

powders. And because the economies of these countries have weakened due to low oil prices, their spending power has been affected.

Still, low commodity prices can be a good thing for the world's economies, particularly those dependent on commodity imports.

Low prices spur growth, reduce inflation, and increase investment in and spending toward other goods and services.

And if it also means China ends up consuming more high-value added Western services and goods, it is a positive boon.

After all, even though the world has become more efficient in both its production and consumption of global resources, because the population continues to grow, more people will need to eat. So from a food point of view, softer commodities such as dairy and grain should recover faster.



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Words: Lorcan Allen



ANSWERING THE FOOD SECURITY QUESTION

As China aims to secure enough food for its people, it is now focusing on investing abroad in food assets rather than pursuing self-sufficiency

Perhaps the most significant deal made in decades in the global agriculture industry was concluded in February this year, when the Chinese state-owned chemical company ChemChina clinched a \$43bn takeover of the Swiss-based seed and chemical company Syngenta. The deal is the largest-ever outward investment by a Chinese company, as well as the single-most costly agriculture transaction in history.

For many, the ChemChina-Syngenta tie-up is just the latest example of the shift in economic power towards the east, but the real significance of the deal may be what it tells us about food security policy in China.

Undoubtedly, the greatest challenge faced by policymakers in China is the question of how to feed 1.4bn people, or 20% of the global population, when you have less than 10% of the earth's farmable land. According to the World Bank, just over half the land in China could be considered agricultural, while less than 12% of China's land is deemed arable. Coupled with this natural constraint, crop yields in China are more than 40% lower than in the US.

Self sufficiency

The idea of Chinese self-sufficiency in food production is really a disappearing prospect at this point, but the country is looking to cut the gap and the Syngenta deal is seen by many as the first step towards that.

Syngenta is one of the largest producers of genetically modified (GM) crops, with close to 7,000 different varieties. And while GM crops are currently banned in China, there is a realisation among authorities that these rules will have to change if the country is to feed itself.

However, while the ChemChina-Syngenta deal made plenty of headlines earlier this year due to the sheer size of the transaction, it is just the latest part of a greater trend we have seen emerge over the last number of years in the global agriculture industry. A trend that has quietly but steadily evolved with a very clear purpose behind it – China is attempting to buy its way to future food security.

Previously inward-looking Chinese



agribusiness companies, many of which are state-backed, are looking more and more at overseas investments as a means to securing future food supply. As a major importer of almost all grain commodities, Chinese authorities established the state-owned conglomerate COFCO to source cereals and oilseeds from around the world.

However, the global grain trading space has been dominated by the ABCD companies – ADM, Bunge, Cargill and Dreyfus Commodities – for decades and challenging them was going to require considerable investment.

To match the scale of these juggernauts, COFCO acquired stakes over 50% in 2014 in two of the world's oldest grain traders, Nidera and Noble, in a combined investment of \$3.5bn. In

December last year, COFCO completed its takeover of Noble's agribusiness division when it paid a further \$750m for the remaining 49% stake in the business.

In just a few short years, COFCO has built itself into an agricultural grain trader with the integrated international supply chain to rival and compete head on with the ABCD companies.

Western diets

One further driving factor behind Chinese overseas investment in the food sector is that middle-class consumers want a more Western diet. This trend can be seen in the rapidly increasing rate of meat consumption among Chinese consumers.

Over the last 40 years, meat consumption in China has increased sixfold

and will only continue to accelerate in the years ahead. Pork, beef and poultry production in China has grown by an estimated 1.7m tonnes per year over the last 10 years, but this is still not enough to meet domestic demand. This has spurred Chinese food companies to go out and acquire meat processing businesses in more traditional meat producing nations, such as neighbouring Australia and New Zealand and even as far away as Argentina and the US.

The deal that grabbed the greatest attention came in 2013 when Shuanghui International paid \$4.7bn for the US-based Smithfield Foods, the largest pork processor in the world. The acquisition

Continued on next page



surprised many at the time and stoked serious concerns about food safety and domestic pork supplies among some US politicians.

Another Chinese company that has been extremely acquisitive in recent years is Bright Foods, a multinational food and drinks business with interests in dairy and meat processing, prepared foods, as well as distribution.

Since 2012, Bright Foods has spent close to \$4bn acquiring companies across the food sector outside of China. The most high-profile deal made by Bright came in 2012 when it paid more than \$1.1bn for a 60% stake in the well-known UK brand Weetabix.

Bright Foods also paid a hefty \$1.9bn for a near 80% stake in Tnuva, a large Israeli dairy processor, while it has also taken large holdings in New Zealand-based dairy company Synlait Milk, as well as the largest livestock processor in New Zealand, Silver Fern Farms.

Land deals

Possibly one of the most controversial and emotive aspects of China's overseas investment expansion has been the targeting of large holdings of agriculturally productive land in outside countries.

Large farms brought to market for sale in Australia and New Zealand in particular have almost always attracted Chinese interest and it is a growing concern for authorities in both countries. Since 2012 alone, Chinese buyers have snapped up more than 2.2m acres of Australian and New Zealand farmland.

The largest of these land deals occurred last year when a Chinese billionaire paid \$47m for two cattle stations in Australia with a combined land holding of 1.74m acres.

In February this year, another Chinese investor paid \$215m for Van Diemen's Land Company, the largest dairy farm in Australia set on 17,500 acres. However, scrutiny is increasing on such transactions, with authorities in both Australia and New Zealand blocking a number of recent high-profile deals with Chinese buyers in the interest of national security.

In November last year, the Australian government blocked the sale of the Kidman & Co farm company to outside investors on grounds it was contrary to the national interest. The Kidman & Co farms extended to almost 25m acres, which is about 1.3% of Australia's total land area or roughly three times the size of the UK.

The most recent Chinese land acquisition to stir up concerns came after an unnamed Chinese consortium bought up more than 4,000 acres of arable tillage land in central France.

Comment

In late January this year, the ruling communist party in China released the latest version of its "No 1 Central Document", a blueprint policy document for Chinese agriculture up to 2020. The fact the policy document is given the title of No 1 tells you all you need to know – the priority in China is food. As the largest market in the world for food, the country has been attempting to modernise and expand its agricultural output for decades.

But with the idea of self-sufficiency in food a disappearing prospect in China, the country's policymakers and businesses alike are examining other ways to meet domestic demand. The country's outward investments has grown from \$20bn in 2005 to \$171bn last year, with food and agriculture investments accounting for a significant share of this.

The question for the Irish agribusiness sector is will we see Chinese investment here sooner rather than later. While Irish eyes may be fixed on the Chinese market for continued expansion in the coming years, will the Chinese themselves look to invest directly in Ireland to secure future food supply?

Has the dragon lost its thirst for milk?

Eoin Lowry
speaks to
Sandy Chen of Rabobank China,
to understand if
China has lost its
thirst for milk

EL: How have Chinese imports of dairy powders been over the past 18 months?

SC: China's imports of dairy powders halved in the first half of 2015, compared with the same period in 2014. The second half of 2015 was less challenging, due to a lower comparison base. However, they were still 15% back compared with the second half of 2014. In January this year, powder imports were up 50% compared with 2015, but February declined 18% year-on-year.

EL: Why are imports back so much – is it really down to reduced demand?

SC: Between 2009 and 2012, demand for dairy products in China was growing at 4% to 5% per annum. However, over the last 18 months, this reduced significantly to 0% to 2.5%. So demand is slowing in China and it has been down to a number of factors. Firstly, high pricing for nearly all of 2014 choked some demand. Secondly, we are now seeing certain categories mature. For example, overall growth of raw milk has been very slow, along with milk beverages declining. Finally, there is definitely some impact from the economic slowdown.

EL: Is there a stock buildup of dairy in China now?

SC: It is estimated that China worked through half of the stock during the course of 2015. This was mainly in the second half of the year when production declined and consumption was in low single digits. This would suggest that the big rise of imports in January may simply be down to buyers rushing to fill the low tariff rate quota from New Zealand. The first 140,000t of powder into China from New Zealand carries a 2.5% tariff rate, compared with the normal 10% rate. However, what is also likely is that the destocking progress during 2015 meant that imported stock was low, and the reduced prices were now becoming attractive to buyers.

EL: Were the import levels in 2013 and the first half of 2014 an outlier or a surge? Are they likely to be seen again?

SC: It does look like it was a surge during this period, and was due to a miscalculation by Chinese buyers. They seemed to be of the view that firstly, global prices were to remain high and supply tight; secondly, domestic production recovery was to be slow; and thirdly, demand in China was to remain reasonable at the then-prevailing high pricing. But now, with over-import a thing of the past and destocking in progress, it would seem that the import of dairy products should grow in the region of 5% to 10% in 2016.

EL: With the current economic slowdown in China, do people feel less confident and hence are they reigning in their spending?

SC: Consumption has its own resilience. There may be a slowdown to some extent, but this is a complicated issue. Within food and beverage, premium products are growing very well, reflecting consumers trading up. But products targeting the mass market are slowing or de-

clining, for varying reasons. For example, instant noodle sales declined in 2015, impacted by a few factors: 1) a significant player raised prices which led to falling volume and sales; 2) a lower amount of migrant workers in the cities due to the slower economy (fewer target consumers); and 3) the online meal delivery service has been growing rapidly and gained popularity in the cities (substitution).

In soft drinks, there is a decline in sales, but more due to the aging of products as there has been a lack of innovation over the last few years. Beer sales declined overall. However, premium and imported beers continue to grow.

EL: Will the relaxation of the one-child policy increase demand for dairy in general?

SC: Such demographic themes may unfold in the long run, with limited near-term boost. The more direct positive impact could be on infant formula, which will see some demand improvement as a result of the two-children policy. But it remains to be seen whether young couples in China are embracing this new policy enthusiastically. Surveys in the recent past suggest that the interest in a second child is at the best lukewarm, largely due to the perceived cost of raising children in China.

EL: Where next for China and dairy imports in the near term?

SC: It is expected that overall dairy imports (including all products in liquid milk equivalent terms) will be down slightly in the first half of 2016. The second half of the year looks better, with imports increasing by 25% to 30%. This

would mean that overall dairy imports would increase by 5% to 10% overall in 2016. This is driven by destocking, a need to source cheaper ingredients (domestic milk is expensive) in the international market as processors focus on cost management.

EL: We hear reports of fake powders under big brand names in the market in China. How is the government tackling this?

SC: This may slightly impact the reputation of big brands in the short term. However, more importantly, it highlights the need to improve the regulation of the supply chain, despite so much having been done by the regulators, and that the fines may need to be raised significantly.

EL: Is China still investing in its own milk supply?

SC: Due to the downturn in milk price in China over the past two years, investments have slowed significantly and were even suspended in some cases. Dairy farming continues to go through structural changes, with large-size farms getting larger and small farms exiting. As a result, local supply growth is expected to be just 0.8% in 2015. The biggest challenges will be to large-scale dairy farming, where environmental regulations and enforcement could be heightened.



AGRI
BUSINESS

FRAGILE WORLD

Words: Brendan Dunleavy



ROUTE TO RUSSIA

Perhaps no country in the world has as much agricultural potential as Russia, but its agricultural development deficit currently spans 50 to 60 years

History tells us that Russia's colossal agricultural and natural resources have been an irresistible magnet for invasion and conquest. But the Russian landscape is littered with the whitened bones and the broken dreams of hordes of pillaging and rapacious invaders.

Winston Churchill said in 1939: "I cannot forecast for you the actions of Russia, because Russia is a riddle, wrapped in a mystery, enclosed inside an enigma. But perhaps there is a key: that key is Russia's self-interest."

Since the Russian ban on western food products, almost 400,000t of dairy exports from the EU have had to find a new home. And it seems Russia is more adamant on feeding itself than ever before.

The Russian minister for agriculture, Aleksander Tkachev, said last year: "We will complete the historical mission to feed our own Russian people. We should ensure national food security with actions, not just in words. Specifically, we will produce enough milk, meat, grains, protein and oilseed crops, vegetables and fruit, to at least satisfy domestic consumption. We also have the capacity, and the ambition, to generate a large volume of exports."

So, anyone wondering what it takes to safely get into Russian farming and food markets must look at some recently successful case histories.

Successful agribusiness models that found a route into Russia

THE BLACK EARTH FARMING AGRIBUSINESS MODEL (INTERNATIONAL AGRIBUSINESS PLC)

Black Earth Farming PLC (BEF) is a global agribusiness group that owns and operates a large-scale land acquisition

and crop production conglomerate in Southern Russia. It was set up in 2006. Eight years later, the group had acquired nearly 300,000ha (750,000 acres) of the very best land in Russia. This is about the same size as counties Carlow or Louth. Prime agricultural land can be bought for as little as €40/acre in Russia.

BEF is bringing the best and the most scientific agricultural technologies to Russia – 68 combines, 37 self-propelled sprayers, 109 large tractors and 175 trucks form the basis of BEF's machinery fleet. Everything is guided, monitored, and controlled by GPS and computers.

The main agricultural crops grown by BEF include maize, wheat, sunflower, potatoes and sugar beet. Long-term contracts are in place locally with PepsiCo/Frit-o-Lay and Quaker Cereals for the produce. In addition, BEF is shipping out huge quantities of grains and oilseeds direct to global markets.

The group owns all the essential infrastructure on-farm and at the ports to store, transport and export grain. Specifically, BEF has direct transport links to all the main Baltic and Black Sea ports. Port-side, BEF also has the complete range of grain stores, elevators, and facilities for loading grain direct on to ships. From here, BEF can ship its grains and oilseeds direct to any Irish, UK or mainland European port, for as little as €8/t.

THE HERMITAGE PEDIGREE PIGS MODEL (IRISH FAMILY AGRIBUSINESS)

From a small base in Kilkenny, this family-owned pig breeding company has enjoyed stellar success in Russia. The Nolan family, owners of Hermitage Pedigree Pigs, broke into the Russian market when the Russian pig industry was on its last legs. On-farm losses were crippling.

Continued on next page

Prime agricultural land can be bought for as little as €40/acre in Russia

Pig diseases were rampant and malnutrition was endemic. Pig breeding genetics and production systems were 60 to 70 years out of date.

Pig-housing systems were totally obsolete and the buildings were actually collapsing and falling apart. Feed conversion efficiencies and pigs weaned per sow per year were less than 30% to 50% of Irish standards. Days to slaughter were at least three times longer than on Irish pig farms. Consequently, in the 13 years from 1992 to 2005, there was a four-fold decrease in Russian pig production. But from 2005 to 2011, the industry underwent a spectacular recovery. During these six years, industrial-scale pig production in Russia was turned around and increased three-fold.

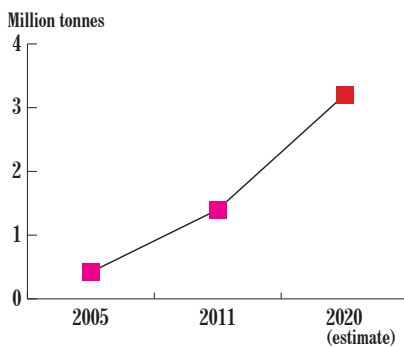
Specifically, pork production in Russia recovered from 420,000t in 2005, and increased to over 1.4m tonnes by 2011. This rate of increase continues apace. By 2020, Russian pork production will have more than doubled again to nearly 3.2m tonnes.

Recently, Hermitage Pedigree Pigs set up a joint venture pig breeding farm about 1,200km northeast of Moscow. Over €10.5m was invested in the modern, fully integrated pig breeding and production farm.

● **EU AGRICULTURAL CONSULTANCY AND TRAINING SERVICES MODELS (STATE-SPONSORED AGRIBUSINESS)**

Russia's self-interest, now more than anything else, is to feed its people from its own resources. This looks set to remain the top priority in Russia into the future. Russia's agricultural resources are indeed colossal, but they are also totally under-developed. Furthermore, the country doesn't have any of the basic

RUSSIAN PORK PRODUCTION



400,000t

of dairy exports from the EU have had to find a new home since the Russian ban on western food products



Dutch, Danish, German and other EU ministries for agriculture are sponsoring training projects in Russia.

know-how or the practical farm managers to develop and exploit them. This is the single biggest deficiency in Russian farming, food and agribusiness today.

Dutch, Danish, German and other EU ministries for agriculture are sponsoring a wide range of agricultural consultancy and training projects throughout Russia. Leading Danish and German, agricultural trade organisations and agribusinesses co-fund and co-work these projects.

Their highly skilled agricultural consultants and farm managers deliver the projects to Russian farmers and agribusinesses. Automatically, these projects become trojan horses to get into Russian agricultural markets. Once in, they can sell unlimited quantities of their country's farm machinery, equipment, pedigree livestock and agricultural seeds.

● **INTERNATIONAL DAIRY PROCESSORS' PRODUCTION AND MARKETING MODELS**

With the demolition of the Berlin Wall in 1989, the first products Russians imported from Europe were not bread, butter or meat, but chocolate and ice cream. Overnight, sales of Mars bars, Snickers, fruit yoghurts and choc-ices went through the roof.

The Mars group, Valio, Parmalat, Cadbury, Unilever, Friesland-Campina, Danone and others, very quickly became established in the fast-growing Russian market. How they did this is one of the big lessons to be learnt about how to get into Russian food markets. Specifically, the Russian market entry and development strategies of these multinational food groups were simple, immediate, low-cost and highly effective.

Russian food market entry and development

Phase one (early 1990s)

The Mars Bars etc were produced by the multinational food groups firstly in Europe. Every day, these products were rushed across the continent into Russia in convoys of large, refrigerated containerised trucks.

The journey to the streets of Moscow from confectionery plants and dairies in Holland, France, Germany, Finland and Italy, took less than 12 to 24 hours.

Once they got on to the streets of Russia, sales of these products took off automatically.

This was critical, because 25 years ago, advertising systems in Russia were unknown and ineffective.

But at that time, no advertising programmes were necessary as once they got the taste for a Mars bar, they were hooked.

Phase two (2000 to 2005)

Once established, these companies moved into phase two of market development. This was done with great speed and efficiency. Phase two entailed replacing the finished confectionery products produced in Europe and exported directly to Russia, with exporting instead, their main ingredients, such as skim milk and whole milk powders, vegetable oils, sugar and cereals. There, these ingredients were recombined in newly constructed plants, prior to producing the same confectionery products in Russia. This was a lower-cost model, so the retail prices could be slashed. This, in turn, increased the sales and the profits of the EU-based multinational food groups. At that time, even Irish farmers profited from this evolution of Russian food markets.

Phase three (2005/ongoing)

In phase two, the multinationals perfected their match-winning formula for producing their best-selling food and confectionery brands in Russia. In phase three, they are going one step further. Specifically, today, they are directly sourcing Russian agricultural raw materials to produce these European products in their Russian dairies and food factories.

Brendan Dunleavy has over 20 years' agribusiness project management experience in Russia and Ukraine.



NETWORKS

ESB NETWORKS' €2.2 billion Investment

ESB Networks builds, owns and maintains a transmission and distribution network of over 180,000 kilometres in the Republic of Ireland. Communities and businesses across the country have been benefitting from major upgrade work carried out by ESB Networks over the past decade. The business invested €494 million in constructing and upgrading network in 2015, bringing the total investment over the last five years to €2.2 billion.

Overall, since the programme began, 44,000km of lines have been upgraded to 20kV operation across every county in the country, with 3,000km converted in the past two years. To give an idea of scale, one 20kV project which commenced in January 2015 has recently been completed on time and within budget in south-west Cork and involved the upgrade and refurbishment of over 200 kilometres of medium voltage lines as well as the replacement of 460 transformers. Over 60 ESB Networks' staff worked on this project over a number of months. In conjunction with this work, 'smart' technologies such as additional remote control capability and automation were added to the network so that it is now one of the most modern to be found anywhere in the world.

Marguerite Sayers commented that the major investment undertaken in the areas of network automation and consolidation over the last ten years has benefitted business, local communities and the environment.

"The improved resilience of our network will almost certainly mean fewer and shorter-duration power outages for our customers, while a reduction in system losses impacts positively on our national carbon footprint. All of these upgrades are helping to fulfil the mission of ESB Networks to provide electricity to all Irish customers safely, reliably and efficiently, thereby helping businesses to grow and encouraging inward investment into every part of the country. On behalf of ESB Networks, I would like to extend a heartfelt thanks to urban and rural customers all across the country, including many small business owners, who have facilitated our upgrade works and have been so understanding of what we are trying to achieve."

NEW CONNECTIONS

Economic recovery has continued during 2015 in both the house building and business sectors with both experiencing increasing volumes of new connections, with connections up 8% on 2014. ESB Networks connected 17,012 new residential and business addresses in 2015, bringing the total connections across Ireland to over 2.3 million.



RENEWABLES

The amount of wind generation connected to the Irish electricity network has exceeded 2,400 MW and continues to increase annually. The connections to seven new large wind farms in the last year have helped to increase the wind generation capacity up to 21 percent of Ireland's electricity needs. Ireland is on track to achieving the national target of providing 40% of its electricity needs from renewable resources by 2020.



SAFETY

ESB Networks is fully committed to ensuring the health and safety of employees, contractors and the public. In 2015, ESB Networks launched a major new public safety campaign promoting the Stay Safe, Stay Clear message. The campaign features a new TV ad, radio advertising, online and social media campaigns. As part of the campaign ESB Networks has launched a comprehensive schools programme with the RSA and a partnership with the Irish Farmers Journal to promote Safe Family Farms.



Words: Lorcan Allen

BUTTER IS BACK

A surge in domestic demand in the US for butter has helped support farmer milk prices despite the downturn in global dairy markets

In the face of massive overproduction in the early 1980s, the European Commission implemented dairy production quotas in 1984 to curb output from EU dairy farmers. And while quotas were abolished in April last year and output is set to increase steadily in the years ahead, EU milk production is actually 5% behind where it was in 1984.

During that same 30-year period, US dairy farmers have always been free to produce as much as the market demanded. Since the early 1980s, US milk output has increased by more than 50% to almost 95m tonnes in 2015, with output forecast to increase a further 1.4%, or 1.3bn tonnes, this year.

What the US dairy industry has always been blessed with is a huge domestic market with a strong appetite for dairy products, particularly liquid milk, cheese, butter and ice cream.

What has been less clear is the US dairy sector's commitment to the dairy export trade with less than 15% of the milk pool exported. Although US dairy exports have increased by 190% since 2003 to almost 1.7bn tonnes, the role of the US in the global export trade has largely been as a back filler in the market with New Zealand and EU exporters dominating.

Increasing

The value of US dairy exports last year was close to €4.6bn – a fourfold increase over the last decade but just €1bn greater in value than Irish dairy exports. Certainly, the bullish US dollar has held

exports back over the last 18 months but it is still surprising to think that such a massive global producer does not have a greater presence in the global trade.

However, with strong domestic demand for butter and cheese in the US, dairy exports mainly comprise dried milk powders and whey products.

And with prices for these products on the floor in the world market for the last year, the focus of US processors has been squarely on the domestic market where returns are much stronger. Cheese prices in the US have remained indifferent over the last 12 months but the real story of the US dairy sector in the last year has been butter.

In May 2015, US butter prices were just over the \$4,000/t mark, which was almost \$750/t more than EU butter prices and \$800/t more than New Zealand prices. Fast forward a year, and US butter prices have actually increased by more than 11% in the intervening period to over \$4,500/t, while in New Zealand and the EU prices have declined by 21% and 15%, respectively.

Butter prices in the US are now almost \$1,700/t higher than in the EU and nearly a massive \$2,000/t higher than in New Zealand. But what is driving this surge in US butter prices? The primary reason is that US domestic consumption of butter has been growing strongly over the last five years. It is a product that has come back very much on trend with US

consumers once again with per-capita demand back to levels not seen since after World War II.

Amazingly, another major stimulus for butter consumption in the US has been the new initiative by fast-food chain McDonald's to offer an all-day breakfast option at its outlets.

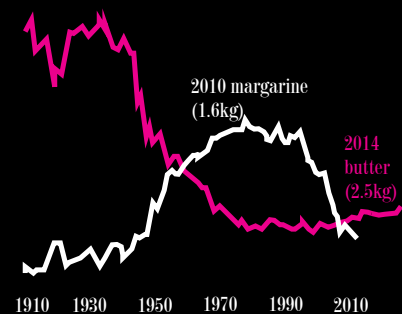
Strong prices

With milk powder and whey prices so weak and cheese prices generally in line with the world market, Peter Vitaliano, chief economist with the National Milk Producers Federation in the US, estimates that the strong butter price contributed more than two thirds of farm-

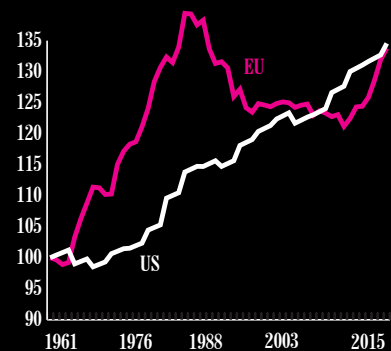




US PER CAPITA BUTTER CONSUMPTION



INDEXED US AND EU MILK PRODUCTION



ers' milk cheques in the US between November and December last year.

And while butter returns have historically contributed about 40% of the milk cheque in the US, Vitaliano is forecasting that the contribution from butter to US milk prices will remain above 50% for the rest of this year. As such, butter is now the key component in determining the milk price outlook in the US.

However, while the strong price of butter has propped up US milk prices over the last year in spite of the global downturn, it is one of many factors encouraging increased production from US farmers. Since the start of the year, US milk production has shown bull-

ish increases with supply up by 1.8% in March alone to 8.4m tonnes.

The outlook is therefore darkening for US farmgate milk prices as a greater milk supply will lead to increased butter production and add to already high stocks of butter in the US, which will in turn drive prices downward.

Driver

So what is driving the increased production from US dairy farms? Data shows that the national dairy herd in the US has remained stable over the last 12 months, so the extra supply is coming from increased production per cow. No doubt the cheap price of grain is fuelling

this. With cereal prices on the floor in the US, coupled with massive stocks from last year's harvest, US dairy farmers have been able to increase feeding to cows at relatively little cost.

As such, US farmers are being urged to remain vigilant to what markets are telling them. Vitaliano believes that the broader international picture is that prices for milk powders and whey products will stay low for quite some time. In fact, Vitaliano estimates it will probably be at least another year before we see any uplift in powder prices because the oversupply situation, particularly from European producers, is "very very large" and showing no signs of turning around.

Protecting farmers' margins

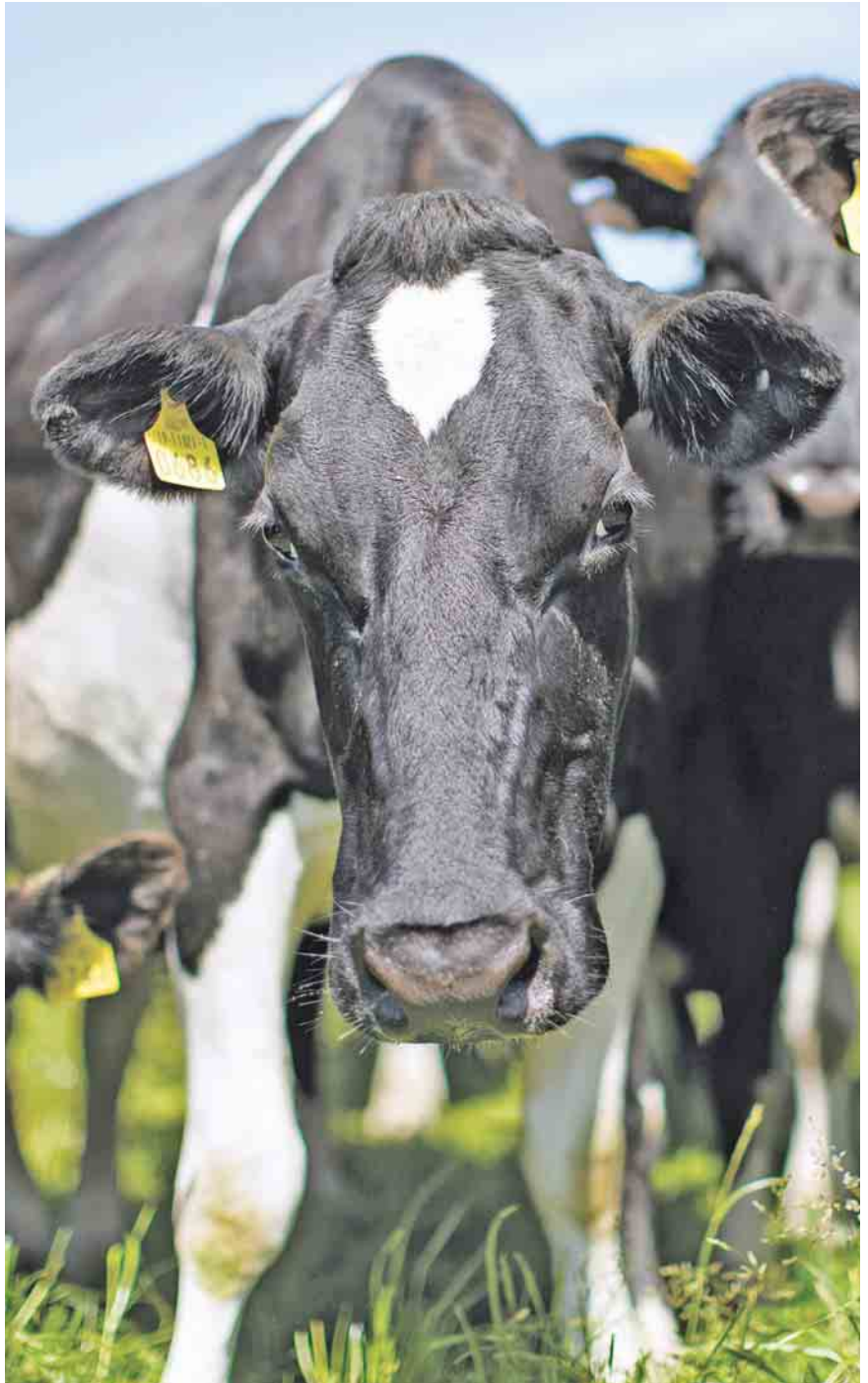
On the back of the increasing supply seen in recent months, US milk prices are beginning to move into a lower cycle right now. This can be seen as farmers who are insured at the higher end of the scale under the USDA's margin protection programme (MPP) are starting to receive insurance payments.

The MPP was enacted by the USDA in 2014 in response to the collapse in market prices in 2009 and again in 2012. The scheme allows farmers to insure or protect themselves with a margin on anything between 25% and 90% of their milk production. The level of margin farmers can insure themselves for is between \$0.08/l at the lowest end of the scheme and \$0.16/l at the highest end.

Payments are made to farmers by the USDA once their own production margin falls below the rate of insurance they have taken out. The minimum sign-up cost of the scheme is \$100, which insures up to 90% of milk produced by the farmer for the basic margin of \$0.08/l. If a farmer wishes to insure themselves with a higher margin, they pay a higher premium.

The USDA estimates that had the MPP been in existence between 2009 and 2014, US dairy farmers would have paid in \$500m in premiums and fees, while the USDA would have paid out \$2.5bn in financial assistance or margin protection insurance to farmers.

The MPP is not the only volatility management mechanism available to US farmers. The CME operates a futures milk market allowing producers to forward-sell portions of their milk output for a set price and thereby better manage farm cashflow.



Comment

Exporting about 85% of production every year, the Irish dairy sector is firmly playing in the global market with prices determined largely by the dynamics of global supply and demand. In the US, however, thanks to a large domestic market, it is less vulnerable to the vagaries of the global market.

In particular, the surge in butter consumption by US consumers has helped prop up the milk price for US farmers at a time when their counterparts in Europe

and New Zealand are seeing the farmgate price for their milk hurtling to levels not seen since 2009.

And even with milk prices in the US starting to come under downward pressure in recent weeks, government support mechanisms are now kicking in to protect farmer margins.

Even though Ireland is one of the lowest-cost producers in the world, it doesn't have the benefit of a large domestic market like the US. It also now operates in an open free market without direct government support.

Cheap grain, along with the margin protection program, ensures that the US dairy farmer will continue to make money and the milk supply tap will continue to flow. This will be at the expense of global commodity dairy prices in two ways.

Firstly, prices will be weighed down directly through increased US exports.

And secondly, as the highest-cost producers normally set the floor for global prices, any government interference through margin supports indirectly reduces this floor.



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A full-page background image showing the Christ the Redeemer statue in Rio de Janeiro, Brazil. The statue is perched on a lush green mountain peak, with its arms outstretched. Below it, the city of Rio de Janeiro is visible, nestled in a valley and along the coast. The bay is filled with numerous sailboats. In the background, more mountains and the city skyline are visible under a clear sky.

BRAZIL IN NEED OF REDEMPTION

Eoin Lowry reports from the region and looks at how the once vibrant economy is now firmly in recession

In less than three months, Brazil will host the 2016 Olympics at a cost of \$11bn. But with protests on São Paulo's main street, Avenida Paulista, it seems these games can't come fast enough for Brazil's president, Dilma Rousseff.

Just 18 months ago, the Workers Party president, who has a strong emphasis on social programmes, was voted in for a second term. However, since her re-election, Latin America's largest economy has plunged into recession and Rousseff is now facing impeachment.

In 2010, Brazil was enjoying 7.6% GDP growth, making it the world's seventh largest economy. But since the previous president Lula da Silva left office six years ago, Brazil has experienced a major economic downturn.

To make matters worse for Rousseff, Brazil is experiencing one of the worst corruption scandals in the country's his-

tory. An investigation of state-controlled oil company Petrobras has seen its stock fall by 60% over the past year, and the company has had to write off \$2bn in bribery-related costs.

Brazil was once among the fastest-growing large countries in the world, booming at China-like growth rates. However, in 2015 its economy shrunk by 3.8% and is expected to suffer a further 3-4% contraction this year.

Unemployment now runs at about 7% and is increasing, while Brazil's high interest rate of around 14% is making borrowing costlier to service. And with a large amount of that debt in US dollars, the recent devaluation of the domestic currency means that the amount to be repaid has significantly increased.

There doesn't seem to be any light at the end of the tunnel for the 200m Brazilians and especially the 55% termed as middle class. According to the Govern-

ment, if you earn anything from €90 to €300 a month in Brazil, then you're middle class.

And the recession is projected to continue this year, due to much-needed fiscal adjustment, tighter monetary policy to contain inflation and a lack of investor confidence related to the political uncertainty. Some economists believe that a slow recovery will unfold by 2017 as confidence in macroeconomic policies improves. Right now, this is hard to see.

So what went wrong? The three pillars supporting economic policy between 1998 and 2006 were strict fiscal targets, an inflation targeting system and flexible exchange rates. This model persistently reduced inflation and interest rates simultaneously, leading to a flexible exchange rate system. The strict fiscal control and economic growth ensured national debt reduction and



therefore secured reduced interest rates and increased public and private investments. However, from 2006 onwards, those pillars gradually changed.

The economic policy focused on fostering demand without fostering competitiveness as a whole. It was hoped that this strategy would deliver demand incentives and create a favourable environment for investments, which would, in turn, create economic growth. However, the economy grew only until full employment was achieved and investments never came.

The government is now trying to incentivise consumption and this is fueling inflation which is running dangerously close to double digits (9.93%) – something Brazilians are all too familiar with having seen inflation spiral and reach an annual level of nearly 5,000% at the end of 1993. This was curbed by the introduction of a new currency, the real,

in 1994 and by 1998 inflation rates fell to a low of 2.5%.

Red tape, poor infrastructure and a strong currency (up to now) have rendered much of the economy uncompetitive. Therefore, consumers have been the main source of demand. A low unemployment rate has pushed up wages. In the past 10 years wages in the private sector have grown faster than GDP (public-sector workers have done even better). That allowed consumers to borrow more, which encouraged still more spending.

Inflation rates

In order to keep inflation rates from rising further, economic policies are keeping prices of various products under government control, such as electricity and petrol, artificially low.

Coupled with this, its currency crashed to an all-time low against the

dollar last autumn on concerns over the fiscal management and political uncertainty. In the past, one US dollar bought BRL2.5, today it buys BRL4. As the largest producer of sugar cane and the second largest producer of cattle and soya bean in the world, this is boosting exports from Brazil and farmers are feeling the benefit. But it is making everything from clothes to fertiliser and machinery, which must be imported, much more expensive.

Brazil is South America's largest country, with only Russia, Canada, China and the US larger in terms of size and what happens there clearly affects the global economy.

The country's plans for the next decade may not just depend on the economic policy adopted over the next five years, but is more likely to depend on whether Rousseff will still be in power in 12 months time.

Words: Phelim O'Neill

TWIN THREATS OF BREXIT AND TRADE TALKS

Despite the uncertainty created during negotiations, long-term trade deals often can be beneficial to the Irish agribusiness sector

Irish agribusiness is in a period of considerable trading uncertainty because of the imminent vote in the UK on continued membership of the EU. While this will be resolved one way or the other by the end of June, a series of trade discussions are ongoing to which another could be added if the UK does in fact vote to leave.

Irish agribusiness is bracing itself for the outcome of the UK vote on continued membership of the EU on 24 June with considerable apprehension. The UK remains our prime market outlet, accounting for a third of our dairy exports and over half our total beef exports. In the context of our overall trade, exposure to the UK market is 16%, which suggests other sectors will be able to adapt more easily should Brexit happen.

The founding treaty of the EU provides for two years of negotiation if a member decides to withdraw. There are suggestions that a UK exit from the EU wouldn't be that significant and that there are examples of other European countries, typically Norway and Switzerland, which are outside the EU but enjoy the free-trade benefits. However, these aren't as simple or straightforward as they may at first seem.

UK options post Brexit

In the case of Norway, it is part of the



European Economic Area (EEA). This allows it trade with the EU on a tariff-free basis with the exception of agricultural and fisheries, which Norway excluded. However, in return, Norway has to accept into domestic legislation all EU law and is therefore bound by all EU controls without being in a position to influence or shape them as a member.

Furthermore, they have a cost, being liable to pay several billion euros to the EU budget annually so their position isn't an attractive option to a member who wants out.

Switzerland has a variation of this model, the difference being that it adopts EU legislation into Swiss law on a case-by-case basis. This doesn't operate



as smoothly as the Norwegian model, and it is most unlikely the remaining EU 27 would extend this facility to the UK in the event of them leaving. Similarly, being part of the free trade area like Turkey is unlikely to appeal to an exiting UK as they would be bound by EU international trade treaties without being in a position to influence. It is most likely

that a specific deal between the EU and UK would be negotiated, but whatever this is, there is no way that it could be better than the present single market.

Ireland has a further complication in that there is a land border with the UK across which businesses north and south trade daily. With this being an entry and exit point to the EU, some

level of checking and therefore disruption seems inevitable, all of which would hinder agribusinesses both sides of the border in their daily operations as people trading between north and south before the Single European Market in 1992 will recall.

While the possibility of Brexit is an immediate threat to Irish agribusiness, ongoing negotiation of various international trade treaties between the EU and various global trade blocks present several threats but also some opportunities for Ireland.

Trans Atlantic Trade and Investment Partnership (TTIP)

This discussion between the EU and the US has been ongoing since the middle of 2013 and there is a big push coming on, particularly from the US side, for a deal this side of the US elections. However, uncertainty will prevail as the main presidential candidates are cool about free trade, though that may change after the election.

For Irish agribusiness, TTIP is a mixed bag. The Irish Government commissioned Copenhagen Economics to do a TTIP impact study and the only real loser was judged to be the beef sector. With the US the second-largest exporter in the world, there is a threat to the EU market of an inflow of steak meat in particular, which in turn would make Irish steak meat more difficult to sell and the price would likely be depressed.

However, there could be some opportunities as well for Irish companies which started doing business in the US last year. These are particularly for supplying manufacturing beef for the burger market and increasingly popular fajita dinners in the US.

Meanwhile, the US is a major market already for Irish dairy companies, many of which have invested considerably there. There is an issue with US support for milk production through subsidised margin insurance, but overall a TTIP would be positive for our dairy industry. Ireland is a major importer of grain, so a trade agreement will make this easier but do little for the value of domestic production.

The US is also a huge exporter of pigmeat so there is likely to be little opportunity there. It is a more positive picture for lamb once veterinary issues are sorted as the US is New Zealand's most lucrative export market and Irish lamb exports could complement our beef offering.

Free Trade Agreement (FTA) Japan

While these are the lowest profile of the various trade discussions the EU is involved in, it is the one that has probably the most positive potential for Irish agribusiness. Irish dairy is well established in the Japanese market with cheese, despite high tariffs.

Butter potential is curtailed by a 200% tariff barrier, though some government contracts have been won by Irish companies. Beef exports are limited to

For Irish agribusiness, TTIP is a mixed bag. With the US the second-largest exporter in the world, there is a threat to the EU market of an inflow of steak meat in particular, which in turn would make Irish steak meat more difficult to sell and the price would likely be depressed. However, there could be some opportunities for Irish companies which started doing business in the US last year

relatively low volumes, while a reduced or eliminated tariff barrier on pigmeat would present considerable growth opportunities.

EU Commissioner for Agriculture Phil Hogan recently led an EU business delegation to Japan and was very upbeat about the opportunities, especially if there was an EU-Japan FTA.

Discussions have slowed, however, given the difficulties the Japanese government is having getting approval of the TPP trade agreement. It is also likely that there will be Japanese elections this July, so little by way of meaningful negotiation is likely to resume before the autumn.

Mercosur

Discussions with Mercosur, the group of South American countries including Brazil, Argentina, Paraguay, Venezuela and Uruguay, have gained considerable momentum since the election of a new free trade-inclined president in Argentina at the end of last year. He is the polar opposite from his predecessor, who actually imposed export tariffs on beef to keep it cheaper for the domestic market.

This resulted in a collapse, with Argentina falling from being the number three exporter in the world in 2005 with 750,000t to less than a third of that a decade later in 2015. Mercosur, established in 1991, had a vision of being the EEC of South America, but in practice has been a much looser association.

They began trade talks with the EU in 1999 and relaunched in 2010, but much of the rest of the time they have been dormant. Now, with Argentina back on board and under the ambitious Uruguayan presidency, there is renewed vigour in discussions, which isn't being discouraged in the EU.

These talks have potential to hit Irish agribusiness hardest of all, particularly the beef sector. The industry trade association, Meat Industry Ireland, has highlighted this on several occasions. If the threat to beef is immediate, dairy will in the longer term also be exposed. The reason why agriculture is so vulnerable with Mercosur is because it wants to trade agricultural products with the EU, while the EU is anxious to trade industrial products including cars and various manufactured goods, pharmaceutical and financial services.

There is a fear in the industry that agriculture could be sacrificed as Mercosur is the opposite of Japan, which wants to trade industrial goods with Europe and is likely to offer agriculture in return.

Long-term good trade deals are to the benefit of Irish agribusiness. The problem is making sure they are good and living with the uncertainty while they are being negotiated.

Section two Gaining a competitive advantage

In the second part of this year's agribusiness report, we profile how companies and countries are overcoming the uncertainty of a fragile global economy. We have identified four areas that companies are focussing on to gain a competitive advantage: innovation, sustainability, consolidation and supply chain integration.

In New Zealand, we examine how the kiwi fruit marketing company, Zespri, innovated the complete chain to transform its sole product from a basic traded commodity to an added-value, higher margin product. As we have already seen, commodity prices have become increasingly challenged and are much more susceptible to the vagaries of supply and demand swings. The strong brand created by Zespri allowed it to mitigate this risk out of its business.

In Saudi Arabia, we see what true sustainability looks like as the country faces up to the prospect of a depleted natural water supply. Water scarcity is set to become one of the highly political issues in the coming years and companies such as Almarai that are operating in the desert are being forced to adapt their feed supply chains currently to find new ways of accessing water. And, while water scarcity may seem like a remote problem in Ireland, the increasing length and severity of drought periods in the water distressed parts of the world is a cause for great concern as food production accounts for the majority of our water needs.

One of the key threats facing agribusiness in Europe is the ongoing TTIP and Mercosur trade talks. From an agriculture perspective, a Mercosur deal has great potential to cause harm to the industry, making farmers and agribusinesses equally sceptical and nervous. The European industry likely to lose out the most on any Mercosur agreement would be our meat sector. We examine how fragmented the processing sector is here in Europe and how new competitors from South America or the US would dwarf even the largest players in the European market.

Despite this, we retain some significant competitive advantages over competitors. We look at how Brazilian exporters are being crippled by a creaking infrastructure system that is driving up transport costs.

So while challenges will always present themselves, it is learning to adapt and innovate around them that will set Irish agribusiness apart from the competition.

9bn

**Forecast global
population by
2050.**



**Brazil's creaking
infrastructure
system is driving
up costs just to
move product
out to the
country's ports**

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Words: Lorcan Allen



YARA INSIDE THE BUSINESS

Eoin Lowry sits with the boss at the world's largest producer of nitrogen to get his views on the future of agriculture

The phrase "knowledge grows" sits on the wall in the lobby of Yara's minimalist headquarters in Oslo. Intrigued, it seemed appropriate that the first question to Svein Tore Holsether, president and chief executive officer of Yara is to ask about its meaning.

He explains that the experience over the past three decades illustrates that there is a strong need for smarter farming. European farmers have substantially increased the efficiency of fertiliser use. For every kg of mineral nitrogen fertiliser applied today, they achieve about 50% higher yields compared with 1980. He says: "This means far less nutrients are lost to the environment, as well as a significantly reduced carbon footprint."

Holsether, who took the reins of the world's largest producer of nitrates, ammonia and NPKs last September, says "simply put, to grow more food to feed the expanding population we must either achieve higher yields – or expand farmland. But farmland expansion causes deforestation, which releases massive amounts of CO₂."

He adds: "Gaining higher yields is essential to alleviate pressure on deforestation. But agriculture must also become more resource-efficient. Farmers must achieve bigger harvests from every kg of fertiliser, every drop of water and every hectare of land."

He tells me that five crops (wheat, rice, maize, soya-bean and barley) cover about 50% of current cropland and that, by 2050, the demand for these crops will increase by 30%.

Without any yield increase, covering the additional demand would take an added acreage of 220m ha. This is the size of most of western Europe, Germany, the Netherlands, Belgium, UK, Ireland, France, Italy, Spain and Portugal combined.

Converting natural land into arable land at this magnitude would trigger devastating amounts of greenhouse gas emissions, not to mention the local climate and biodiversity effects.



Svein Tore Holsether,
president and
CEO of Yara.





With regulators introducing increasingly tighter restrictions on nitrogen use, additional pressure is going to be put on the farmer.

He explains that nitrate-based fertilisers, such as CAN, are preferred from an environmental and also nutrient use efficiency point of view. In general, if a farmer uses urea-based fertilisers, they have to apply a higher amount to achieve the desired protein level than by using nitrates, making urea a less efficient option. In addition, urea-based fertilisers have a higher risk of losses to air through volatilisation.

By the numbers

Yara started more 100 years ago when Sam Eyde and Kristian Birkeland found a way of extracting nitrogen from the air to produce mineral fertilisers. Today, Yara has a worldwide presence, with close to 13,000 employees. It sells more than 26m tonnes of fertiliser to grow 240m tonnes of grains to feed 240m people. It works with 15m farmers, with operations in 60 countries and it sells to 150 countries.

It is the world's largest producer of ammonia and nitrate (CAN and AN)

fertiliser, with about 20% of global ammonia trade. It is listed on the Oslo Stock Exchange, has a market cap of NOK 88.4bn (€9.5bn) and revenues of NOK 111.9bn (€12bn). It has earnings (EBITDA) of NOK 21.4bn (€2.3bn).

The company has a strong production and marketing base in Europe, and now a greatly extended presence in North and South America, having taken over Bunge's Brazilian fertiliser operation last year.

Shortening the supply chain

Holsether says that the opening of a new import and bagging facility in Cork is a major step for Yara in Ireland. Although Yara had been operating from two locations in the North, he says that this site will give Yara a real presence in the south of the country.

"This will enable us to get closer to farmers and bring knowledge and insights back to the company to develop and refine products suited to the market.

"I believe that our integrated business model is our key competitive advantage. Not only do we have large-scale production but we have people on farms that enable us to swiftly adapt to chang-

ing market conditions," says Holsether.

The model that had operated in Ireland up to now was not typical of how Yara operates in other countries. He explains that it wants to be able to offer farmers much stronger advice, so that Yara can contribute to increase productivity on Irish farms.

"We want to support farmer profitability through knowledge, quality and productivity," he adds. With over 700 agronomists worldwide, it certainly is investing in this area. Ireland is strategic for us as we have eight factories in the neighbourhood. We see it as a growth market and it is a natural market for our key factories in Europe."

Innovation

Over the past number of years, value-added products have constituted an increasing share of Yara's total fertiliser deliveries, now making up more than 50% of the total. Holsether's ambition is to further increase the value-added share of total sales, with less reliance on commodity swings.

Continued on next page



COMPETITIVE ADVANTAGE

"I think one of the most exciting trends we've seen in recent years is that of digital agriculture. I'm an innovation optimist. If you look at the history of Yara, it's a story of innovation," says Holsether.

Yara has developed fertilisers tailored to local conditions and farmers' needs. To do this, we need to be at the forefront of innovation, explains Holsether. "We are developing solutions that combine knowledge, digital tools and services to both meet the farmer need against the backdrop of the environmental challenges."

Yara has developed tools to measure the nitrogen status of a crop from the chlorophyll content of its leaves. From this, the agronomist can evaluate the additional nitrogen needed to meet target yields, and adjust fertiliser use accordingly.

Demand

2015 was more challenging for Yara, with total fertiliser deliveries of 26m tonnes. In Europe, fertiliser deliveries fell 4%, driven by lower NPK and urea deliveries. This fall was offset by a 4% increase in deliveries in Brazil, which is now its largest market for fertiliser.

Holsether says that demand for nitrogen fertiliser remained strong in 2015 and prices held up overall. However, he says that urea prices fell through most of the year, reflecting supply-driven market conditions.

26m

tonnes of fertiliser delivered by Yara last year

He says that global nitrogen markets were supply-driven during 2015, with increases in production particularly from the Arab Gulf and North Africa. In China, export costs declined mainly due to lower coal prices and a weaker currency, and Chinese urea exports reached 14m t for the year, in line with 2014.

The highest-cost producers in China are now setting a floor. Holsether says that because urea is the largest-traded nitrogen fertiliser, it sets the global nitrogen commodity price. However, Yara sells most of its production to the more differentiated nitrate and NPK products. He says that last year, Yara's average prices for urea fell by 12%, while nitrate prices fell by 14%.

Energy costs

While companies such as Total and BP reported significant revenue hits due to the collapse in the oil price, Yara showed



the benefits of the falling cost of inputs such as natural gas. Its average oil and gas price fell by 20% in 2015, driven by a reduction in spot gas prices.

"Securing access to stable supplies of favourably priced natural gas is imperative to our competitiveness," says Holsether. "As the largest industrial buyer of natural gas in Europe, it is our main raw material and represents our largest variable cost."

Soft commodities

Holsether says that despite a third consecutive strong grain harvest globally, the US Department of Agriculture projects only a two-day increase in stocks-to-use, as consumption continues to grow. He says that while it may not look like the case right now in Europe, the global farm margin outlook and incentives for fertiliser application remain supportive overall, especially for key crop exporting regions such as Latin America where local currencies have depreciated relative to the US dollar.

Prices

Holsether says the nitrogen market is expected to remain supply-driven in the short to medium term, with export costs from China being the main price setter in the global market.

The export cost from China is a function of coal prices, high-quality anthracite coal in particular, but also natural gas prices, transport costs and trade policy measures.

He says that current export prices for urea in China are close to break-even for swing producers. In Europe, a weaker euro and lower gas prices have improved the relative competitiveness of domestic fertiliser manufacturers.

Industry outlook

The nitrogen fertiliser industry is highly competitive, with a large number of producers, according to Holsether, adding that market prices are influenced by several factors, not least the supply situation.

World capacity fertiliser additions are expected to come mainly in commodities. The main recent supply additions have come from China, Saudi Arabia and North Africa. However, China remains a high-cost producer, and is expected to remain the global swing producer in the near future.

China, development of energy prices and cost of capital will remain important drivers for global nitrogen pricing in the longer term. Due to lower natural gas prices in North America, there is considerable investment in nitrogen capacity in this region. Other regions where investments are planned, but where timing and volume are more unclear, are Sub-Saharan Africa, the former Soviet Union, Latin America and Iran.

Capacity increases from new investments are to a certain extent offset by reduced production from existing capacity, whether caused by political problems, gas supply issues or equipment age.

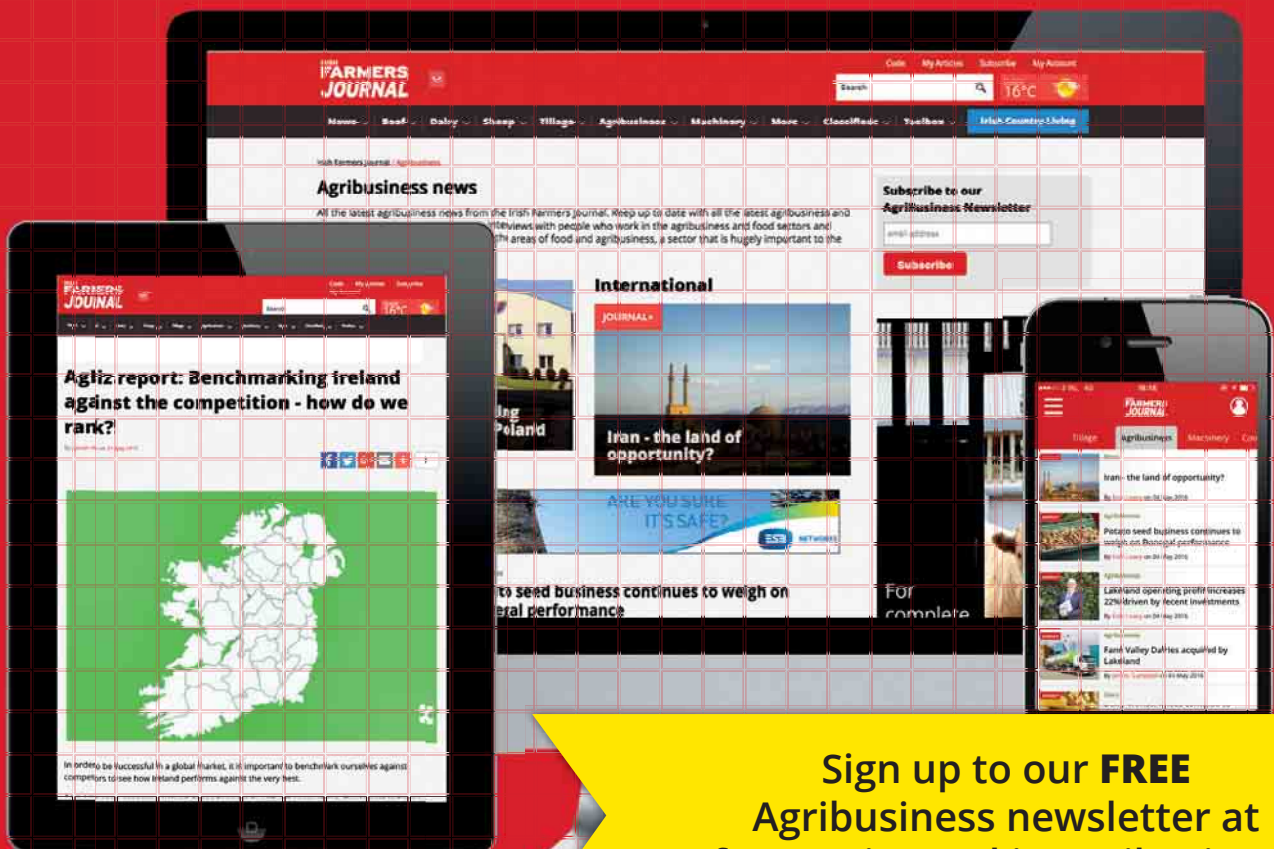
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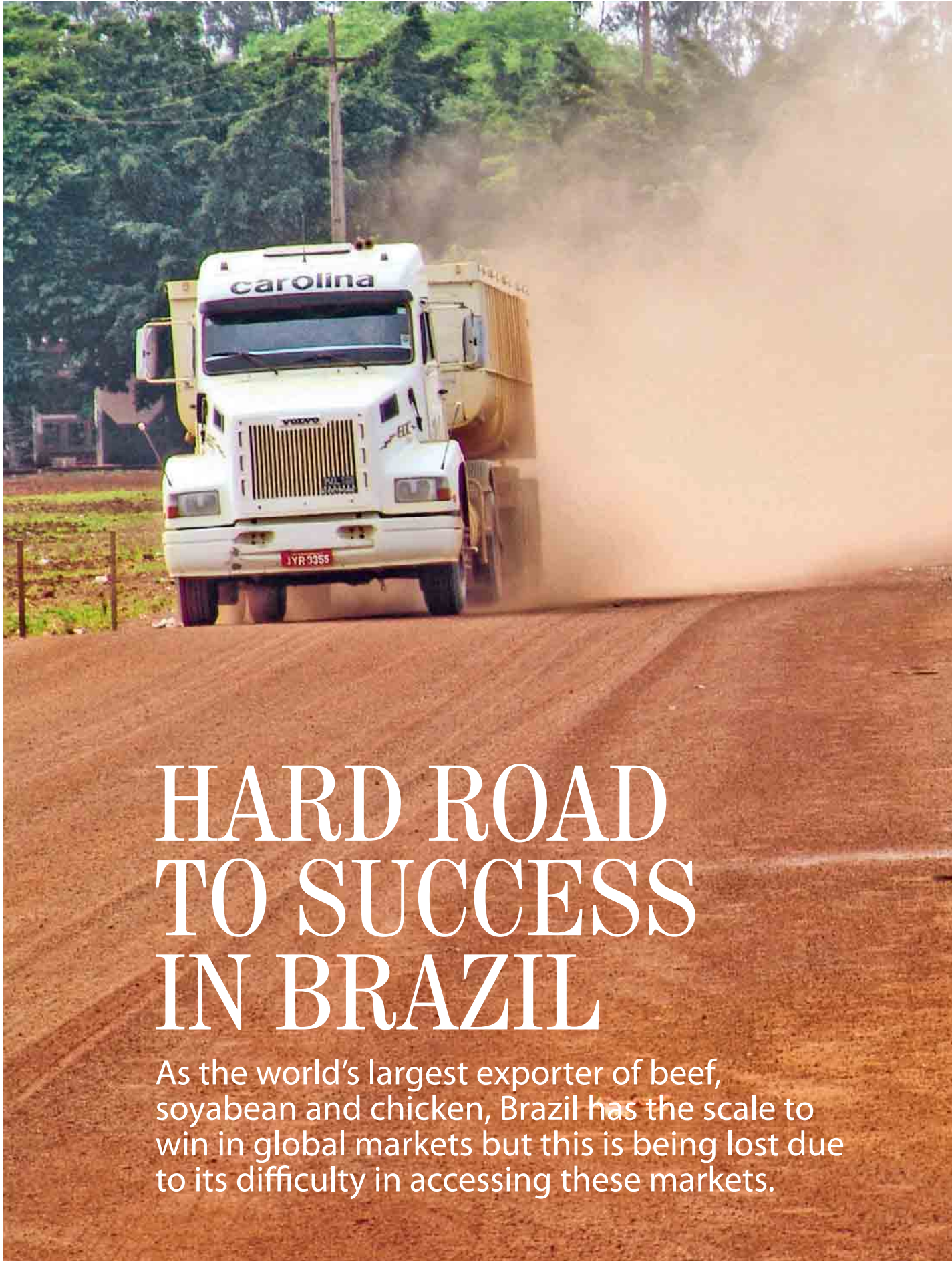
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Words: Eoin Lowry



HARD ROAD TO SUCCESS IN BRAZIL

As the world's largest exporter of beef, soyabean and chicken, Brazil has the scale to win in global markets but this is being lost due to its difficulty in accessing these markets.



COMPETITIVE ADVANTAGE

Brazil, similar in area to Europe, is the fifth largest country in the world in terms of land size and occupies almost half of the entire South American continent. But getting crops to market is a big problem due to the size of the country, lack of good infrastructure and distance from access points to the world. It's just a long way to transport anything efficiently.

Otavio Lemos de Melo Celidonio, CEO of the Institute of Agricultural Economics of Mato Grosso (IMEA), says: "The first issue for farmers here is logistics, the second issue is logistics and the third issue is logistics."

Thanks to its tropical climate, short-season soyabean and deep soils, the state of Mato Grosso produces about 30% of the country's soyabeans. But, according to Lemos: "When the cost of transporting soyabeans from the fields in central Mato Grosso to a China-bound ship reach 40% of the commodity's value, you have a serious problem."

He explains that despite farm sizes of 10,000ha or more, some producers must truck their crops about 600 miles across the country to where they can be loaded on barges. The barges then travel another 700 miles by river to ports on the Amazon River. At the port, the soya beans are offloaded and stored until they are loaded on ships destined for the Atlantic Ocean, another 600 miles away.

But distances are only one problem. Less than 15% of roads in Brazil are paved. And because there are few railways, 60% of soya beans are transported by road.

Although the market price for soya is global and currently sits around \$350/t (\$9/bushel), the transportation in Brazil can cost up to \$150/t or \$4/bushel to get it to the terminal. One of the key competitive advantages US grain producers have is down to their investments in road, rail and barge infrastructure. South Dakota producers ship their soya beans on trains to the Pacific northwest at a cost as low as 7c/bushel. So the further soya bean prices fall, the more uncompetitive the Brazilian soyabean farmer becomes.

Agricultural boom

Grain production has more than doubled in Brazil since 1990, without improvement in agricultural logistics. And in the state of Mato Grosso, output has increased fourfold to 52m tonnes over the last 15 years.

And forecasts indicate that soya bean and maize exports will grow further.

But one of the key issues is that as agribusiness, and especially the boom in soya bean production, expanded into

Comment

Despite planned improvements, poor logistics and transport infrastructure burdens Brazilian agriculture and influences the competitive position of the sector. In general, Brazil allocates a relatively low share of its agricultural support to infrastructure. While short-term benefits accrue to farmers from price support and credit programmes, in the longer run sector-wide investments can have a higher pay-off for farmers.

If Brazil transferred additional resources to public investment it should lead to improvements in agricultural productivity and hence the associated profitability of the sector.

the vast plains of Mato Grosso, it moved further away from the ports. For example, Santos, in the state of Sao Paulo, is 2,000km away from the main soya bean producing area in Mato Grosso, yet it still handles nearly 60% of exports of the crop, most of which is hauled in by truck.

Lack of investment

Many believe Brazil's infrastructure is not adequate enough to put it on a more competitive footing against rival exporters, who are often from the most advanced economies.

Brazil more or less stopped heavy infrastructure investment in the 1970s. So when grain production began to ramp up in areas thousands of miles from the sea, the roads, rail and port facilities eventually became overrun.

Road infrastructure

During the 1950s and 1960s, to serve agricultural development in the west and north of the country, Brazilian governments built thousands of kilometres of roads instead of more costly, but much more efficient, railroad tracks. This led the country to its present dependence on road-based transport rather than trains.

The realisation that Brazil needs farm revenues to underpin the foreign accounts led president Dilma Rousseff to prioritise infrastructure. However, a recent study by the Brazilian Institute of Logistics found that the cost to improve roads to a sufficient state is 19 times more than the government's current budget for such improvements.

One road project of significance is the paving of the BR-163, which connects the central Mato Grosso region with northern Amazon ports. Farmers have been waiting for asphalt along the infamous highway for more than a decade. Yet despite work progressing, it still may be a further two years away.

Along with reducing internal trucking costs for grains and soya beans, it is expected that the road would decrease sea shipping costs to markets such as the EU compared with ports in southern Brazil.

The Brazilian Soya bean Producers Association estimates that transport costs will fall by at least \$30/t for soya beans transported on this road.

Port infrastructure

Brazilian ports can be known for bottlenecks. In 2013, Credit Suisse noted that there was a "10-mile line of trucks waiting at gates to unload the crop and 200 ships waiting to load the cargo". However, the recent privatisation process of several bulk sea port terminals has resulted in significant investment and a noticeable increase in efficiencies.

Grain production has more than doubled in Brazil since 1990, without improvement in agricultural logistics. And in the state of Mato Grosso, output has increased fourfold to 52 million tonnes over the last 15 years

NATIONAL DISTRIBUTION BY TYPE

Brazil US

Road



65%

20%

Rail



26%

31%

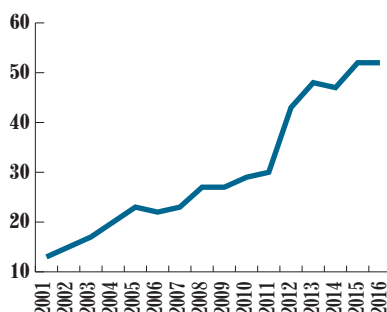
Water



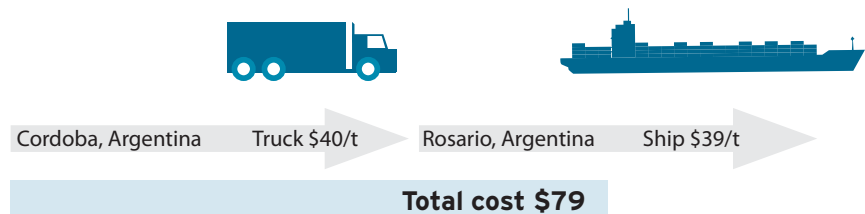
9%

49%

AGRICULTURAL PRODUCTION IN MATO GROSSO, BRAZIL (M tonnes)



BRAZIL COMPETITIVENESS - TRANSPORT COSTS TO CHINA



QUALITY OF TRANSPORT INFRASTRUCTURE OF MAIN COMPETITORS

(1 = best, 144 = worst) Source: World Economic Forum

Country	Roads	Railroad	Port
Argentina	110	96	91
Australia	43	32	38
Brazil	122	95	122
Canada	23	18	21
China	49	17	53
India	76	27	76
Kazakhstan	113	28	123
Mexico	52	64	62
Russia	124	26	81
South Africa	37	44	46
US	20	15	12

Infrastructure

Based on overall infrastructure quality, Brazil ranked 120 out of 144 countries surveyed by the World Economic Forum in 2014, with particularly poor results for roads. Brazil's rankings have generally worsened over the past five years. As illustrated in the chart, Brazilian transport costs to China, the top global soya bean importer, are significantly higher than the US. In the top soya bean production state of Mato Grosso, transport costs as a portion of the total landed price

were 31% compared with 16% in Iowa.

But this is not just a story about exports. Currently, much of Mato Grosso's corn and soya bean harvests are trucked to poultry and livestock feeding operations in southern Brazil. The livestock is then shipped to northeast Brazil, where animal protein consumption is increasing rapidly. Rail improvements will allow for greater meat production in Mato Grosso and direct shipment to the northeast either for local consumption or export.

Words: Ciaran Fitzgerald, food economist

With a population of 4.5m people, growth for the Irish food and drink sector is inevitably export focused

Irish food and drinks companies want access to global markets. But trade expansion comes at a price. The criticism of the agri food sector has been that we are ambivalent about paying this price. While we want access to new markets, the industry does not want cheap imports undermining EU market prices and ultimately replacing EU production.

The collapse of the multilateral trade deals was not only inevitable but a good thing. The complexity of trade issues across product and market sectors was making it virtually impossible to strike a multilateral deal that was fair, balanced and transparent.

The bilateral deals that have largely replaced multilateralism offer a better prospect of balance. But again from an agri perspective, unless there is a true understanding of the complexities of different sectors, combined with joined up policies across a number of EU directorates, bilateral deals will also undermine the agri-food sector.

A key part of a new approach to trade has to be that the specifics of the sectors are comprehensively understood and the drive for a deal does not simply reflect a car-bumper-sticker view of the economic world.

A rising tide lifts all boats

So how did we get here? The key component of EU trade policy since the Uruguay round of the mid 1990s has been that agriculture is a “defensive” issue for Europe. Simply put, defensive means giveaway.

One of the key features of the stymied Doha multilateral trade round – and indeed a number of bilateral trade deals since – has been of agriculture giveaways facilitating European gains in banking, services or the automobile sector.

The reality of this trade policy, however, is that while the agriculture giveaways are substantial and measurable, a large part of the gains are at best aspirational. Furthermore, the impact



of the agriculture losses are largely dismissed by the same modern economy ideology that supports the gains that may arise from increased trade in the knowledge economy sectors.

Through a lack of joined up thinking, there are a number of major reasons for this policy to be pursued. A continuation of this ideologically based methodology will ultimately undermine sustainable food production in the EU. These include:

- Modern economy ideology.
- Chronic undervaluation of total economy impact from agriculture and food production.
- A dumping down of trade policy across product categories into widge-tism.
- An inability to see that regulatory standards imposed on EU food producers significantly undermines EU competitiveness.
- Failure to impose the same regulato-

ry structures on competing imported products.

- The need to recognise that bans on technology adoption, such as genetic modification or hormones, while consumer driven, are competitive-ness issues also.

So let's be clear: agriculture is given away in the first instance because there is an ideological disposition to believe that modern economies move inexorably and seamlessly from agriculture production, through manufacturing to a services economy.

You only give away what you don't value

The reality is that there are plenty of examples like Ireland. There are major countries in the world – such as New Zealand, specific countries in the EU and even the US – where agriculture plays a very significant role in the modern economy.



This is particularly so if proper account is taken of the economic contribution of agriculture to the regional economies through the agriculture supply chain.

In Ireland's case for example, the Irish economy spend deriving from the food and drinks industry and agriculture is over €26bn, which happens to be

higher than the economic footprint of foreign direct investment (FDI) companies in the Irish economy.

In many respects, the seamless economic transformation model is very much a reflection of a cheap-food policy in the UK over the last 100 years. Agricultural production in the UK was neglected on the basis that an endless supply of cheap food was available from former colonies or near neighbours.

So the transition is not seamless – as the most recent recession has demonstrated both in terms of the downturn in the modern economy and the belated realisation of the importance of agriculture.

The dismissal of the value proposition of agriculture is compounded by the one size fits all approach to comparative advantage and trade, or Widgetism.

Clearly, trade in widgets or car parts or IT services follows the comparative advantage trail, with production moving constantly across continents from high-cost old economies to lower-cost new economies in Asia and South America.

There are key gains from trade, both for the employed in developing/newer economies and the consumer in old economies, who is getting a constant supply of technology and productivity-driven products.

This does not happen in food to a large extent.

If the local supply chain is continuously squeezed or broken, consumers simply won't get to eat. Certainly they don't get to eat fresh or nutritious food.

So a more discrete knowledge and insight-based, informed understanding of future global demand for food and sustainable healthy nutrition linked to a comprehensive assessment of technology adoption capability and regulatory constraints is required before trade negotiation commences.

We cannot pronounce that EU and Irish beef production is competitive with the US or Brazil when access to GM and hormones is totally banned in the EU, when animal welfare practices are much more mature and costly and when the inadequacy of the one size fits all tariff means that steak cuts can and will be

dumped on the EU market even in a sensitive product deal.

Food standards, animal welfare and environmental measures

The key here is not that industry rejects the context in which food in Europe is produced, but that compulsory regulatory constraints and or standards – for which failure to comply means either significant financial penalties or a prohibition from placing the product on the EU market – are not imposed on EU trading partners.

So free trade is not free or equivalent. There are very significant regulatory or sunk costs associated with EU production which are imposed on EU producers on the basis that EU consumers need and expect these standards to be met. At the same time, these are not required of imported food products that the same EU consumers end up consuming.

78,000t

the amount of additional beef from South American countries that could be flooded onto the EU market under the proposed Mercosur agreement

This sunk cost issue is increasingly moving from hygiene and basic production standard regulations through animal welfare requirements and environmental/sustainable climate change compliance.

In summary, it is not that industry or farmers don't understand in particular the climate change context and new route to market issues.

It is that these standards are not required of trade-deal-based imported product.

So again, a reduction post-Mercosur in EU/Irish beef production in favour of imported Brazilian beef will see significant net increase in global greenhouse gas emissions, because comparative competitiveness analysis has ignored regulatory sunk costs.

Where to from here?

Given the likelihood that multilateral trade deals are now a thing of the past, the dilemma for the agri-food sector is how we push for the opening of markets without being the sweetener in every bilateral deal.

- Let's firstly properly analyse and

evaluate the total economic impact of agriculture, food and drink production across the EU markets and regions in a truly modern economy context.

- Let's also factually assess the "opportunity cost" of losing agri-economic activity in regions and its impact on sustainable food production in Europe.
- In essence, let's properly understand what we might be giving away.
- The cost of regulatory and

environmental sunk costs can and must be quantified as part of comparative assessment in trade negotiation.

- Plus a joined-up approach between completion, trade, health and agri bodies must properly evaluate the approach to regulation in the EU in the context of the applicability of EU regulation to imported non EU product.

COMPETITIVE ADVANTAGE

Words: Eoin Lowry

In April, Alltech agreed to acquire Keenan, the company behind the renowned green machine based in Borris, Co Carlow. What at first may look like an unlikely marriage, this coming together looks like a win for both Alltech and Keenan. But first of all it must be established what did Alltech buy – a machinery manufacturer or a nutrition business?

Over the course of nearly four decades in business, Keenan earned a particularly strong reputation for manufacturing quality mixer wagons. But in more recent years, it moved to interpret data for more than 1,000,000 cows from close to 10,000 farms in 25 countries around the world, representing one of the world's largest field databases on dairy feed efficiency.

Dr Lyons says that firstly it is a machinery company with a great reputation. "It's not perfect, but it has a great presence in many countries in the world. It didn't have the distribution infrastructure and this limited its growth." He adds that the Keenan team is going to get the benefits of Alltech's experience from having a presence in more than 120 countries. Secondly, he says it is connected to farmers. "Every year, 20,000 farmers contact the call centre in Borris to get instructions, change diets, all in real time. This is the opportunity."

In terms of sales, according to Dr Lyons, it is 95:5 in favour of machines, but in terms of future potential it is 50:50 in favour of communications.

\$2.3bn

Alltech sales

He tells me that Alltech today is a company with \$2.3bn in sales with a clear strategy. "We will continue to grow by acquisition, joint venture and organically," he said, adding that Alltech will get closer to the farmer enabling it to drive efficiencies on farm. "We have an ambition to be a company with \$5bn in sales in the future. This may take two years or it may take a few more but this is where we are heading."

The opportunity with Keenan came unexpectedly and Alltech had to move fast, according to Lyons. Ironically, he says that quite a number of the Alltech team not only has experience with Keenan machines, but have actually worked for Keenan in places as far away as China and the Middle East.

He says "the first priority will be to fill the production line in Borris" and quotes Toyota and the car industry as a production model. But is it profitable to build diet feeders in a relatively high-cost economy, importing the steel and then exporting the machines? He says: "In an ideal world the best place to build them is 20 yards from every dairy farmer. We just have to be as efficient as possible in Borris and we will do it."

He says that he has known the Keenan family for "what seems like forever" as they only started in

A KEEN EDGE

The Irish Farmers Journal caught up with Dr Pearse Lyons, founder and president of Alltech to find out why he is excited about the recent acquisition of Keenan.





business two years before Alltech.

What does Keenan bring to Alltech? He says: "Keenan is a respected brand that brings ethical and profitable farming solutions. It has a strong reputation for manufacturing quality mixer wagons. It focuses on maximising feed efficiencies and it has four decades behind it in business."

So what does Alltech bring to the table? He explains that Alltech's goal is simply to improve health and performance of animals, plants and ultimately people through nutrition and scientific innovation. Alltech has been investing and looking for avenues to better deliver the company's brand to farmers. This is the 14th acquisition for Alltech globally since 2011. Last year it spent €400m in acquiring Ridley, one of the largest feed companies in North America. As Keenan is on-farm and talking directly with farmers, he believes it provides an avenue to do this.

When a local company is purchased by a global company, sometimes customers might have concerns that their experience will change. He says that while there will be change, Keenan will continue to be headquartered in Borris. "We will integrate and realign synergies and get back to full performance once again. Production lines will ramp back up to full

We don't buy companies to sell them; we don't buy companies to shut them down and let people go. We buy companies to grow them.

speed. Customers will receive a renewed level of support and service".

Alltech is the only privately held company among the top five animal health companies in the world. It was founded in 1980 by Irish entrepreneur Dr Pearse Lyons. It focuses on improving the health and performance of animals and plants through nutrition. With nearly 100 manufacturing sites globally, it is the leading producer and processor of yeast and organic trace minerals and algae.

"As to the future, you must look at our experience. We don't buy companies to sell them; we don't buy companies to shut them down and let people go. We buy companies to grow them."

Alltech is the number one feed company across Canada, running 19 feed mills there. France, the UK, Scandinavian countries and the rest of northern Europe and of course Ireland will all be focus regions according to Lyons. He says they will focus on farms with large herds in these regions. He says they will investigate the possibility of innovations in feeding technology, including vertical (tub) mixers, and says he will challenge universities to improve what is already thought to be one of the best

Words: Eoin Lowry

RUNNING DRY

The self-sufficiency programme introduced by Saudi Arabia in the 1970s became a victim of its own success, resulting in quickly depleted aquifers that have not been filled since the last Ice Age

Ahmed bin Abdulaziz Al-Fares, managing director of the Grain Silos and Flour Mills Organization, the state agency in charge of cereal imports, told an industry conference in Riyadh last month that Saudi Arabia will import 3.5m tonnes in 2016. That's a 10-fold increase from about 300,000t in 2008, the first year local crops were curtailed. He says that Saudi will rely on imports for 100% of its wheat in 2016 for the first time.

That is some change from the self-sufficiency programme introduced by Saudi Arabia in the 1970s. In effect, the self-sufficiency programme became a victim of its own success. From producing none in the 1970s, Saudi Arabia became a net exporter of wheat since 1984. But, as a result, it quickly depleted aquifers that haven't been filled since the last Ice Age.

In an unexpected U-turn, the government said in 2008 that it was phasing out the self-sufficiency policy, reducing purchases of domestic wheat each year by 12.5% and bridging the gap progressively with imports. Eight years on and farms like Almarai's northern arable projects in Saudi Arabia are currently finishing up planting their last maize and alfalfa crops. They will leave the alfalfa crop in the ground until 2018 when they will be forced to switch off the water indefinitely.

As it stands, farming operations in Saudi Arabia have had the luxury of pumping water deep from the ground to irrigate crops growing on pivots, for more than three decades.

The water used in irrigation came from large principal and secondary aquifer veins running through the country, many with high levels of saline.

Agriculture accounts for some 75% of all water used in Saudi. The government's U-turn was born out of a need to conserve water for its own resources in towns and cities for businesses and essential operations.

The pumps used to draw water up to grow the crops typically take up to 11 metres of water out of the ground every year. Up until recently, between 6m and 10m were being recharged every year. However, this recharge level has now dropped to only 3m per year.

Therefore, the aquifers are now drying up and in some instances collapsing, with the result that more and more pivots on farms such as Almarai's operations are being shut down in order to boost the recharge levels in localised areas.

Almarai and water

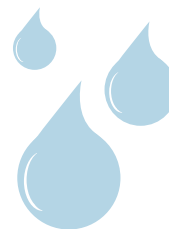
Almarai currently has 190,000 dairy cows producing 1bn litres of milk per year in the middle of the desert. These high-genetic merit cows yield 12,000 litres per year, with the average cow giving 44 litres per day.

The company grows about 170,000 acres of crops in the desert, all on irrigated pivots. Crops include alfalfa, maize grain and maize silage. It currently feeds about 0.5m tonnes of maize silage, almost 1m tonnes of alfalfa and 0.1m tonnes of maize corn, along with 0.1m tonnes of a specialised grass.

It takes almost 1.5m litres (347,000 gallons) of water over a 100-day period



75%



Of all water used
in Saudi Arabia is
for agriculture



3.5m

tonnes of
feed will be
imported
this year

to grow an acre of maize. It is estimated that one particular farm of 25,000 acres, which grows alfalfa, uses 15bn litres a month.

And this is the amount of water used before a cow drinks a drop to stay alive. On one farm that produces 600,000 litres of milk per day, it uses up to nine million litres of water per day including washing parlours, coolers and young stock. That means that for every litre of milk a cow produces, she needs to drink about 10 to 15 litres of water.

The future

In the future, the feed to produce Almarai's 1bn litres of milk will all be imported. This means that from 2018 onwards, roughly 1.2m tonnes of feed per year will land at a port in Saudi Arabia, sourced mainly, but not exclusively, from the company's own farms in Argentina and California.

The company must believe its management systems cannot be matched for quality and productivity given that someone must grow the crop. But is it really sustainable to ship a crop from the Americas to Saudi to feed it to cows in the desert? Obviously, it will not be as cheap to import as it is to grow locally adjacent to the dairy units, but if it is heavily subsidised it can be deemed economical.

For Almarai, it is really only at the beginning of this changed strategy. No doubt it will have to diversify into other countries, not just the Americas, to source feed. Will it buy up more land to secure supply or will it just buy on the open market? Either way, it will need to find an additional 1m t of feed outside Saudi Arabia by 2018.

COMPETITIVE ADVANTAGE

Words: Lorcan Allen



REDISTRIBUTING WATER SUPPLY

Water scarcity will become a key challenge for food production in the coming years, especially as we try to feed an additional two billion people by 2050

In the middle of the 19th century, the Sierra Nevada mountain range in California was a flurry of activity as prospectors scrambled among the rocks and streams in search of gold.

Fast forward to March 2016 and you will find a different sort of prospector foraging among the hills, but a prospector none the less. The difference today is that the hunt is now for snow – or more precisely the depth of the snow, known as the snowpack.

The US state of California is in the midst of its worst drought in recorded history, a drought that has lasted more than four years. But water officials believe that last year's heavy snowfall in the Sierra Nevada mountains could finally mean a recovery from the drought is on the way. The snows that fall in the Sierra Nevada mountains are extremely important to California's hydrology. As the snows melt, the waters drain into the central basin of California, feeding the state's reservoirs and aquifers and providing about 30% of California's water needs.

Increasing drought

While many regions of the US, and indeed the world, have always had to contend with drought, it is the growing severity and length of these drought periods that has made people sit up and pay greater attention.

Coupled with the fact that agriculture accounts for more than two-thirds of the world's water use and humans will have to expand food production by 70% over the next four decades, it is no surprise to see the issue of water scarcity gaining greater prominence on global agendas.

It is on this basis that Michael Burry, the investor who predicted the 2008 financial crisis and made millions betting against the US housing market, now focuses all his financial trading on one commodity – water.

But how do you invest in water? It

cannot be bought or traded in the traditional sense. To get around this, Burry invests in food and agricultural land as a proxy for water.

In a rare interview last December, Burry said he found the idea of transporting water to be impractical for both political and physical reasons.

"What became clear to me is that food is the way to invest in water. That is, grow food in water-rich areas and transport it for sale in water-poor areas," said Burry. "This is the method for redistributing water that is least contentious, and ultimately it can be profitable, which will ensure that this redistribution is sustainable," he added.

Almond production

What's even more interesting is the method of food production that Burry has chosen to invest in – almond farming. Over 80% of the world's almond supply is grown in California which is an incredibly thirsty crop. It takes almost four litres of water for every almond grown.

California is a major producer of other edible nut crops such as walnuts and pistachios which also require a plentiful water supply to thrive. With strong export demand for these products coming from China, India and the Middle East – all regions where water scarcity is an issue – it is easy to see how water redistribution will become more and more relevant in the years ahead.

One company already facing up to the reality of water redistribution is Almarai, the Saudi-based dairy processor. After years of driving for self-sufficiency in many crops, the Saudi Arabian government reverted its policy towards greater imports of crops in 2008 as domestic production began to have a severe effect on the country's water reserves.

Saudi Arabia has ceased produc-

Continued on next page



A small stream in the Sierra Nevadas, at Yosemite National Park.

COMPETITIVE ADVANTAGE

Since 2011, Almarai has snapped up some 42,000 acres of farmland in Argentina and the US at a cost of more than €140m

ing wheat and in December last year it announced that the production of green fodder crops like alfalfa and Rhodes grass, which are used to feed livestock, will be phased out over the next three years.

It is estimated that it takes between 500 and 1,000 litres of fresh water to produce one litre of fresh milk in the Saudi Arabian desert due to the vast amount of irrigation required to grow alfalfa or Rhodes grass.

In the face of this, Almarai has been putting contingency plans in place over the last number of years around how best to feed its 170,000-strong herd of dairy cows from here on. Not happy to just import feed at the mercy of shifting market prices, the dairy processor decided to move back down the supply chain and invested in arable farms outside of Saudi Arabia.

Buying farmland

Since 2011, Almarai has snapped up some 42,000 acres of farmland in Argentina and the US at a cost of more than €140m. The group made its first move into overseas fodder production in 2011 when it paid €73m for Foodomonte, an Argentinian business that operates three large-scale corn and soya farms spread over more than 30,000 acres. At the time, Almarai said the deal would “improve its supply chain and ensure access to the highest quality feed”.

Three years later in 2014, Almarai made its move into the US when it paid almost €42m for a near 10,000-acre farm situated in Vicksburg, Arizona. The Arizona farm is used to produce alfalfa which is then baled and shipped back to Saudi Arabia. And in January this year, Almarai made its latest land acquisition when it paid €28m for a 1,790-acre alfalfa farm in California.

The reaction to Almarai investing in US farmland has been mixed. Many US farmers see it as a positive because they were already exporting bales of alfalfa before Almarai arrived, with most of it actually headed to China and Japan. Local farmers have said that Almarai is now buying more alfalfa hay from its neighbouring farmers and helping to improve the local economy.



Almond trees growing in California.

However, there is also plenty of opposition to Almarai’s strategy to secure its feed supply. Opponents of the land purchases by Almarai say it makes little economic sense for California to effectively export its water in this way.

US economist Christopher Thornberg went on record saying that it is “insane” for California to be exporting its water in the form of alfalfa for “shockingly low prices”, especially with the state in the midst of its worst ever drought.

Cheap crops

“We grow a wasteful cheap crop in the desert and export it to the world, instead of using it to recharge reservoirs for the next drought, sell it to cities for a high value, sell it to other farmers for high-value crop-growing or use it for environmental needs,” says Thornberg.

“To have a water market is a win, win, win, lose situation. California cities, farmers and the environment all win, while only Chinese and Japanese cows and horses lose.”

Other critics have noted that not only does it result in California exporting its water in the form of alfalfa hay, but it also creates a large amount of carbon emissions transporting heavy bales of animal feed across the ocean by ship to the other side of the world.

Comment

The issue of water scarcity is one that is only going to gain greater prominence in the years to come.

To feed a projected global population of 9bn in 2050, it is estimated that food production will need to expand by a further 70% over the next three decades.

As agriculture and food production accounts for over two-thirds of global water usage, it is a major challenge the industry is going to have to overcome.

As water is not an easily transported or traded commodity, a proxy form of redistributing the water supply is more likely.

As a water-rich country, Ireland has an opportunity in this sense and water scarcity is likely to play into our hands in the years ahead.

Our ability to produce the type of innovative food products needed in water poor markets will determine our level of success in this new redistribution trade.

Words: Eoin Lowry

ENERGY IN BRAZIL: A CLIMATE OF CHANGE

Some 40% of Brazil's energy comes from renewables, so the country can make an important contribution to the ongoing climate change debate

In the past 12 years, thanks to the blending of ethanol with petrol or its use as a pure fuel in its cars, Brazil has been able to reduce its carbon dioxide (CO₂) emissions by an amount equivalent to the total annual emissions of Argentina, Peru, Ecuador, Uruguay and Paraguay combined.

In a European context, this is the equivalent to the total annual CO₂ emissions of Poland.

Though greenhouse gas emissions are usually traced to the burning of fossil fuels, deforestation in Brazil has played a huge role in causing it.

Brazil is home to the largest part (about 60%) of the Amazon rainforest and, as little as 10 years ago, it had the highest deforestation rate in the world. This led to a huge amount of carbon being emitted into the atmosphere instead of being absorbed. It made Brazil one of the world's largest greenhouse gas emitters. Ironically, emissions from deforestation dwarfed those from energy or even agriculture, despite the land being opened up to increase production of beef or soya.

But, in the past 10 years, as a result of policies to fight deforestation in the Amazon, Brazil turned this trend around. It dramatically reduced deforestation by 75% in the last decade saving more than 33,000 square miles of rainforest at the same time.

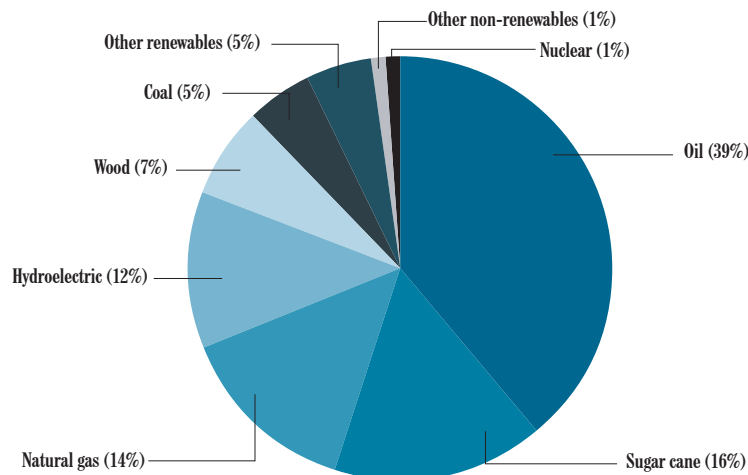
Despite this progress, embarrassingly for the government, data last November revealed that 1.5m acres of land was cut down or burned in 2015 in the Brazilian Amazon – 16% more than in 2014.



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BRAZIL'S DIVERSE ENERGY MIX



With Brazil expecting to need 50% more energy in the next 15 years, ethanol and biomass looks like it will play a substantially increased role in this mix

Weaker government regulation, dams, roads and other infrastructure projects, along with the growing strength of the agricultural lobby and the faltering economy, are being blamed for the increase.

As the third-largest emitter of greenhouse gases, last year Brazil announced that it would reduce its greenhouse gases by 37% by 2025 from 2005 levels as part of the Paris accord, and would aim for a 43% cut by 2030.

The plan is to be financed by Germany, which will provide loans of up to €0.5bn to fund the development of renewable energy sources and to preserve the tropical forests. It will also donate €23m to help Brazil establish a rural land registry aimed at enhanced monitoring of deforestation.

One of the key pillars of the plan will be to make renewable energy account for 45% of the country's total energy mix, well above the global average of just 13%. But what the plan fails to outline is that today, renewable energy makes up around 40% of the country's total energy mix, which prompts some criticism that the new plan isn't ambitious enough.

Brazil also intends to promote low-carbon agricultural and grazing land practices through the promotion of sustainable agriculture and productivity enhancement. In some areas of Brazil, each farmer must leave between 30% and 50% of their farmed land in a conservation zone. Farmers do not receive any subsidies for this.

Due to a combination of geography and policy, Brazil has developed a truly unique energy mix. It has successfully moved from importing almost 80% of its total oil consumption in the 1970s to becoming virtually energy independent today. Significant contributions come from hydroelectricity, ethanol and biomass. Brazil's current largest source of renewable electricity, hydroelectricity,

is under pressure due to recent droughts.

Thanks to the country's significant arable land and favourable growing conditions, Brazil's sugar industry, which produces ethanol, already plays a large role in the country's overall energy mix (accounting for 16%). With Brazil expecting to need 50% more energy in the next 15 years, ethanol and biomass looks like it will play a substantially increased role in this mix.

Development of ethanol industry

Through effective government policies, Brazil has focused on developing a competitive sugarcane industry and making ethanol a key part of its energy mix. This has seen about 40% of its petrol needs replaced with sugarcane ethanol – making petrol now the alternative fuel here.

It comes as no surprise therefore that, today, Brazil is the world's largest sugarcane ethanol producer. It became the first country to use ethanol as a motor fuel. Petrol stations don't have diesel or petrol, but offer gasoline or ethanol instead. Government policies dictate what the blend of gasoline/ethanol is, which tends to vary between 18% and 30%.

Another key part of the development of the industry has been the introduction of flex-fuel cars. The country first began using ethanol in vehicles as early as the 1920s, but it wasn't until the oil shock of the 1970s that it became more common. However, sugarcane ethanol's popularity took off in 2003 with the introduction of flex-fuel vehicles that run on either gasoline or pure ethanol.

Today more than 90% of new cars sold in Brazil are flex-fuel, making up about half of the country's entire car numbers. Through this initiative alone, since 2003, the combination of sugarcane ethanol and flex-fuel vehicles has reduced Brazil's emissions of carbon dioxide by more than 300m t.

Comment

Through a strong vision and government policies, Brazil has developed a renewable energy sector that capitalises on its key competitive advantage – a large area of highly productive land and excellent climate for growing. While it continues to have challenges around deforestation, it remains committed to climate change with specific targets in place.

What is most remarkable is what it has achieved in less than a decade. Taking ethanol, it has also been able to bring industry-wide change, along with integrating the supply chain from field to car.

The motor industry has adapted by developing new vehicles and oil companies have adapted their outlets to offer the choice of petrol or ethanol, along with developing their own blending facilities.

Is it possible for Ireland to achieve a similar level of change that would further enhance our green and sustainable credentials. Who could lead this vision and how could it be delivered?

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CONSOLIDATE TO SCALE

Words: Eoin Lowry and Lorcan Allen

COULD TRADE TALKS RESHAPE THE EUROPEAN MEAT SECTOR?

As talks around two major trade deals intensify, the European meat processing sector could be reshaped in the coming years

Three years ago in this publication, we detailed some of the largest players in the global meat industry, with a particular emphasis on the processing giants based in Brazil and the US. With the industry in Brazil and the US much more concentrated than it is in Europe, these players were vast business entities when compared to even the largest meat processors in Ireland and Europe.

At the time, we concluded that Irish and European meat processors were protected from these heavyweight international competitors thanks to EU food safety standards and trade restrictions between the two regions.

However, with talks intensifying between the EU and the US to get the Transatlantic Trade and Investment Partnership (TTIP) deal across the line, and a renewed momentum to trade talks with Mercosur countries, the European meat industry may be playing on an entirely different field very soon.

Should the EU's trade barriers open up to these markets in the coming months or years, the dynamics of the meat industry here will shift entirely. Trade flows that have been established for years are likely to be disrupted, with inflows of cheaper product coming to the market from places like Brazil.

For example, one study undertaken on the impact of a deal between Europe and Mercosur countries put the cost of such a trade agreement at €7.8bn to EU agriculture.

In Europe, we have already seen how trade-flow dynamics can be disrupted. One of the traditional markets for Irish beef over the years has been the premium French and Italian markets. However, weak consumer demand in these markets, coupled with an influx of cheaper meat from Poland, has seen these once-premium markets for Irish beef become less lucrative destinations.

Continued on next page



CONSOLIDATE TO SCALE

For example current average Italian factory beef price is around €4.15/kg, while the Irish price has hovered around €4/kg for the last six months. The gap has narrowed over the last two years.

The hope right now for Ireland is that an opening of the Turkish market will Hoover up enough Polish beef to undo the displacement that has taken place in the last year in central European markets. However, should cheaper cuts of Brazilian or US beef start to enter the single market, the trade flows will become even more disrupted.

TTIP deal

Whatever about internal trade dynamics being disrupted following the completion of a TTIP or Mercosur deal, it is the scale of the US and Brazilian meat companies that poses the greatest threat to the European processing industry.

In Europe, the meat processing market remains highly fragmented compared to that of the US, where just a handful of companies dominate the processing industry for each meat category.

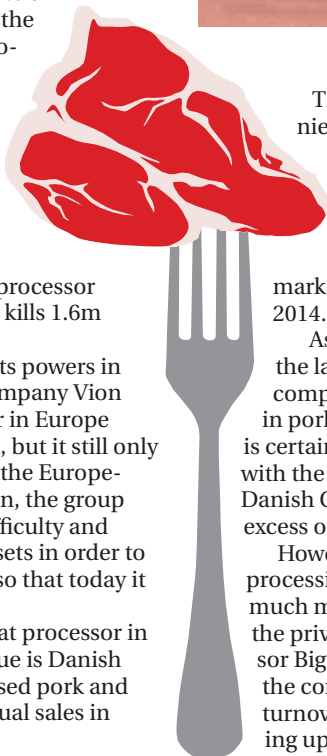
In beef, just four companies account for 75% of the national kill in the US, while four companies also account for 70% of all pork processing. The US poultry sector is less consolidated, although over half (53%) the market is still controlled by just four players.

The biggest meat processor in the US market, a company that holds a dominant market position across the beef, pork and poultry categories, is Tyson Foods – a company with a market cap of more than €21bn.

Tyson accounts for 24% of the national cattle kill in the US, 21% of all poultry production and 17% of the US pork industry. With annual sales of more than €36bn, Tyson dwarfs even the largest meat processors in the EU. For example it kills 6.7m cattle per year, compared to the largest processor in Europe, Bigard, which kills 1.6m head of cattle per year.

At the very height of its powers in 2011, the Dutch meat company Vion was the largest processor in Europe with sales close to €10bn, but it still only accounted for just 6% of the Europe-wide cattle kill. Since then, the group has run into financial difficulty and been forced to sell off assets in order to reduce high debt levels, so that today it kills less than 1m cattle.

Today, the largest meat processor in the EU in terms of revenue is Danish Crown, the Denmark-based pork and beef processor, with annual sales in excess of €8bn.



The German company Tonnies is also a sizeable player with revenues set to hit €6.3bn this year and, despite its troubles, Vion remains a significant presence in the European market, with sales of €5bn in 2014.

As can be seen in the graphic, the largest European meat companies have significant scale in pork processing. The sector is certainly the most consolidated, with the combined slaughtering of Danish Crown, Tonnies and Vion in excess of 52m pigs last year.

However, the beef and poultry processing sectors in Europe are much more fragmented. In beef, the privately owned French processor Bigard is the largest player on the continent. With an annual turnover of €4.3bn and slaughtering up to 1.6m head of cattle per

year, the processor has a throughput equivalent to the entire annual kill in Ireland.

ABP has grown to become the second-largest beef processor in Europe with operations in Ireland, the UK and Poland and slaughtering in excess of 1.1m head of cattle per year. Understanding that supply is as important as scale to compete effectively in the European meat sector, ABP has been one of the more acquisitive processors in recent years. It has acquired three meat processing operations in Poland, giving it a large supply of cattle, as well as its most recent announcement to acquire a 50% stake in Slaney Meats.

Furthermore, in a move towards greater scale, Dawn Meats acquired a 49% stake in Elivia, the second largest beef processor in France, in 2014. It slaughters in excess of 500,000 head of cattle per year.

Despite this, these leading European beef processors are very small when



The meat sector in Europe is very fragmented compared to global competitors.

lined up against Tyson and its annual cattle kill of 6.7m head. Similarly in the poultry industry, Northern Ireland-based Moy Park is the largest poultry company in Europe, processing over 260m chickens in 2015, with sales of €1.8bn.

Again, Moy Park may be a market leader in Europe but it pales in comparison to the 1.8bn chickens processed every year by Tyson Foods. However, Moy Park has a new parent company that knows a thing or two about scaling meat operations and is likely the greatest threat of all to the European meat sector.

JBS, the Brazilian meat processor controlled by the Batista family, snapped up Moy Park last June in a deal worth €1.3bn. Already the largest meat processor in the world, JBS now has its first significant foothold in the European market following the capture of Moy Park. So even if the EU-Mercosur trade talks break down, JBS now has a presence inside the EU.

Comment

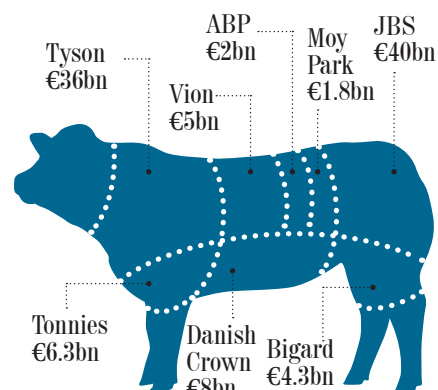
The threat from the global meat giants has never been greater, as talks intensify around two major trade deals which could reshape the European meat processing sector.

The meat sector in Europe is very fragmented compared to global competitors, but we have seen moves towards greater consolidation in recent years. Not only are the bigger European processors preparing for the outside threat, from the likes of JBS and Tyson, they are also capitalising on the struggles of the smaller processors, who have been squeezed by the weak demand for a number of years.

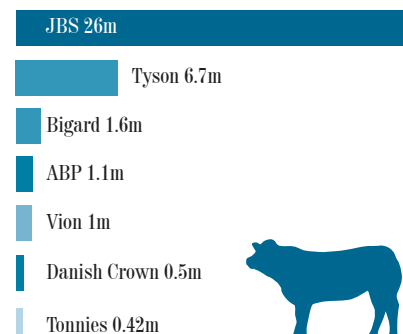
Further consolidation in Europe and possibly here in Ireland looks likely, as companies try to shield themselves from new threats.

However, it may be the European authorities, through competition law, who will ultimately decide how the European processing sector looks in the future.

Top eight global meat processors in terms of sales



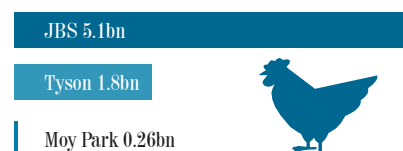
CATTLE KILL



PIG KILL



POULTRY KILL



Words: Eoin Lowry

SUSTAINABILITY DRIVEN BY INNOVATION

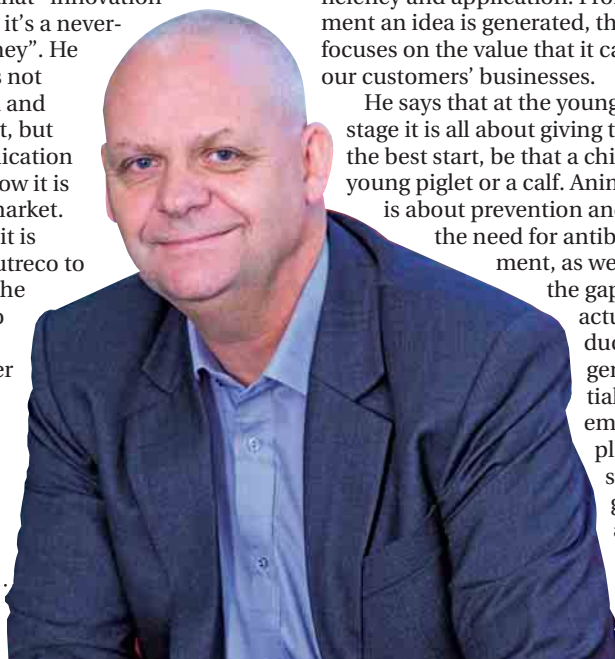
Innovation and sustainability are guiding principles embedded in the Nutreco culture from research to application in agriculture and aquaculture. But what makes it different?

Nutreco is a global leader in animal nutrition and fish feed headquartered in the Netherlands and is probably best known in Ireland for its Trouw Nutrition business that sells a range of premixes, minerals and animal health products.

Nutreco employs approximately 11,000 people in more than 35 countries with sales in over 80 countries. It is a privately owned company and reported annual revenues of €5.7bn in 2015. It spends roughly 10% of its profits on research and development. The company has more than 250 people involved in research and development.

Viggo Halseth, is chief innovation officer at Nutreco, and he says that innovation is a core value at the company. He believes that "innovation is not a goal; it's a never-ending journey". He says that it is not just research and development, but also the application of this and how it is brought to market. He says that it is our job in Nutreco to ensure that the research also gets implemented faster

Viggo Halseth, is chief innovation officer at Nutreco.



and more effectively.

Because current global food production needs to increase 70% by 2050 in order to feed the additional two billion people forecast, leading animal nutrition companies like Nutreco need to innovate to deliver more from less.

According to Halseth, part of the reason why Nutreco spends more on research than any of its competitors is that it is not a typical nutrition company working solely on molecules. "We are more about the right nutrition at the right time and it is about the animal response," he says. He adds that "Nutreco's success to innovation is built on its market-driven approach to research and development".

Throughout the company, innovation is based on four central pillars: young animals, animal health, feed efficiency and application. From the moment an idea is generated, the company focuses on the value that it can offer to our customers' businesses.

He says that at the young animal stage it is all about giving the animal the best start, be that a chicken, a young piglet or a calf. Animal health is about prevention and to reduce

the need for antibiotic treatment, as well as closing the gap between actual productivity and genetic potential. Particular emphasis is placed on supporting gut health as normal gut func-



tion is crucial for the health and wellbeing of both animals and humans. This integrated approach is designed to raise profit by decreasing infection pressure and effectively contributes to the reduction of antibiotic use.

He says it is amazing what can be done with natural substances, just by regulating the pH for example can provide for better microbial status in the gut. Feed conversion rates are also critical. This focuses on providing the right nutrition at the right time, for example layers need a different feed composition in the morning versus the afternoon - much like a human eats a different meal at breakfast, lunch and dinner.

Research facilities

The company works with more than 60 external partners, including research centres and universities. The main purpose is to work with people of different competencies along with others having specialist facilities.

Within animal nutrition, Nutreco has five major international research facilities for poultry, ruminants, swine and ingredients. These are located in Canada, Spain and the Netherlands.



The animal nutrition research teams encompass a broad range of scientific disciplines, including nutritionists, veterinarians, animal physiologists, microbiologists, immunologists and technical engineers. In-house research is complemented by more than 40 long-term research collaborations with leading universities, research institutes and other organisations.

It has also established an exclusive research partnership with the Ministry of Agriculture Feed Industry Centre (MAFIC) of China. To further validate and test its research results in practice, it has field research farms in many key markets. Last year, Nutreco announced the investment in a new calf and beef cattle research unit in the Netherlands. The facility expands the trial capacity.

Future

He sees the future in precision-farming and feeding. He says we cannot afford to spill resources. With the advance of digitisation, it is now possible to offer more individualisation and specific nutrition advice. He sees there will be much more individualisation in dairy. This is already happening, driven by technology and it

€26m

Annual investment in R&D



More than 250
researchers and 11
research centres
worldwide

>60

Collaborations
with research
institutions

is more accessible to dairy cows, because the animal is much more expensive than say a chicken.

He says we need to better understand how a feed or additives work inside the animal. In effect, this is much more about physiology rather than chemistry.

The biggest challenge he sees is priority setting and to make the application easy for the farmer to implement. The ordinary farmer has more than enough on his plate, so we must make his job as easy as possible he adds.

He says that, in the future, the industry will use more unconventional raw materials and this will take more innovation on the feed additive side that can break down this food raw material better.

Nutreco operates more than 100 plants in 30 countries. Some innovations are global solutions that can be adapted to multiple species and markets, while others resolve individual customer issues or deliver advances for specific species or regions.

He says that from idea to market, developing the most appropriate nutrition advice is essential for the animal.

ZESPRI INNOVATION BEARS FRUIT

The New Zealand Kiwi marketing company shows how focusing on product innovation can deliver results

Pick up the annual report of any company, regardless of what it does, what markets it operates in or how much profit it makes in a year, and

there is one word you are almost always likely to read at some point – innovation.

It is a term used by business executives the world over, but what it truly signifies is harder to pinpoint. What represents real innovation in a business? Steve Jobs, the man who co-founded the technology company Apple, once described innovation as what distinguishes between a leader and a follower. So is it the point of differentiation every business strives for?

When we think of what innovation might look like for a company such as Apple, it is abstract and far removed from the vast majority of agribusinesses out there. Instead, one of the more realistic and practical interpretations of the term is that true innovation is a change that unlocks new value.

Whether this change is in product design, marketing, supply chain management or customer services, it must be something that adds real value to an overall business. And while almost all companies claim to be innovative, how many really are making changes that unlock new value in the business.

True innovation

One company that can certainly claim to be a true innovator for its approach to a seemingly basic business model is the New Zealand-based kiwi fruit marketer Zespri. Formed in 2000, the genesis of Zespri stretches back as far as 1970 when the first kiwi growers in New Zealand came together to form an export co-op.





Close to

€1bn

In revenues in 2014/2015

€21m

in profits, more than double that of the previous financial year

€10m

Invested in innovation projects

COMPETITIVE ADVANTAGE

Much like Ornua here in Ireland, the aim of the export co-op was to create a joined-up approach across the industry to the international marketing and sales of kiwi fruit. Export demand for New Zealand kiwis came from Japan, China and Europe, but was also starting to take off in North America.

As a result, Kiwi production in New Zealand expanded rapidly with the creation of the export group with the area planted in kiwifruit ballooning from 3,500ha in 1979 to more than 18,000ha by 1986. Production is primarily concentrated around the Bay of Plenty region in New Zealand's north island where 80% of all New Zealand kiwis are grown.

By 1988, the export group had evolved into the New Zealand Kiwi fruit Marketing Board (NZKMB) but by the early 1990s, New Zealand kiwi fruit had become a commodity product with high production and shipping costs to export markets.

The equally rapid expansion of the Chilean kiwi fruit industry had grown to compete directly with New Zealand exporters and the increased global supply sent kiwi prices crashing through the floor. By 1993, many kiwi fruit growers were facing bankruptcy and the NZKMB reported losses of more than €45m.

Differentiation

Although consumers saw New Zealand kiwis as healthy, nutritious products (they were also marketed under the slogan "the world's finest"), the product had very little points of differentiation from the rest of the competition. A brand was needed.

To go about creating this new brand for New Zealand kiwi fruit, consumer insight teams engaged with kiwi eaters from key markets as to what a New Zealand kiwi meant to them and the Zespri brand name was eventually developed in 1997.

By 2000, the NZKMB was restructured into the Zespri Group, with growers allotted shareholdings based on their annual production volume. While it had a new brand label to operate with, Zespri still had the sizeable task of moving its products away from the commodity space.

The catalyst for this was a newly developed variety of kiwi fruit that was golden in colour opposed to the traditional green coloured kiwi fruit. With the property rights of this new golden variety owned by the New Zealand research institute, Zespri had a new, distinctive looking fruit that was sweeter than the green variety.

The visual distinction between the two varieties allowed Zespri to create two brands. The traditional green kiwifruit was rebranded Zespri Green to form its main offering, while Zespri

Comment

From an Irish perspective, there are striking parallels that can be drawn with the story of Zespri. Much like many of our dairy and meat exporters, the company handles a simple commodity product with demand coming from export markets around the world.

However, by taking an innovative approach to what appears a simple business, Zespri was able to move away from the commodity space. Convincing growers that becoming too supply driven would only deteriorate returns and that developing a premium, higher margin range was key to the group and the growers' success.

Likewise, Irish dairy has had remarkable success through the development of the Kerrygold brand. As the Zespri story proves, a brand in itself is not enough. If we really want to move away from the commodity space, true product innovation is not only necessary but essential. The reputation of Irish dairy is unique with a sustainable and green production system. This is the opportunity in a globalised market but we must lead the market rather than follow it.

Gold formed a new premium range and sold for a 30% higher price on the shelf.

The ability to offer two separate ranges allowed Zespri move away from a space where price was just a race to the bottom, or sometimes referred to as death in the middle. The higher priced gold range could meet the needs of more affluent, health-conscious consumers willing to spend a bit more on food. And the traditional green range could meet the demand from consumers who simply saw value as price.

Grower challenge

The next major challenge facing Zespri was getting its growers to buy into the new strategy. Zespri chief executive Lain Jager said at the time: "The greatest strength of Zespri is that it is grower owned and controlled. That's also our greatest potential weakness. We must work hard every day to avoid becoming supply driven."

It faced the challenge of communicating to its growers the importance of managing supply from year to year so as not to flood the market at any one time like in 1992 when a fruit glut in Europe caused prices to collapse.

Following the economic downturn in Europe, Zespri reduced volumes sold into that market in order to retain its price point and sent excess supply to markets in Asia where trading conditions were stronger.

As a customer-facing business, Zespri is also well positioned to pick up on the changing dynamics of its different markets and relay this demand information back to its growers. Indeed, the group quickly realised that certain markets were more demanding than others in terms of quality, appearance and taste, and were then able to communicate this back to growers.

It found that prices could be increased as wealthier consumers in markets like Japan were willing to pay more for sweeter, higher-quality kiwis. This in turn led to higher fruit consumption and acted as a barrier to competition as it set consumers' future taste expectations, making them less willing to buy a less-sweet alternative.

So rather than incentivising growers to produce greater volumes, a new "taste Zespri" incentive programme was introduced that awarded bonuses to growers based on sweetness. Quality became the goal rather than quantity.

Innovation is intrinsic to the success of Zespri and it invests almost €10m in continued brand development and marketing. In 2016, Zespri describes itself as the company that sets "the global benchmark for guaranteed excellence" and it certainly rings true. Just like Mr Jobs, the business is a leader not a follower.

Global agribusiness sector confident of expansion in 2016

This year's survey shows that 91% of agribusinesses are confident and expecting to grow despite the overall global uncertainty. Encouragingly, almost one third of respondents expect to grow their business by more than 5% in the year ahead.

With growth slowing in emerging markets, the focus for business growth has switched back to existing markets, concentrating on innovation alongside renewed M&A activity. Despite regional differences in primary production, many of the challenges facing the sector are similar.

Volatility remains the greatest challenge. The end of the commodity supercycle, low oil prices and uncertain economic and manufacturing indicators coming from China has many people questioning the health of the global economy.

When oil started to fall, the expectation was that it would stimulate the global economy through increased consumer spending. The hope for a boost from low oil has not transpired and the health of the global economy is more in question now than it was 18 months ago.

For agriculture, low oil has reduced the cost of farm inputs and benefited manufacturers such as Yara. However, low oil in general is bad for agriculture as it reduces the economies of many oil-dependent emerging countries, many of which are large importers of agricultural commodities.



The hope for a boost from low oil has not transpired and the health of the global economy is more in question now than it was 18 months ago

AGRI BUSINESS CONCLUSION

Ireland is firmly set in the global marketplace competing with some of the largest-producing countries in the world. As such, our global competitiveness will determine our success. This report identified that some of the greatest competitive advantages include access to export markets, government support, having a large domestic market and a vibrant innovation eco-system.

As we have seen with Brazil, its inability to access export markets cheaply due to a creaking infrastructure network has reduced its global competitiveness despite being a low-cost food producer.

Water scarcity is perhaps the biggest challenge facing global agriculture in the years ahead as the world tries to feed 9bn people. We are already seeing governments who had once strived for domestic self-sufficiency in food, implement complete policy U-turns banning crop production due to water stress. In the future, agricultural exports may become more about water than the actual crop.

Similarly, meeting climate change targets is another challenge for the industry. Producing more from less means driving productivity through greater efficiencies and it is advances in technology through innovation that will bring the industry there.

What this report also highlights is that Ireland is just a small player in global terms. The threat from international competitors has never been greater as Europe's bilateral TTIP and Mercosur trade talks have regained momentum recently.

We can see how vulnerable the European meat processing sector is to outside competition due to its fragmented nature, but consolidation is slowly starting to gather pace. However, the question remains will European competition law stand in its way.

A more immediate threat to Irish agribusiness is the impending referendum in the UK on its EU membership. With over 40% of our food and drink exports sold into the UK market, any disruption in the trade flow with our nearest neighbour would be a significant threat to agribusinesses here.

Despite the current challenges of competing in a globalised market, the long-term fundamentals for the sector remain positive. The new economic conditions are placing a renewed premium on efficiency, innovation and creativity for agribusinesses.

**Water scarcity
is perhaps
the biggest
challenge
facing global
agriculture
in the years
ahead**

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* Initial dose in animals ≥ 3 months old.

GFK January 2015

† For the revaccination of cattle from 15 months of age that have previously received both vaccines separately.



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