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Anthony Nolan argues
That that the link between
food and fuel is not as close
as some believe
IWEA CEO Michael Walsh
Takes our interview



Southern fired chicken

Barry Bowen looks to limerick to see how chicken
litter is cutting fuel bills



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The BRC Energy and Commodities Bulletin is a bi-monthly publication produced by staff and researchers in Bioresources research centre (BRC) in University College Dublin. The BRC is a dedicated research centre of excellence that focuses on environmental research with particular emphasis on renewable energy.

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Editors note:

Rory Deverell

Editor: The BRC Energy and Commodities Bulletin
The beginning of the end for biofuels?

It was a fleeting love affair but like most passionate affairs of the heart it ended in tragedy. There was something romantic about it, one could simply grow their own fuel, the potential seemed endless, until now.

In the beginning there was the biofuels directive, a modest 5.75% target, a small number but it may as well have been 575% given our resources, level of support and structure of the agricultural sector. Then there were the biofuel excise relief schemes I and II, excise relief for either the very big or the very brave. Where to now for our brave biofuel producers who have been left high and dry?

There are two nails that have/will seal the fate of a significant biofuel industry. The first is the proposed EU renewable energy directive which looks set to require sustainability criteria, which in itself is not too bad. However, it looks more and more likely that the EU will require that “sustainable” and “unsustainable” feedstock and products will have to be tracked all along the supply chain using mass balances which the grain and transport industries believe is unworkable and it probably will be.

The next is the cut in supports both at home and abroad. The government has already abandoned domestic biofuel targets while the EU were going to cut import tariffs on biofuel under the recently collapsed WTO negotiations.

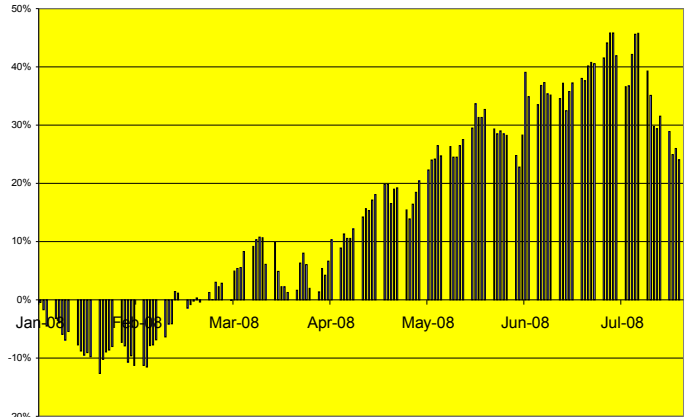
Rightly or wrongly Biofuels have been dealt the lions share of the blame for rising food prices, nonetheless they have fallen out of favour.



National and international news:

Crude goes for a rumble then takes a tumble

Crude oils five month rally has come to an end with record drops being incurred on the last few days of July. Oil still remains over 20% higher for the year but is down significantly on the 45% gain it made at its peak in early July. There are a number of factors pulling down the price such as the potential reduction in demand due to the slowing US and world economies, reduced tensions between Israel and Iran and also hurricane Dolly's insignificant impact on US output. The weakening dollar is also playing a role.



Starch grains around the world fall with big harvest expectations

Following the brief rally in June most starch grains have posted losses on the main futures exchanges. The rally, primarily driven by flooding in the mid-west states of the US drove corn prices over the \$7/bu (€190/tonne) barrier. Since then however, prices have given way with corn below \$6/bu and Liffe feed wheat below €170/tonne. Futures price for September indicate a green price for feed wheat in or around €150/tonne, down €50/tonne on last year harvest price. (Liffe, CBOT)

Vegetable oils lower with crude

Vegetable oil prices have begun to follow oils losses with significant reductions in the JADE palm oil and the CBOT soybean oil prices. CBOT soybean oil has fallen €0.10/l from €0.77/l to €0.67/l while Jades palm oil fell €0.12/l from €0.59/l to €0.47/l (CBOT and JADE).

5.75% biofuel target abandoned

In a major U-turn in policy the government has abandoned the 5.75% biofuel target for 2010. This follows an article by *the Guardian* newspaper stating a leaked world bank report pins 75% of the recent rise in food prices on biofuels. It also follows the EU's "misreading" of the proposed RES directive where a 10% biofuels inclusion rate turned out to actually be a 10% renewable energy inclusion rate. There is a growing sense that the public and politicians are starting to seriously round on the biofuels industry.

Airtricity re-enter the domestic electricity market

Airtricity have re-entered the domestic electricity market citing more favourable electricity prices and a better market structure following the formation of the single electricity market. It appears the SEM is starting to pay dividends..

Ethanol plants re-open

Abengoas Salamanca plant that uses barley as feedstock will reopen following a Spanish bill that now requires a minimum blend of ethanol in the fuel mix.

National and international news:

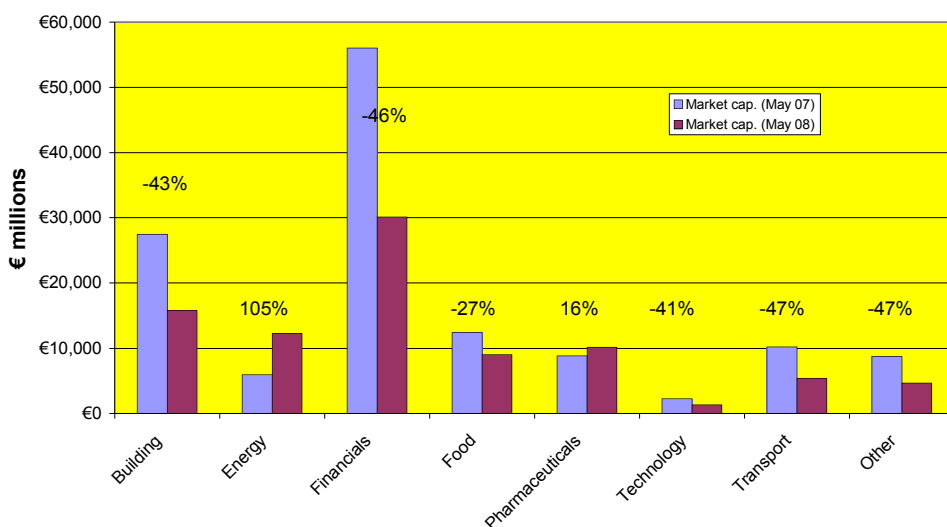
Tullamore show to host a large bioenergy section

The Tullamore show, Irelands premier one day agricultural show will have over 40 renewable energy and forestry companies in its forest and energy section. The section, in a village format will have both indoor and outdoor trade stands and will also have an extensive demonstration area. The section is sponsored by Axis architecture, a Tullamore based architectural firm specialising in sustainable building design.

Energy related companies share values now worth 14% of ISEQ

The meteoric rise of Tullow oil as a serious oil prospecting company has seen the share of energy related companies traded on the Irish stock exchange jump from 5% this time last year to 14% now, admittedly this is in some way due to the capitulation of financial stocks nonetheless it does emphasise energies growing importance. Tullow oil is the best performing stock on the exchange rising 13% in the last two months.

Performance of ISE categories



Source of data: www.lse.ie

BRC news and events

The BRC launch new website

The BRC have revamped the old www.ucd.ie/bioresources website thanks to the hard work of Barry Bowen. The website also includes back issues of the BRC energy and commodities bulletin, so if you missed any previous issues they are all available online. All contact details for BRC staff and projects are also available on the site.

Two new PhD student join the BRC team

Peter Meahan and Michael O' Flynn will begin their respective doctorate research programs in September. Both project relate to the production and use of bio energy crops.

BRC Energy and Commodities Bulletin celebrates its 1st anniversary

As you read this it is one year since the first issue was written. We would like to thank all our readers and contributors over that period and we look forward to another years of research and analysis.

Southern fired chicken

Contributed by: Barry Bowen

Irish chickens starting to produce their own heat.....

According to the Irish EPA, agriculture was responsible for producing a massive 27.7% of greenhouse gases (GHG's) in 2006. As Irelands largest GHG'S producing sector, agriculture can be blamed for almost 19 million tonnes of CO₂ alone. While trends in agriculture have made for slight decreases since 1999 - due to smaller herds of cattle resulting in less methane production. - massive change in practices has been lobbied for as Ireland fights to regain control of her harmful emissions.

“Combined with an innovative boiler system, litter produced from one batch of chickens can be used to provide heat for the next batch of chickens”.

For years poultry farming has played a major part in Irelands farming industry. Almost 67 million chickens are reared every year for their meat. 30 years ago it took farmers between 14-16 weeks to produce chickens ready to be sent to the factory. With new trends and better breeding procedures been practiced the broiler production has been almost halved. Selective breeding is one of these new trends, proper feed and water distribution is also required. A huge factor in the successful growth of chickens is heat. Huge heating costs result in farmers providing little ventilation



for their flock. This lack of ventilation produces a poor environment for the broilers resulting in poor quality meat. The environmental costs are also huge.

One company hoping to combat these costs is Biomass Heating Solutions Ltd (BHSL). Based in Killeedy, Co. Limerick, BHSL provides a complete, managed on site, energy recovery position. The main string in this companies bow is poultry litter. Combined with an innovative boiler system, litter produced from one batch of chickens can be used to provide heat for the next batch of chickens. This method not only produces an alternative form of heating fuel but also clears up any problems farmers may have with the storage of excess poultry litter when land spreading is not permitted.

Recently, poultry litter was used largely as a form of compost, spread across mushroom fields. However since the Nitrates Directive (91/676/EE), the potential for land spreading has been severely reduced.

The advantages of this latest agriculture innovation are numerous. As the combustion takes place on farm, there is little movement from house to storage area, thus reducing the risk of fugitive loss of material and disease during transport. The ash produced is sterile and has great economical potential to be used as a substitute for mineral fertilizer. This process also eliminates the burning of fossil fuels.

In a recent study that was undertaken in the USA it was found that the burning of 10 tonnes of broiler litter is equivalent to about 600 litres of LPG. In Irish terms, it is envisaged that the costs of heating an individual bird will be reduced by two thirds.



Biomass Heating Solutions Ltd in conjunction with UL, Teagasc and the BRC in UCD have been working together on this project for a number of months. All aspects of this heating method will be monitored, from the day the broilers arrive on site all the way through to week 8 when they are taken away. Welfare of the birds is paramount in proving that this is a viable form of energy. Both the capital and operational costs will be evaluated in order to determine the cost to heat a house with the proposed chicken litter system compared to conventional heating systems.

The disadvantages of poultry litter have, so far, proved to be minimal. Compared to using fossil fuels the main disadvantage is the labour it takes to produce this heat. However proper management and location of the boiler would solve this problem relatively easily. Another disadvantage is the loss of fertilizer value of the litter, this problem can be relieved through the proper distribution of the ash as a fertilizer.

Other ideas for the future developments of litter combustion include the production of biogas. Virginia Tech have developed a self-contained, transportable pyrolysis unit that will allow poultry producers to process the litter on-site. The biogas generated by the portable pyrolysis unit will be used to power the system, while the bio-oil will be used to heat poultry houses.

The thermal energy produced for the space heating of chicken houses is an environmentally acceptable form of heating in the UK. So much so that a number of large scale power generation and combined heat and power schemes have been established through the combustion of poultry litter. Further testing is to begin in the next month or so. Watch this space.....as it heats up!!!

Profile: Barry is researcher in the BRC currently working on the food tractability project sigma chain and also on a DAFF funded research project into the use of chicken litter as a heat source in chicken houses. He currently works out of our Belfield offices and can be contacted at: barry.bowen@ucd.ie

Are high food prices a consequence of energy crop production?

A common link between energy, food production and lifestyle prevails in the ever-increasing cost of food for human consumption. This link is often ignored blaming the increased land competition between cereals production and energy crops.

In producing cereal crops one third of the input energy costs are fossil based. These fossil based costs may be tractor diesel, chemicals or fertilisers. With the ever increasing costs of fossil fuel prices and the issue of affordable oil, increases in the input costs associated with cereal crops and food production are inevitable. These issues together with past exploitative use of agricultural land and changing climates which has resulted in reduced yields and in many cases no sustainability of crops in many parts of the world. Many of the world's large cereal producing countries have suffered from lower crop returns due to adverse weather conditions. Large cereal producing and exporting economies, such as Canada, America and Australia, all suffered from some form of adverse weather last harvest resulting in lower yields from crops and an increase in prices. As a result of poor land

management and lack of knowledge in agricultural practices much land has been over farmed and is now unable to sustain any significant crop production. This issue together with climate change has compounded the situation in such areas as North Africa where affordable crops are needed to sustain life. Such lands that were once able to support their own food



requirements as well as possibly supporting part of other countries requirements are now dependent on world supplies, which are in increasing demand. This increased demand has resulted in increased cost, which many are often unable to afford.

In contrast to this problem of barren land there are many parts of America and Europe with uncultivated land which could be utilised for either cereal production if demand required or energy crop production to reduce dependency on diminishing fossil fuels. Such utilisation of uncultivated land could reduce food costs.

The rise in world population and the change by many cultures to a more extravagant lifestyle has furthermore put increasing pressure on food and energy demands. Increased car ownership and single owner occupied houses in western civilisation has resulted in greater demand on our energy resources also. Dietary changes in many cultures are becoming highly meat dependant.

In producing 1 kilogram of beef an equivalent 6 kilograms of cereals is consumed by the animal. If this 1 kilogram of meat in the diet was swapped with 1 kilogram of porridge, the saving in cereal consumption would produce enough biofuel to drive a 20 kilometre round trip to the supermarket. The rise in fuel demand which indirectly adversely impacts food prices is further compounded with increased travel. The dramatic increase in car ownership in western civilisation to almost one car per adult would be unsustainable worldwide.

In the U.K where 46% of all salads purchased are disposed of because they are not used within their 'use by' date and deteriorate

This together with increased air travel is placing serious demand on a diminishing world fuel supply. As a result of current lifestyle patterns, copious amounts of food are disposed of on a daily basis. In Ireland alone, 20% of all potatoes grown are rejected by markets simply because they are not aesthetically pleasing. A similar trend of food disposal is evident in the U.K where 46% of all salads purchased are disposed of because they are not used within their 'use by' date and deteriorate. Each year retailers dispose of thousands of tonnes of food simply because it goes out of date on the shelves. Impulse buying of luxury foods and disposable income together with an increased trend in eating out has led to an increase in the disposal of unconsumed goods by families simply because no one is at home to eat the food purchased. All of these factors have increased demand on food supplies and increased the cost of food worldwide.



Above: The recent situation in Naples showed just how wasteful our lives have become

In many developing countries much of the food produced for markets never reaches its destination due to a lack of infrastructure and transport logistics. In India alone, as much as 50% of the food produced never reaches the market due to the lack of refrigerated transport. All of this food rots and goes to waste. The perceived competition between food production and energy crop production has an insignificant impact on the rising cost of food prices when all things are considered. In fact energy costs and extravagant lifestyles have a greater bearing on increasing food prices when considering the link between energy, food production and lifestyle.

In producing energy crops in conjunction with food crops, optimum yields at optimum costs could be achieved. Energy crops such as rape seed oil, hemp, or energy grasses could be utilised as break crops. This would help reduce the fossil based input required by reducing the use of chemicals and fertilisers to control disease and increase yields.

Also in utilising energy crops, many of which have a low energy input requirement, for the purposes of transport fuels much of the crop production costs associated with fossil fuels could be greatly reduced.

By proper management of land usage, both food and energy crops could benefit us greatly in combating increasing food prices.

Authors: Anthony Nolan - UCD, Tom Bruton - Bioxl, Barry Caslin & John Carroll – Teagasc, Oak Park, Carlow

Profile: Anthony is principally working out of the Teagasc Lyons estate research farm and is working towards a PhD into the production and uses of energy crops such as miscanthus. Much of his research revolves around the pelleting of various biomass material. He can be contacted at anthony.nolan@ucd.ie.

Windtalker, This weeks interview is with the Irish

Wind Energy Association (IWEA) CEO Dr. Michael Walsh



General:

Age: 35

Occupation: CEO Irish Wind Energy Association

Car: Opel Corsa

Home heating system: Natural gas

Industry specific:

What was your first contact with renewable energy:

Engineering lectures in UCD, Rick Watson and Mark O'Malley were very aware of the challenges we are now facing nearly twenty years ago.

What was your route to your current position?

After completing a PhD in UCD I joined ESB National Grid (now EirGrid) in 1998. I worked on a wide range of projects there, most recently the establishment of the Single Electricity Market before joining the IWEA.

What do you feel is the outlook for energy supply generally?

I believe that we are going to face a few very difficult years while we struggle with the growing imbalance between supply and demand for fossil fuels. Increasing energy availability is a key part of reducing poverty in the developing world. Until we get much better at taking advantage of renewable sources and intelligent consumption we will struggle with increasing costs and a very risky energy supply chain.

And your sector in particular:

It is a wonderful opportunity to make a real difference to society and the excitement in the sector is palpable. There are a lot of difficulties to be overcome but the outlook for all renewable energies and particularly wind is excellent.

What do you feel are the biggest threats to your industry?

In the short term it is difficult to translate the strong long term strategic positions into detailed policies that allow the industry to proceed. All the detailed frameworks were developed for the traditional energy industry and there is a good bit of work in translating them for a 21st century energy system.

Would you be more in favour of large (corporate/multinational) or small (SMEs, farmers) scale?

The scale of development required will need developers from large enterprises and small local players. Both are going to be crucial to meeting our national targets.

If you had to choose someone that that could be termed as an inspirations or that you had admiration for in the renewable energy or business world who would it be?

Minister Ryan has made a huge impact on the Irish energy industry, it is now important that the rest of us in the industry move to deliver the changes we need to our energy systems.

Any advice for the government?

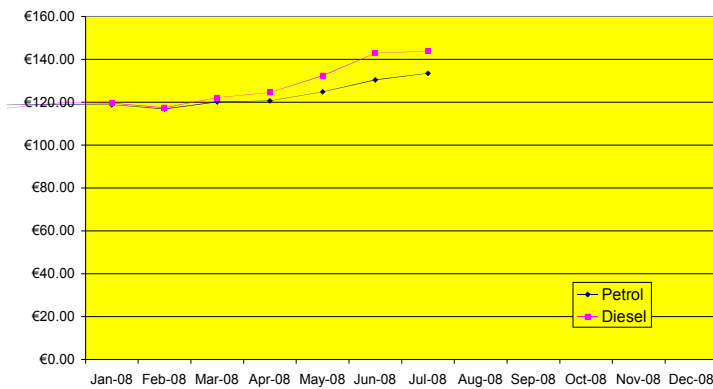
There is a lot of work to be done to turn the high level goals into detailed policies that allow delivery. Government must continue to work hard to make this happen.

Is your sector at the bottom or top of its growth potential?

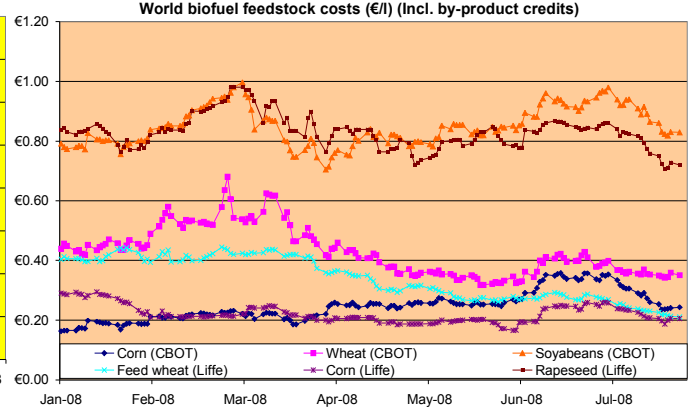
We are just starting into a phase of rapid growth both nationally and globally.

Thanks Michael

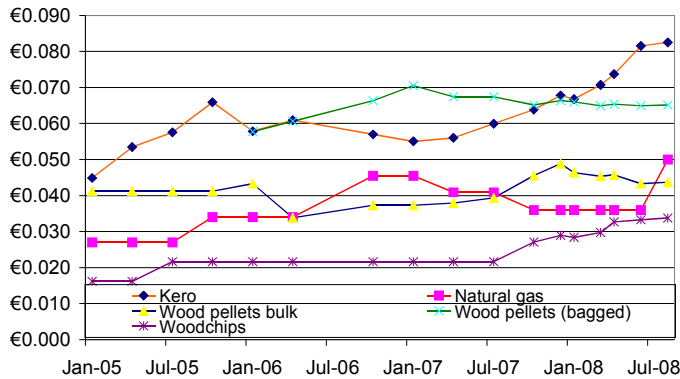
Forecourt petrol/diesel prices €/100l



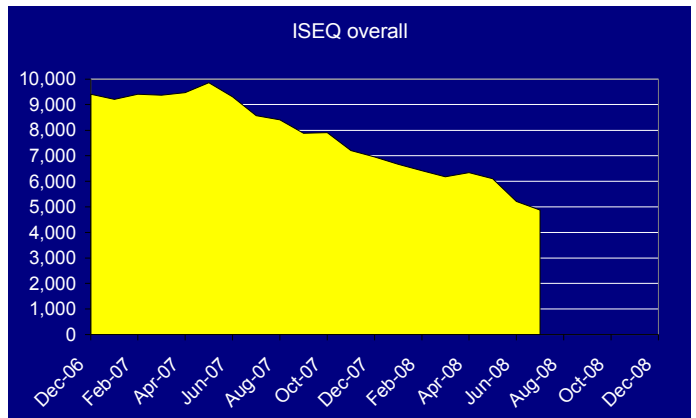
World biofuel feedstock costs (€/l) (Incl. by-product credits)



Space heating fuel costs (€/kWh)



ISEQ overall



About the Bio-resources Research Centre and the Energy and Commodities Bulletin

The Biosystems Engineering department is a department within the Agriculture faculty of UCD. The main areas of research include but are not limited to renewable energy research, food science and environmental engineering. Within the biosystems department is the Bioresources Research Centre (BRC). The BRC has long built up a core understanding of the mechanisms through which agriculture can contribute to Ireland's energy security and the factors that act upon that potential. The goal therefore of this publication is to convey that information and understanding to those within and outside of academic circles.

The BRC Energy and Commodities Bulletin will initially run on a bi-monthly basis giving you up to date information in relation energy and commodity market trends and actors. The bulletin will also consist of the latest research ongoing both within the BRC and the wider academic community. So, if you have a relevant piece of research and would like to contribute to the publication please contact the editor, Rory Deverell. We hope you find this publication informative and useful and all suggestions regarding its enhancement would be much appreciated.



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