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Research, Education and Innovation

New Opportunities in a Global Policy Environment

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The policies that now drive the development of agriculture, food and the rural economy are very different to those that existed in the past and require different responses from those of us who are involved in research, education and innovation management. The global challenges are potentially enormous; in the case of climate change, for example, a 1°C rise in temperature will virtually remove water supplies from one third of the world's land area; on the other hand the population of the world is expected to increase to over 9 billion by 2050 from the current level of over 6.5 billion. The potential of science to contribute to solving the world's problems is equally enormous – we are just beginning to understand and to capture the potential of the biosciences to increase the efficiency of food production and, in fact, to develop not just safe and healthy food but specific foods with characteristics that are truly health giving. The competition for land to meet the increasing targets for biofuels will increase prices which in turn will bring large additional areas of land back into production. In other words, we face a range of major challenges and opportunities that frequently are in conflict.

Policy Environment

For those of us operating with the EU the most immediate policy concerns are the EU Health Check policy review timed for 2008 and the uncertainty as to policy changes that are likely after 2013. While the early indications are that the Health Check will concentrate on the further decoupling of payments from production, there are likely to be further reforms to the EU dairy commodity market organisation. Changes post 2013 will be driven by EU budgetary pressures although the Single Payments Scheme income support will continue in some form for a considerable period. Set-aside will rapidly disappear now and the milk quota regime will not be renewed post 2015. Advance warning and a process of gradual erosion of the value of quotas is likely as well as a rebalancing of funding from income supports to rural development measures.

While agreement of the DOHA round of the World Trade Organisation is now unlikely in the short term, there is a huge risk of bilateral deals being done with some of the major players. Within the DOHA round the restriction on domestic support is the issue of most concern to US farmers while market access is the main concern of many EU countries and other developed countries. Increased imports will undermine the viability production of important products in many developed countries. Here in Ireland beef production could be undermined by cheap imports to an extent that it could have a dramatic effect on our rural economy.

Policy developments to deal with global warming are likely to have the greatest overall influence. The EU set a target to reduce greenhouse gas emissions by 20% by 2020 and is prepared to consider a higher target of 30% if the international trend is in this direction. Mandatory targets of 20% of energy to be produced from renewable sources and at least 10% inclusion of biofuels in the fuel supply will require a substantial shift of land into supplying fuel. Will there be a future for low output / low intensity ruminant production systems if methane production has to be reduced? Failure to respond positively to the global warming issue will bring catastrophic changes to weather patterns, water supplies and sea levels in the lifetime of many of the people in this audience.

Demand for food products from developing countries, in particular China and India, will increase substantially as their economics grow. As well as providing an outlet for countries exporting the main food commodities, these consumers will be influenced through the marketing campaigns of multinationals to consume an increasing range of western style and higher cost branded products. Food supply will increase to meet rising demands provided the price is attractive and market access is provided. Huge tracts of land in the US, Russia and EU can be brought back into production. It is overall level of economic growth and development in these countries that will dictate whether they can feed their expanding populations rather than world food supply.

The policy changes and reforms will result in an increase in the volatility of markets, on prices and the impact of disruption in supplies or of surpluses on prices. Farmers will have to accept this volatility; in many countries previously used to controlled supplies and markets, farmers and agribusiness will have to build this risk into the financial planning of their farms and businesses. For the first time in nearly 50 years the policies in areas such as the EU will not have as their core objective the containment or reduction in food output. The market place will carry out this task for them in its own way and probably lead to more frequent periods of boom or burst along the way. While my paper today will deal with the issues from an Irish perspective many of the points will apply in other countries.

New Focus for Irish Agriculture

As a high cost economy with limited natural competitive advantages, Ireland must now introduce the benefits of the knowledge economy into the agrifood sector as well as into the non agricultural economy. Production of many basic commodities will no longer be viable in Western Europe; instead, production and exports will have to concentrate on higher value products demanded by the consumer. Health giving foods, based on intellectual property and scientific discoveries, are the ones that will be in a demand and be profitable for Irish producers. Farm business size will have to increase significantly with a resultant decrease in part time and hobby farming. Speciality, local and organically produced products will be in demand along with convenience foods that suit the lifestyle choices of consumers. There will be opportunities for some people to get involved further up the food chain in the form of direct retailing or in food preparation. Support for farming and rural areas will likely shift towards recognising and rewarding the public goods provided by farmers whether these are in landscape and heritage management, environmental benefits or access for leisure.

Role of Research, Education & Innovation

Two very major challenges must be met by those who deliver services in research, education and innovation. These are:

- Making full use of the developments in the biosciences and capturing intellectual property; utilising these developments to increase the efficiency of production, create uniqueness and improve the marketability of products.
- Identifying ICT applications that will contribute to agricultural development.

Following on from the acceptance of the Lisbon Agenda, the Irish Government has developed a Strategy for Science Technology and Innovation that seeks to place Ireland firmly on the global map in terms of the excellence of our research and its application for the benefit of society. It is committed to providing the resources to do this under our current National Development Plan. Growing research capacity is a core component of the plan and my own organisation is embarking on an ambitious capital investment and staff resourcing plan to ensure that the agriculture and food sectors play their part in the knowledge economy. Centres of Excellence in Animal Science, Crop Science, Environment and Land Use, Rural Research and Food for Health are currently being established. In addition to focusing the existing resources of the organisation towards the goals of these centres, a very significant capital investment programme costing €27m is being undertaken together with the recruitment of additional research staff, including principal researchers in key areas. The programmes will seek to harvest advances made possible by developments in science - and in the biosciences in particular - for the benefit of Irish agriculture and Irish society generally. These centres will have the capacity for collaboration with research and third level institutions both here in Ireland and internationally. We are already partners in an UCC led Centre for Science, Engineering and Technology. This centre is undertaking fundamental studies in food and health that lay a base of knowledge for applications in the pharmaceutical and food industries. With UCC and other partners we expect to be establishing and participating in new

centres that will develop functional foods and nutraceuticals based on agricultural and marine components. The capacity to test "Proof of Principal" by clinical trials of new products will also be part of the development.

ICT has not made the contribution to agricultural development that it has made in other areas and its adoption amongst farmers and rural dwellers in Ireland has been disappointing. We seem to be still waiting for that critical "killer application" that will make the difference. Farmers, while having to grow their businesses, are increasingly isolated and having to work on their own. Compliance with regulations is a huge headache and, since many farmers are one person businesses, they don't have the opportunity to delegate this responsibility. Support services for farming must get a lot smarter and more competitive. They must use IT to capture data once at point of entry, and utilise it for multiple purposes whether this is for the farm accounts, farm business management or records necessary for compliance with regulations. Service providers need to stand back and look at the total needs of the farm business and develop integrated packages that utilise module technologies to use the information to meet the needs of technology transfer, farm business management and compliance with regulations.

After years of neglect the EU has rediscovered that advisory services are a necessary infrastructure to support the change process that is going on at farm level. It is vital that advisory services do not allow themselves to get overly involved in problems associated with compliance with regulations. Rather they must concentrate on the application of technology, especially the developments from the advances in biotechnology and ICT, to farm businesses to improve the efficiency of production. Yes, production will have to be carried out in a manner that respects environmental and animal welfare concerns but, the regulations surrounding these issues cannot be the driving force behind the programmes of the advisory services. The challenge for the advisory services that are in existence is to adapt their methods and develop their skills to meet the needs of the future rather than continue with the methods of the past.

The opportunities for research, education, innovation and support services are exciting and demanding but good leadership will be essential if they are to meet the challenges presented by the global policy environment. Above all these services must ensure that the advances being made in science and technology are applied to agriculture and food production. The education system has to ensure that it produces people with the capacity to effectively utilise these advances on the farm or in the processing unit. The farm owner/manager of the future is likely to be a graduate with good scientific knowledge supported by a range of business, financial, technical and management skills.

As an organisation, Teagasc is planning for the future and is currently carrying out a Foresight exercise – Teagasc 2030. We are in the process of identifying the key drivers of change in the agri-food and rural economy sector, analysing their impacts, developing scenarios, engaging in extensive stakeholder consultations and preparing a final report for publication in mid 2008. This report will give strategic direction to the development of our organisation into the future.

It is truly an excellent time to be involved in the development of the agri-food sector. The opportunity exists to carry out ground breaking research, utilizing all the latest developments in the biosciences and in ICT, and to make a real difference in terms of the production of food that is health giving as well as nutritious. The overall challenge will be to apply this knowledge for the benefit of farmers, rural society and humanity in general while recognising the need to adjust our methods of production as a result of climate change issues.

I wish you all the best of luck in taking up the challenge in your varied roles back in your own countries.