Teagasc 2030: Creating knowledge for Ireland’s bioeconomy

Lance O’Brien, Foresight & Strategy Manager, Teagasc-The Irish Agriculture and Food Development Authority

This brief is based on the project report Teagasc 2030: Teagasc’s Role in Transforming Ireland’s Agrifood Sector and the Wider Bioeconomy. Teagasc, Dublin, 2008.

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Objectives and context

The Teagasc 2030 Foresight project began in December 2006 and concluded with the launch of the project report at an international conference in May 2008. The project aimed to:

- develop a broadly shared vision for the long-term future of the Irish agrifood and rural economy and for Teagasc as the leading provider of science-based knowledge to the sector;
- identify the technologies, research and innovation-management strategies required to underpin the development of the sector in the short, medium and long term;
- identify the strategies and mechanisms required to maximize the impact of training and technology transfer; and
- build the strategic capabilities of Teagasc as a science-based knowledge organization and develop a culture of continuous renewal.

The project was undertaken against a rapidly changing market, policy and scientific environment for the agrifood sector. Associated concerns about food and energy security, climate change and environmental sustainability were, and remain at the forefront of global concerns. Rapid advances in the biosciences were helping to meet these urgent global challenges and, in the process, creating many new business opportunities for agriculture and the broader natural resource sector. The project sought to explore the potential relevance of some of these scientific and market opportunities for Teagasc and for Ireland.

The process

Teagasc 2030 was undertaken in collaboration with the key agrifood and rural stakeholders, including government, universities, other state agencies, farmers, the food industry and agribusiness. Stakeholders were directly involved in planning, developing and implementing the project. The project was overseen by a Steering Committee (SC) comprising national and international representatives from government institutions, industry and universities. The SC was assisted by a representative Foresight Panel (FP), which was responsible for information gathering and analysis, scenario building, strategy development and reporting. A Foresight Working Group (FWG), drawn from within Teagasc, was responsible for running the project on a daily basis.


As shown in Figure 1, the project was built around seven workshops and a number of other special information-gathering events, including an international 'Out-of-the-Box Thinking' workshop held in 2007. Inputs to these workshops included background analyses of driving forces and other reviews prepared by the FWG. Drawing on trends and likely developments in the agrifood sector, rural economy and global developments over a 20-year time horizon, the foresight process developed alternative scenarios, outlining different possible ‘futures’ and the impact they could have on the agrifood sector and on Teagasc. These outputs were designed to stimulate thinking about the organization's ability to prepare for different eventualities or ‘futures’ as they emerged. The scenarios formed the basis for the development of a vision for the Irish agrifood sector in 2030 and a long-term organizational strategy for research and knowledge management in Teagasc.

Results: A new vision for the Irish agrifood sector

The report envisioned the long-term Irish agrifood sector as being:

“a knowledge-intensive, innovative, internationally competitive and market-led bioeconomy profitably producing and providing food, feed, fiber, renewable energy, industrial materials and services in a sustainable manner for the health and well-being of Irish consumers and global added value, and contributing to wider social goals, such as better public health from improved food products and a higher quality rural environment”.

From an Irish perspective, it made sense to complete this vision by distinguishing four pillars of the Irish bioeconomy:

- **Food production and processing**, which mainly represents mature industries where competition is relentless and global and where competitiveness often relies on efficiencies of scale, automation and process technologies, scientific management and competitive sourcing.

- **Value-added food processing**, which includes advanced food processing and food service, functional foods, food additives and ingredients, bioactives, nutraceuticals and cosmaceuticals. This sector is fast-moving and innovative. There is continuous adoption and improvement of technologies for production, processing, distribution and preparation. Supply chains are constantly changing and considerable attention is given to intangibles such as patents, brands, provenance and traceability.
• Agri-environmental goods and services, which includes food safety and traceability, animal welfare, energy security, climate, clean air and water, fertile soils, biodiversity and areas important for their public amenity, natural beauty and cultural heritage. Although these are normally treated as spin-offs from other activities based on multi-functionality, they are given a separate identity in recognition of the overall role they will play in citizens’ quality of life, energy and climate security and the overall sustainability of society and the economy.

• Energy and bioprocessing, which includes the production of feedstock for biofuels and biopolymers. This sector makes substantial investments in harnessing knowledge and places great importance on knowledge as a factor of production. It corresponds to new and emerging areas of science and to entire new markets. It is characterized by a high level of risk and provides opportunities for government support to lead markets. This sector is where high value-added and commodity sectors of the future are being created.

Achieving this vision will require actions that:

• foster a stronger entrepreneurial and innovation culture at all points in the various production and processing chains;

• promote a competitive, diverse and profitable sector that has the capacity to respond quickly to rapidly changing market opportunities;

• encourage the sector to profit from market opportunities by meeting evolving consumer demands in areas such as food safety and quality, health and well-being, the environment and renewable resources;

• support building the skills and competencies of people employed in the sector;

• respond to citizens’ needs and concerns by embracing environmentally sustainable production systems, providing a safe and secure supply of food, and promoting understanding of the integral link between food and health; and

• align public-sector research more effectively to the needs of business.

The Foresight Report concluded that successfully implementing these key actions will require Teagasc itself to become more innovative and to develop new organizational capabilities in leadership and partnership. Proactive leadership by Teagasc will be particularly needed for the new and emerging sectors of the bioeconomy. In regard to partnership, the Foresight concluded that the complex challenges facing the agrifood sector can only be addressed through sustained collaboration and partnership with national and international organizations.

A key outcome of the project was the establishment of a permanent Foresight Unit in Teagasc. The Unit was responsible for developing a plan to implement the Foresight recommendations. This resulted in major structural changes in the organization designed to strengthen its innovation role. It also led to changes in science priorities, with a new focus on biosciences and the development of technology platforms for key technologies underpinning the Irish agrifood sector. The Unit has also forged closer alliances with Irish universities and other agricultural and food-support agencies. The Unit is responsible for initiatives to create a culture of continuous foresight in Teagasc and the head of the Unit has participated in other national and international foresight exercises.

In addition to their impact on Teagasc’s structure and programmes, the findings and conclusions also helped set the agenda for later policy developments for Ireland’s growing agrifood industry, specifically in terms of its influence on a major new policy launched by the Irish Government in 2010\(^3\). It also fed into the formulation of new national research priorities for the agrifood sector. It led to a broad acceptance of the concept of the bioeconomy and of its potential to develop new opportunities for Irish farmers and industry.

Potential outcomes of the vision for farming patterns, land use change and production/consumption links

Realization of this vision will result in a greater focus in Irish farming on enhancing its unique international competitive advantage in producing high-quality beef and dairy products from grass. Ireland’s farming system of family farms will continue, but with fewer and larger farms and a shift from beef to dairy farming following the abolition of the European Union’s milk quota regime in 2015. More companies will become involved in farming as markets for bioenergy and bio-based raw materials expand.

A key observation concerning the future of Irish agriculture was that approximately 40 percent of farmers in Ireland would retire in the next ten years and that almost all farms would change hands at least once by 2030. This pointed to an opportunity to use the unavoidable dynamic of retirement and property transfer to restructure the farming sector so that land as a natural resource could make the greatest possible contribution to the economy. This would include enabling successful farmers to increase the area they manage and less successful ones to move on, perhaps using models based on leasing.

It is possible that the land transfers that will happen in the coming years will give rise to a younger, better educated and more international generation of farmers. Armed with agricultural MBAs or degrees in biotechnology, many will approach farming as a business more than as a family tradition or vocation. Their approach will be less sentimental and more scientific and entrepreneurial. Such farmers represent very different clients for Teagasc than those it has served before. Land-use changes will see more land devoted to production of raw materials for a growing energy and bio-based industrial sector. Also, agreement on methods of payment to farmers for providing environmental products and services, will lead to larger areas of land being devoted solely to providing such services. Since Ireland depends on exporting more than 90 percent of its beef and dairy output, the growing markets outside of Europe will be targeted for exports. There will be a continuing drift towards consumption of products locally through direct sales from farms and through local farmers’ markets, although these will continue to account for only a small proportion of total output.

A learning process

A number of important lessons emerged from this project:

- Participation of key stakeholders is essential from the design stage in order to ensure relevance and successful implementation.
- The process itself is very important for learning and for building capability and partnership.
- Knowledge generation and innovation will be critical in ensuring that the Irish bioeconomy is competitive, profitable and environmentally sustainable.
- Teagasc must become more innovative in order to better support science-based innovation in the Irish bioeconomy.
- Teagasc must strengthen its technology transfer capabilities to farmers and the food industry.
- Teagasc must build stronger partnerships with other knowledge providers and with the industry.

The general message of Teagasc 2030 is a positive one based on the opportunities offered by the bioeconomy, not only for actors currently involved in the agrifood and rural economy, but also for a whole new generation of bioentrepreneurs who may have no previous link to the land.

The key to success continues to be innovation. What is new is the pace of innovation and the need for organizations such as Teagasc to operate simultaneously on several fronts in a more international context and in shorter timeframes. The challenge for Teagasc in the future will be to increasingly channel its efforts and resources towards support for innovation, in particular for the development of the knowledge partnerships that clients require for innovation in the bioeconomy.

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