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Teagasc 2030: Reinventing the Irish Agri-Food Knowledge System

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Background

Teagasc means 'teaching' or 'instruction' in Gaelic. It is the name of the food and agricultural research, education and advisory body in Ireland. By 2006, fundamental changes happening to the Common Agricultural Policy in Europe were already being felt throughout the Irish agri-food sector. New and emerging issues were gaining importance and looked likely to have an impact on the sector. It was necessary to ask how Teagasc could maintain its relevance to clients and stakeholders as it moved ahead. The study builds upon previous foresight exercises and long-term strategic studies undertaken in Ireland and the EU.

Employing Knowledge for Developing a Positive Vision and Creating Opportunities

Teagasc 2030 was designed to establish a broadly-shared vision of what the Irish agri-food and rural economy would look like in 2030 and a vision of what Teagasc could become as the leading science-based knowledge organisation in the sector. It set out to develop the strategic capabilities of Teagasc, improve its ability to provide proactive leadership on complex issues, identify strategies and mechanisms to maximize the impact of its knowledge generation and procurement, technology transfer and education activities through innovation support and to develop an internal culture of continuous renewal.

The **Steering Committee (SC)** included key Teagasc managers, high-level representatives from relevant organisations, such as the university system and the Environmental Protection Agency, influential business leaders from both the farming and food sectors, as well as international experts. The members of

the SC played a decisive role in the process in that they were fully engaged and provided constructive input each time the group convened. The **Working Group (WG)**, consisting of Teagasc employees aided by two international consultants, was responsible for the detailed planning and execution of the exercise. The **Foresight Panel (FP)** consisted of experts from Teagasc, representatives of the farming and food sectors, as well as experts from the research community, including a commercial research service provider. FP members participated in and contributed to workshops and other activities organized by the WG.

Early consultations with the SC reinforced the need for a structural approach that went beyond the traditional sectoral view. The SC emphasized the need for new strategic capabilities that would enable the organisation to operate in a rapidly changing context. One of the first tasks of the WG was to review foresight exercises on food, agriculture and the rural economy that had been conducted previously, whether in Ireland or around the world, start a discussion on the scope of the exercise and get agreement on the nature of the results it should provide. The first observation of the WG was that previous foresight exercises on food, agriculture and the rural economy tended to focus on problems related to commodity markets and the Common



Agricultural Policy (CAP) system of payments. It was resolved at an early stage that Teagasc 2030 would have to do more than this by identifying how knowledge could help create opportunities for young people in the sector and by developing a positive and realistic vision of an innovation-led rural economy.

The work itself was organized in two phases. A **Divergent Phase**, where the main purpose was to study issues relating to the organisation, the sector and the broader economy in a creative and exploratory fashion, brought in outside knowledge and expertise, as well as relevant case-studies from abroad. The second **Convergent Phase** focused on choices to be made about desired outcomes, long-term visions for the future of Teagasc and the context in which it would operate, as well as the practical immediate steps to be taken on the basis of an action plan. Just before the end of the Divergent Phase a **Radical Thinkers Workshop** was organized to challenge peoples' thinking and try to overcome any remaining inertia or scepticism as regards new ideas and the necessity for change.

The Divergent Phase

This consisted of paper writing on a number of key topics that provided important background to the members of the Foresight Panel. The papers were especially important as they allowed people who are not experts in a domain to get an overview of what is happening. The real action, however, was in a series of four workshops (WS).

Turning Towards a Knowledge Based Bio-Economy

WS1 consisted of a *scoping and profiling* activity to determine the boundaries of the Teagasc 2030 exercise and to verify that the FP included a sufficiently broad range of actors. Important discussions arose concerning how agriculture and food related to the use of land in Ireland, the relationship between this and both the rural and national economy, how both the theatre and the actors might be changing, and how there was a need to revisit ideas of who the typical Teagasc client was, is now or would be in the future. The immediate output of this workshop was strongly criticized by the SC as not being radical enough. It was thought too traditional or sentimental in its attachment to 'land'. The modern reality consists of urban agriculture, gardens on the sides of buildings, forests, marine and lake habitats, greenhouses and bio-reactors, as well as a food industry that has long outgrown a dependence on local production and that in some sectors relies almost entirely on imports for raw material inputs. This workshop started a process of reflection that lasted until the end of the exercise.

The feedback of the SC on the results of this first workshop was very important. Its intervention ensured that some of the issues addressed in the workshop did not conclude pre-maturely, but stayed open and continued to be debated for the best part of a year. New ideas need time to mature. The workshop started a process whereby traditional and ultimately limited thinking

about farming and the rural economy were replaced with entirely new thinking about the knowledge-based bio-economy or **KBBE**.

WS2 focused on trying to understand relevant *drivers* of change, the factors shaping the future of Teagasc and the environment in which it operates. The focus was on identifying the drivers and the *impacts* that they could have on the economy in 2030. The discussion included references to *trends* and *trend breaks*. The exercise was intended to help people develop their 'intuition' about 2030.

WS3 focused on strategic *issues* and started the process of formulating the opportunities and challenges that the various sectors and stakeholders would face in 2030. By this stage the concept of the '**Sustainable KBBE**' had started to come into focus.

WS4 was about developing *scenarios* to further develop thinking *about* the 'Sustainable KBBE' in 2030, to further explore and define the issues and challenges, and to identify the *big questions*, whose answers would impact on the structures and programmes of Teagasc going forward.

A **Radical Thinkers Workshop** was timed to take place between WS3 and WS4 to provide new ideas to the ongoing foresight process. This consisted of a series of talks followed by discussions, involving speakers from a variety of areas who were capable of presenting challenging views on relevant topics. It involved scientists, geographers, venture capitalists and policy makers. For some participants it was an opportunity to hear for the first time about a renewable chemicals industry based on crops grown for their chemistry rather than for food, feed or fibre. For others, it was an opportunity to hear what foreign experts think. A venture capitalist provided his vision of where important opportunities for investment would arise in future. A Danish speaker raised important questions about the organisation of research and innovation when he explained that, while Denmark performs about 1% of all global research, Danish industry requires access to the other 99% of global research if it is to achieve or maintain global competitiveness.

The Convergent Phase

This consisted of a series of three workshops involving the FP and had to provide an actionable plan for the transformation of Teagasc. Such a plan would require the commitment of Teagasc senior managers. It had to be something they would own and act upon. To make sure that they were adequately prepared, a series of internal meetings was arranged involving senior managers and representatives of the WG to help them understand the implications of the exercise, identify the main axes of change for the organisation and anticipate the detailed requirements of the last workshop. Although the foresight workshops were usually animated by members of the WG with help from the external consultants, the goal was for key sessions of the final workshop to be led by members of senior management with support from the WG. At the same time, an internal dissemination or consultation process took place involving all parts of the organisation. The goal was to explain what was happening and gather feedback on the changes required for moving forward. An external consultation process separately involved farming and food in-

dustry representatives. It too explained the ideas that were emerging. It gathered feedback and inputs from Teagasc clients as inputs to the final stages of the foresight exercise.

WS5 was dedicated to the development of *scenarios* about the *Sustainable KBBE*. In particular, the goal was to develop more specific thinking about the role of knowledge, learning, research, innovation, training and advice in the sector in 2030.

WS6 was used to finalize the *scenarios* and flesh out a *vision* for the sector in 2030 along with an identification of its knowledge requirements and the role that Teagasc would occupy in the system.

WS7 was devoted to the issue of organizational transformation and the *directions of change* for Teagasc. The senior **management** meetings played a significant role in determining the structure of this last meeting. Based on their discussions it was decided to focus on transformation under the major headings of *leadership, partnership and governance*.

The issue of leadership originally emerged in meetings of the SC and was echoed in discussions with industrial stakeholders. Leadership gaps emerged on long-term scientific and technological issues not only for small and medium-sized enterprises, but for larger companies as well.

The Vision of a Sustainable Bio-Economy

One of the most important results was the development of a vision for the Agri-Food and Rural Economy in 2030 as a '*knowledge intensive, innovative, internationally competitive and market-led bio-economy*'. This helped to place the sector at the centre of something big and positive, with significant opportunities that would play a role not only in the rural economy, but also in the general knowledge economy, via its contribution to climate change, energy security, sustainability and the transition to a post-petroleum era.

Recognizing that countries with excellence in agriculture have opportunities for moving up the value-chain by selling not only their products but their know-how, the final report speculated about a time when the most important export of the dairy sector in Ireland might no longer be its milk, cheese, yoghurt and functional foods, but its management expertise and its technical knowledge about the organisation of competitive dairy production systems.

The Four Pillars of the KBBE

From an Irish perspective it made sense to complete this vision by distinguishing '*four pillars of the KBBE*':

- **Food Production and Processing**, which mainly represents mature industries where competition is relentless and global, where competitiveness often relies on efficiencies of scale, automation and process technologies, as well as scientific management and competitive sourcing.
- **Value-Added Food Processing**, which includes advanced food processing and food service, functional foods, as well as food-additives and ingredients, bio-actives, 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** includes food-safety and traceability, animal welfare, energy security,

climate, clean air and water, fertile soils, bio-diversity, areas of public amenity, natural beauty and those of importance for 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 the quality of life of citizens, in energy and climate security as well as in the overall sustainability of society and the economy.

- **Energy and Bio-Processing** includes the production of feedstock for bio-fuels and bio-polymers. This sector makes substantial investments in harnessing knowledge. It 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.

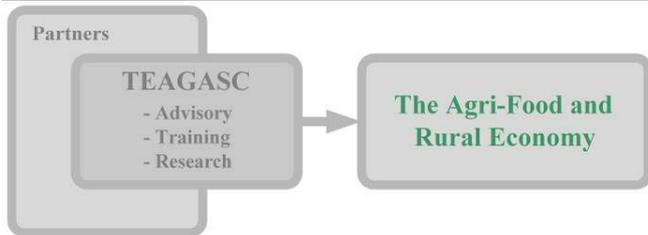
Demographics Facilitating Change

A key observation concerning the future of Irish agriculture was the observation that approximately 40% of farmers in Ireland would retire in the next 10 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.

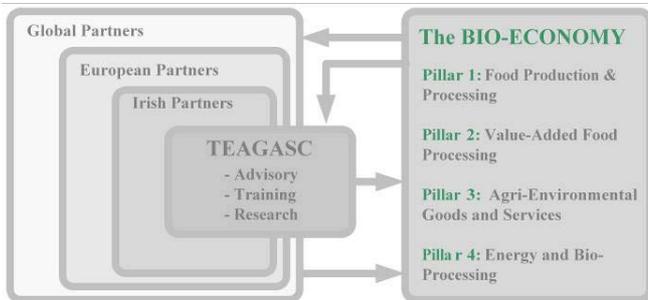
Discussions arose about 'future farmers' and 'foresight farmers'. It is possible that the land transfers that will happen in the coming years will give rise to a younger, better educated and more international generation of farmers. Armed with agricultural MBAs, or degrees in bio-technology, many will approach farming as a business more than a family tradition or vocation. Their approach would be less sentimental and more scientific-entrepreneurial. Such farmers represent very different clients for Teagasc than those it has served before.

Leadership, Partnership and Governance

One of the most important currents of debate throughout this foresight exercise concerned the traditional push-approach to technology transfer, the so-called 'linear model'. The old approach was summarized as follows



whereas Teagasc in 2030 would need to focus on innovation support that would resemble something more like this:



One challenge that emerged was the need to become more demand-led as an organisation. Another challenge emerged from the recognition that no organisation can meet all of its research or knowledge needs internally and that an increasing share of these would need to be sourced outside. This is something that traditional research organisations are not used to doing, and, in future, they will need to engage both private and public service providers, as well as cooperate with international knowledge networks.

The vision that emerged for Teagasc as an organisation in 2030 was that of an organisation suffused with a culture of support for innovation by its clients, capable of:

- providing *leadership* where necessary on innovation-related issues,

- developing and maintaining the *partnerships* required for research, innovation, technology transfer and education,
- employing *governance* mechanisms to assure relevance and accountability to its clients and stakeholders.

Creation of a Permanent Foresight Unit

In many ways, the implementation of the action plan started even before the exercise was finished. A part of the action plan is a natural continuation of consultations with major stakeholder groups that was started as part of the foresight process. The most immediate and tangible result was the creation of a permanent foresight unit within Teagasc to oversee the implementation of the Teagasc 2030 action plan and to support other foresight activities as needed within the organisation.

The action plan is outlined in the Teagasc 2030 report. It includes steps to create a broader culture of innovation within the organisation and to intensify systematic interaction with client groups and stakeholders. It addresses reform of personnel structures to enable greater mobility of staff within the organisation, facilitate transdisciplinary work and align incentives with the needs of clients. Other structural reforms include a focus on network-based activities, as well as time-limited project-network-like interventions such as technology platforms and commodity working groups that pool the resources of partners and involve stakeholders in management.

The general message of Teagasc 2030 is a positive one based on the opportunities offered by the KBBE, not only for actors currently involved in the agri-food and rural economy, but for a whole new generation of bio-entrepreneurs who may have no prior link to the land.

The key to success continues to be innovation. What is new is the pace of innovation and the need for organisations such as Teagasc to operate simultaneously on several fronts in a more international context and in shorter time frames. 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 required by clients for innovation in the KBBE.

Sources and References

All background papers, scenarios and proceedings as well as the final report are available from the Teagasc 2030 website at www.teagasc.ie/foresight/index.htm. The papers and presenta-

tions of the Radical Thinkers Workshop are available at <http://www.teagasc.ie/publications/2007/20070725/index.htm>.

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About the EFMN: Policy Professionals dealing with RTD, Innovation and Economic Development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. One of the most important tools they apply is FORESIGHT. The EFMN or European Foresight Monitoring Network supports policy professionals by monitoring and analyzing Foresight activities in the European Union, its neighbours and the world. The EFMN helps those involved in policy development to stay up to date on current practice in Foresight. It helps them to tap into a network of know-how and experience on issues related to the day to day design, management and execution of Foresight and Foresight related processes.