Confronting difficulties and making the most of opportunities require public policies designed with future views.

In 2009, the Chilean Ministry of Agriculture (MINAGRI) contracted the services of the World Bank, via the Fundación para la Innovación Agraria (FIA), to carry out a strategic foresight exercise and to suggest recommendations in order to make adjustments to the country’s agri-food and forestry research, development and innovation system (R+D+i) for the medium and long term.

The scenario-planning approach was used to explore the future of the Chilean agri-food and forestry sectors and its implications on the innovation system. This methodology points out the need to change the way of thinking and provides a way of exploring the uncertain future.

The process started with the creation of a vision about the sectors’ future as described in the document “Una visión de la innovación agraria en Chile hacia el 2030” and the subsequent development of the document “Sistema de innovación de la agricultura chilena: un plan de acción hacia el 2030”; it was from the latter document that the implications of a future vision for the innovation system were derived and the recommendations for adjustments to the system proposed.

Building the vision

First, the forces of change that would affect the sectors by 2030 and that could be used to build the scenarios were identified. This stage considered the inputs resulting from interviews to prominent and distinguished persons in the country and tour studies that were carried out, related to past and future behavior of markets and trade, policies and rural development, natural resources management and climate change.

Subsequently, based on the resulting documentation and the results of a workshop attended by representatives from the public, research, academic and productive services sectors, the World Bank and FIA defined and configured two principal scenarios: one based on a modest impact of climate change and a regulatory system similar to the present “business as usual” (BAU) system; and another based on a high impact of climate change and a very restrictive regulatory framework called Terra Cálida (Figure 1).
The consolidation of the two scenario story lines and its validation by agri-food and forestry stakeholders were carried out through an open consultation process on FIA’s website directed to the business, scientific and human resources sectors.

The implications of the validated scenarios were drawn during “vision and implications workshops” for value chains (fresh fruit, red meat, dairy, wine, cereals and processed food, and forestry) and three cross-cutting themes (natural resources, human resources and quality management). Public and private stakeholders directly linked to each chain and cross-cutting themes took part in the workshops, facilitated by FIA.

Based on the resulting implications of the BAU and Terra Cálida scenarios on the productive chains and cross-cutting themes, the World Bank and FIA formulated a future vision of the agri-food and forestry sectors in Chile by 2030.

**Box 1: Future vision of the agri-food and forestry sectors of Chile by 2030**

“In 2030 Chile is a quality producer of an ample range of food and fiber products. Its international image is marked by the diversity that its geography enables it to produce. The sectors emphasize environmental sustainability and the wholesomeness of their products, valued by both domestic and international consumers.

Through the application of ICT, investments in agricultural technology and the training of its labour force, Chile has been able to develop profitable value chains, well integrated from production to final markets and able to remunerate its participants at levels that are comparable to the rest of the Chilean economy.”


**Defining the action**

An action plan was formulated based on the proposed vision and complementary support studies with recommendations for adapting the agro-food and forestry sectors’ R+D+i system. Five principles were identified to organize an effective innovation system for the sector by 2030:

1. Create more R+D+i capacities, at national level and at regional levels, making sure that regional entities assume a more significant role in developing and funding their innovation agendas.

2. The public and private sectors have distinctive and complementary responsibilities. The private sector will continue to set its own agenda within a regulatory framework that is the public sector’s responsibility, and the public sector will concentrate on providing public goods. Public investment should establish the base for a greater private participation that allows its actors to take better ownership of the benefits.
3. Recognize the diverse nature of agriculture innovation priorities and the ample range of participating stakeholders, for which the action plan will promote a balance among basic funding to ensure the continuity and integrity of the teams and the competitive funds.

4. Chile needs to have a world-class agri-food and forestry innovation system that can access and be linked to other innovation systems in the world. The country must assume a greater role in discovering new knowledge and developments, and strengthen its capacity to translate new knowledge into practical applications.

5. The action plan recognizes that the agro-food and forestry innovation system should be a more active participant in the national innovation system and be more integrated into the system in order to increase its critical mass and facilitate knowledge flows.

**How can we achieve the vision?**

The main areas of recommendations of the action plan are:

- **Ensuring MINAGRI leadership and facilitation, which are necessary to address issues related to agricultural innovation**
  
  MINAGRI is responsible for guiding the public sector and recognizing that innovation is a cross-cutting issue in its agenda. To assume leadership, MINAGRI must increase its capacity to manage issues related to the sectors' innovation. The plan recommends that MINAGRI establish a Directorate of Innovation whose main responsibility would be to guarantee the sectors' participation in the National Innovation System and facilitate the implementation of its own agenda. Also, the private sector must be able to influence priority programmes, modes of funding and co-funding, and capacity building requirements. For these, MINAGRI will need to offer incentives that promote the strengthening of private sector organizations.

- **Obtaining greater value for the funds invested in R+D+i**
  
  MINAGRI should work with the respective agencies and use its budget to support multidisciplinary teams with a critical mass of scientists in its priority areas of interest. It should also establish a better combination of tools to obtain balance between the different funding mechanisms. To this end, Chile must be at the same level with the Organization for Economic Co-operation and Development countries (OECD) with regard to public funding intended for R+D+i.

- **Incorporating institutions into the innovation system**
  
  To facilitate the integration of innovation institutions, a way of work must be established that allows the creation of feasible and attractive links between the system institutions. Integration should occur around the research areas identified as priority and through the regional centres. The integrated teams need stable funding and must be able to combine their resources wherever necessary.

- **Transferring technology to the productive sector**
  
  Chile should develop regional technology transfer centres throughout the country, comprised of highly qualified specialists similar to the extension specialists of the US system.
In addition, the availability of information and knowledge for agriculture producers should be enhanced as well as the training of workers and technicians, especially within the value chains; the technological control of the productive systems should also be improved, especially:

- genetic improvement and use of biotechnology to develop eco-efficient and productive systems
- management of agriculture fields, including agronomy and the use of water
- management systems of value chains through expert systems and market information
- fulfillment of the systems’ quality and certification requirements.

How have we advanced from plan to change?

The vision and the action plan were presented by the World Bank during the last quarter of 2011 to MINAGRI’s highest authorities and to a large group of relevant public and private stakeholders in the sectors, at regional and national levels. The objective of the presentation was to disseminate the results of the work and to align positions for future implementation of the actions recommended.

The main impacts observed in the first stage of the strategic foresight exercise are related to the alignment of some ministerial policies with the study’s recommendations. This has become evident in the gradual change of the traditional funding scheme for short-term R&D+i projects to long-term projects and the increase in of the amounts and stability of the budgets allocated to R+D+i.

Other more specific impacts are: define genetic improvement priorities so it can be funded by the public sector; elaboration of a proposal by the Sub-secretary of Agriculture to transform the technology transfer in the sector; and the special announcement of FIA for the co-funding of innovation projects that address problems or opportunities related to the efficient use of water in the agriculture and forestry sectors.

What have we learned from this trajectory?

We believe that strategic foresight exercises should include with the greatest possible participation by different sectors without affecting the governance process. This will allow better ownership by stakeholders within the agriculture and forestry sectors. These exercises should also include vast and cross-cutting validation and sharing which will guarantee continuity and completion of the process, as well as its use before important changes by authorities.

The World Bank contributed with approaches that at present are very difficult to achieve internally. In order to achieve continuity of the process, it will be necessary to enhance internal capacities in the sector so that strategic foresight methodologies can be better understood and systematically used to help define public sector policies and inform the business decisions of the private sector.

Citation:

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