This brief series was developed in preparation for the Foresight Breakout Session of the Global Conference on Agricultural Research for Development (GCARD 2012) and the Global Foresight Hub\(^1\). The briefs were written to communicate to a wider audience, such as policy makers, civil society organizations, researchers, and funders. The briefs were classified into three categories: Future Studies, Regional Update, and Visioning.

### Possible research, innovation and development scenarios in the Southern Cone countries

Emilio Ruz, Secretary of PROCISUR Executive Board


“Faced with the world’s increasing complexity and indecisiveness, it is no longer possible to uphold traditional approach systems. It is necessary to establish internal early warning systems for the opportunities and threats that could impact the future.” (Ortega San Martín)

The programme Programa Cooperativo para el Desarrollo Tecnológico Agroalimentario y Agroindustrial del Cono Sur (PROCISUR-www.procisur.org.uy) is comprised of national institutes of agricultural research (INIA) in Argentina, Bolivia, Brazil, Chile, Paraguay, Uruguay and the Inter-American Institute for Cooperation on Agriculture (IICA). The programme is regulated through an agreement which is renewed every four years, together with an updated Medium-Term Plan.

In 2009, the PROCISUR Executive Committee decided to implement and finance a strategic foresight study whose central topic was “The role of the Southern Cone as the world’s food reserve: possible scenarios for research, innovation and development”. The objective of the study was to analyse the possible scenarios for research and innovation within the framework of opportunities and threats of the regional agrofood system. The scenarios established a reference framework for the regional innovation system and enabled the development of a robust strategy for PROCISUR that contributed to the elaboration of the Medium-Term Plan 2011-2014.

A high number of technicians from national research institutes and IICA, and experts of world-renowned institutes made important contributions to the development of reports, in conferences and also in the final workshop that took place in November 2009 during the PROCISUR research forum. A professional team of the Science and Technology Policy Department of the Campina University, Brazil\(^2\) provided valuable collaboration to the methodological base and training of the entire strategic foresight process and scenario building.

In the work’s design, the most complex themes that needed to be addressed were related to the preliminary planning. It was necessary to reach an agreement to define a methodology that would be feasible to carry out and that would guarantee intended results with a good cost/benefit relation. In this phase, the decision to look for a team of external experts who would join PROCISUR to interact with PROCISUR technicians as a mixed team was crucial. During the development of the strategic foresight study a good number of updated reports on the region’s agriculture were used, which considered diverse production systems and farmer typologies. This preliminary information was available to team members who participated in the discussion workshops.

\(^1\)http://www.egfar.org/our-work/shaping-future-together/global-foresight-hub

\(^2\)Led by Dr. Sergio Salles Filho
The final work consisted of an extended workshop where five dimensions (previously agreed upon during the preparatory workshops) were analyzed as well as their corresponding interactions and critical uncertainties. Critical uncertainties were established for each dimension and a description of the present situation was made.

Dimensions and critical uncertainties analysis

- **Scientific and technological dimension**: a) investments on research and agricultural extension; b) training of agricultural research and extension professionals; c) technical base for agriculture production; d) technologies aimed to improve the quality of the product; e) control of and access to genetic resources; and f) national, regional and global scientific and technological integration.

- **Political-institutional dimension**: a) institutional and organizational models and governance structures for agricultural research and innovation; b) role of public and private sectors on scientific and technological development; c) legal frameworks for innovation and market access; d) integration of Science, Technology and Innovation (STI) policies with other productive and rural development policies; e) organization of productive and organizational agreements in value chains and agglomeration economies; and f) implementation of policies aimed at social inclusion and rural development.

- **Productive and economic dimension**: a) global offer and demand for food and agricultural raw materials; b) production and productivity of the main agricultural and livestock products; c) commodity prices; d) agricultural frontier in the Southern Cone and in the world; e) dependence on input supply for production; f) diversification of production; g) import-export balance in the Southern Cone; and h) role of agro-energy in the global energy framework.

- **Sociocultural dimension**: a) alternatives for income generation in rural areas; b) rural job creation and qualification; c) research and development for domestic agriculture; d) access of domestic agriculture to internal and external markets; e) access to resources for socially excluded population; and f) community organizational capacity.

- **Environmental dimension**: a) monitoring and evaluation of vulnerability to climate change; b) climate change adaptation and mitigation technologies; c) sustainable use of soil; d) sustainable use of water; e) conservation and sustainable use of biodiversity; f) environmental regulation; and g) renewable sources of energy in rural areas.

Exercise analysis: creation of scenarios

In this phase, the results of the dimensions and critical uncertainties were analysed. This served as the basis for creating four scenarios:

**Neo-paradigm**
- The desired situation from the point of view of research, innovation and development
- Greater investments and participation of the private sector in consortiums and business incubation
- Collaboration with foreign universities and institutions will be fundamental to respond to demands
- Greater regional integration (for research, policy formulation and legal frame)
- The result will be a sustainable increase of demand, food supply and agricultural products, and more attention to social and environmental aspects.

**Delayed futures**
- Business-as-usual scenario, where regional integration challenges are maintained
- The Southern Cone continues to be an important food producer, with opportunities for biofuel production
- The conditions of rural workers and for environmental conservation are unfavourable
- There is increased demand for research but still within the same current paradigm
- The technology space is increasingly occupied by international companies
- The topic of agrofood chain quality does not progress due to lack of market intelligence.
- There are increasingly more difficulties in the region for the exchange of genetic material
Consequences and challenges

The four scenarios presented above unlock a set of consequences and challenges for the future of research, innovation and development, and become a model for the revision of PROCISUR strategies for the medium and long term. What is being sought is to consolidate a “robust trajectory” for the development of its actions.

Based on the core of the Programme’s action – the theme of regional cooperation for the scientific, technological and innovative development of agriculture – PROCISUR has managed to strengthen its robust trajectory thanks to the following points: a) broadening the variety of relations with innovation system stakeholders; b) capacity training at PROCISUR on themes related to climate change (trends and ways of mitigating, technological adaptation and development of new technologies, which in bio energy appear as key in all scenarios; and c) capacity building in themes linked to adding socio-environmental value to small production and to the search for markets that pay premium prices for products with those characteristics.

Has foresight been of help?

In short, PROCISUR’s strategic foresight and scenarios studies, which was carried out in a simple, low-cost manner, delivers clear messages, has helped the programme to redirect the mission and collaboration objectives that were captured in the medium-term plan, Plan de Mediano Plazo 2011-2014. This plan strengthens the participatory technological approaches that were included in PROCISUR’s management model and the handling of institutional innovations, and ratifies the role of “rural extension” as an important component of innovation.

Also, it has helped to redirect the action of the technical institutes that participate in the programme. Especially, it has influenced two recently created institutes: the Instituto Paraguayo de Tecnología Agraria (IPTA) from Paraguay and the Bolivian Instituto Nacional de Innovación Agropecuaria y Forestal (INIAF). These institutes are supported directly by an institutional strengthening project whose mandate is based, to a large extent, on the criteria and vision provided by the strategic foresight and scenarios study. The systematic inclusion of the strategic foresight studies has been very valuable to the PROCISUR management model. (Figure 1)

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3The concept of robust trajectory refers to the set of initiatives that an organization must undertake to have the necessary conditions to confront the different challenges that stem from scenarios. The concept is an input to revise the Programme’s long-term strategies that enables PROCISUR to be prepared for more or less important changes.
One of the most important changes promoted by this scenarios study and by the robust trajectory proposal is PROCISUR's decision to look for a greater internationalization -- collaboration activities that go beyond the Southern Cone. This is how a broad collaboration programme was undertaken with AGROPOLIS International, which reaches the six country members of PROCISUR.

In the political field, the new innovation approach used by PROCISUR has helped the programme to interact with authorities in the Ministry of Agriculture and to take part in meetings of the agricultural council Consejo Agropecuario del Sur (CAS). In this way, PROCISUR has managed to position itself as a technical support group for ministerial decision making and demands in the Southern Cone region.

Figure 1. PROCISUR Management Model

Citation:

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