TC Document

I. Basic Information for TC

▪ Country/Region:	Uruguay/CSC
▪ TC Name:	Promoting Productive Transformation and Competitiveness of Uruguay's Agri-food Industry based on Science Technology and Innovation
▪ TC Number:	UR-T1182
▪ Team Leader/Members:	Team Leader: Gustavo Crespi (CTI/CUR), Team Members: Pablo Angelelli (CTI/CHL), Hernando Hintze (RND/CUR), Juyoon Sun (IFD/CTI), Gaston Rodriguez (VPC/CUR), Carolina DÁngelo (VPC/CUR), Emilie Chapuis (VPC/FMP), Abel Cuba (VPC/FMP), Federica Gomez (INT/CUR) Maria Fernanda Lopez de Valles (IFD/CTI) and Cristina Celeste Marzo (LEG/SGO).
▪ Taxonomy:	Client Support
▪ Reference to Request[1]: (IDB docs #)	Request Document (EZSHARE-943825504-2)
▪ Date of TC Abstract authorization:	9/12/2018
▪ Beneficiary	Oriental Republic of Uruguay through National System of Productive Transformation and Competitiveness at the Office of Planning and Budget (OPP) under the Presidency of the Republic
▪ Executing Agency	Inter-American Development Bank (IBD)
▪ Donors providing funding	Knowledge Partnership Korea Fund for Technology and Innovation (KPK)
▪ IDB Funding Requested:	US$ 1,000,000
▪ Local counterpart funding:	US$ 100,000 (in-kind contribution)
▪ Disbursement period:	24 months for disbursement (18 months for execution)
▪ Required start date:	11/01/2018
▪ Types of consultants:	Firms and Individual Consultants
▪ Prepared by Unit:	Competitiveness and Innovation Division (IFD/CTI)
▪ Unit of Disbursement Responsibility:	CSC/CUR
▪ Included in Country Strategy (y/n);	Yes
▪ TC included in CPD (y/n):	Yes
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Productivity and Innovation Strengthening of state institutional capacity

[1] A copy of the Letter of Request, Programming/Portfolio Review Mission Aide Memoire or Report requesting the TC should be submitted with the Abstract.

II. Objectives and Justification

2.1 Since 2003, Uruguay shows a remarkable record of 15 years of uninterrupted economic growth, averaging 4.3% per year (BCU, 2017). This expansion has been partially fueled by the satisfactory performance of agribusiness complexes that explain about 78% of exports of goods (Uruguay XXI, 2016)[2]. Indeed, main export products include meat (15%), soybean (12%), rice (6%), diary (6%), wool (2%) and pulp (14%), among others[3]. As such, the agri-food industry is a significant contributor to Uruguay's Economy. However, economic growth has slowed down to a mere 1.6% since 2015 (IDB,2016). A great factor underlying this has been the loss in competitiveness in agri-food, mostly due to dramatic changes in the international context, with a sharp decline in the global demand of raw materials together, in some cases, with problems of global oversupply[4]. Additionally, these changes in global demand have concurred with increased volatility in the weather conditions due to climate change[5]. In summary, the sustainability of the current Uruguay's growth model is seriously challenged if it remains based only on the competitiveness of raw materials and commodities.

2.2 In contrast to the situation of commodity markets, trends in high value-added food products have been more dynamic and stable. Although there are different estimates, the functional food market – which is just a segment of the high-value added food market – generated a global revenue of approximately USD 300 billion in 2017 with a projected annual growth rate of 8% until 2022[6]. Population growth in developing countries, aging population, together with an increase in per-capita income create significant global growth opportunities for the agrifood industry of Uruguay. It is also important to note the global changes in consumption habits and preferences towards healthier, more nutritious, sustainable, functional and nutraceutical food. These transformations occurring in the international context place Uruguay in a privileged position to become a supplier of high quality foodstuff. However, high valued added food products are also knowledge intensive goods that require a relatively strong science base to develop competitive advantages[7]. Such changes in market conditions and consumer demand require Uruguay to move away from its business as usual approach towards innovation and knowledge to take advantage of global market opportunities.

2.3 Uruguay stands out among Latin American countries has having some of the best Agriculture Science and Technology Indicators and well-established capacity in agricultural research. Indeed, R&D expenditure in agri-food is about 1.4% of the sector's GDP (IDB, 2016), well above the rest of the economy[8].These strong capacities have allowed the country to increase agricultural productivity and to achieve a high standard in terms of sanitary conditions. In addition, the agri-food

[2] Primary industries account for 12.6% of the GDP (BCU, 2016)
[3] Atlas of Economic Complexity, Harvard (2016)
[4] This is particularly severe in commodities such as wool and dairy products.
[5] After a peak yield in the 2012/2013 harvest, the oilseed yields declined by 20% due to unfavorable climatic conditions which affected crops at the level of production, logistics, harvest conditions and quality impacting exporting chains.
[6] https://www.statista.com/statistics/252803/global-functional-food-sales/
[7] Several opportunity niches are already available for Uruguay, from exporting new varieties of oilseeds for counter-season production to the Northern Hemisphere, to development new packaging materials to protect functionality of products, including the development of microbial applications, new antioxidant compounds, probiotics, ready to eat foods and aging friendly foods, among others.
[8] Overall national R&D intensity is 0.36% of the GDP (RICYT, 2018).

sector is also one of the most innovative sectors in the country in terms of investment in innovation and number of human resources working in innovation[9]. Despite this, the current state of the agri-food innovation system has not been enough as to increase the economic complexity of the agri-food value chain by developing more sophisticated and knowledge intensive food products. Two serious shortcomings of the current agri-food innovation system that undermine entry in high value-added market niches are fragmentation and low coordination among innovation actors (universities, technological institutes, firms and government), spreading scarce resources among too many different research lines, and a bias of the research system towards curiosity-driven basic science far from the demand by industry sectors (SNU, 2018)[10]. In other words, there is a missing link in the system needed to coordinate research capacities already existent and bridge them with the knowledge demands of the industry for the development of more sophisticated food products. Partially, because of this situation, the agri-food innovation system is not taking full-advantage of the opportunities that modern biotechnology[11] offers for increasing productivity, enhancing value of agri-food products and achieving sustainability. The experience of most developed countries suggests that technology centers, if regulated by the right set of incentives, can play a critical role in the innovation system connecting knowledge demand with supply, building capacity through human capital formation and providing sophisticated knowledge services to firms through the operation of advanced equipment[12].

2.4 This view is also shared by the Uruguayan government. To enhance the institutional coordination of Uruguay's innovation system, the Parliament of Uruguay approved the Law 19472 creating the National System of Productive Transformation and Competitiveness (SNTPC) in December 2016, with the goal of promoting productive and innovative economic development with environmental sustainability, social equity and regional balance. Located in the Office of Budget and Planning (OPP) and led by the President of the Republic, the vision of the SNTPC is to diversify the country's production structure by using raw materials as platforms to develop the export basket towards more sophisticated goods and services by incorporating knowledge and technology. Consistent with this, the SNTPC has recently approved the 1st Strategic Plan for Productive Transformation and Competitiveness where the deployment of technology centers in different productive sectors, including the agri-food value chains, is considered among the key strategic projects. Aligned with this, the government has set the target of increasing agri-food exports to feed 50 million people by 2050 worldwide, which implies doubling the export figures of the sector.

2.5 The general objective of the technical cooperation is to contribute to productive transformation and increase competitiveness of agri-food industry in Uruguay. Specific objectives are: (a) to assess the background conditions of the agri-food innovation system in Uruguay; (b) to establish a world class biotechnological center aimed at improving the coordination of the agri-food innovation system and at

[9] According to the innovation survey conducted by ANII in 2012, the agri-food sector in Uruguay comprises 25% of the total investments in innovation and employs 30% of professionals in innovation.

[10] Other important shortcomings are the lack of modern research equipment in most laboratories and a small critical mass of researchers mostly active on crop and livestock research with few researchers focusing on food science. So, most of research is concentrated on the productivity of livestock and crop while research on value–added food products is paid little attention (based on an assessment by the Seoul National University evaluation team).

[11] Such as bio-informatics, genetic editing, mutagenesis and genetic engineering.

[12] OECD Reviews of Innovation Policy. Industry and Technology Policies in Korea (2014).

providing stronger university-industry linkages and (c) to enhance market intelligence research capacity based on trade statistics and to develop strategic planning capacity for R&D agenda with the primary focus on agri-food industry.

2.6 Building up on Korea's strong technological capabilities in this sector, on its longstanding research excellence and tradition with the operation of technological centers and public research institutes, the main activities in this technical cooperation will be carried out in strong collaboration with the Institute of Green Bio-Sciences and Technology (IBGST) of Seoul National University (SNU-Pyeongchang Campus). IBGST, as a global leading education and R&D institution in advanced agri-food technology, provides an important benchmarking model for Uruguay. With its strong core in academic and research excellence, but simultaneously working closely with the industry, IBGST plays a key role in creating mutually beneficial university-industry collaborations to translate its knowledge and technology that can upgrade the local and national economy. Benchmarking the IBGST model can also support the Government of Uruguay to attract global leading institutions to enhance domestic innovation capacity through close international collaboration.

2.7 This technical cooperation is consistent with the Update to the Institutional Strategy 2010-2020 (AB-3008) under the pillars of productivity and innovation and strengthening the institutional capacity of the State. It is in alignment with the objectives of the Country strategy 2016-2020 (GN-2846) to promote innovation. Furthermore, it is consistent with the Innovation, Science and Technology Sector Framework Document (GN-2791-3), and it will contribute with the Sector Strategy Institutions for Growth and Social Welfare (GN-2587-2) and the Corporate Results Framework (CRF) 2026-2019 (GN-2727-6) as established in the indicator government agencies benefited by projects that strengthen technological and managerial tools to improve service delivery. This TC is also in alignment with the objective of the Knowledge Partnership Korea Fund for Technology and Innovation (KPK) to promote science and technology capacity and innovation for economic growth and sustainable development through innovation-based development strategies by increasing competitiveness and easing the integration into the global markets. It is also in line with the MOU signed between IFD and the Ministry of Science, Technology and ICT (MOST) of the Republic of Korea in 2016 to increase the production and distribution of knowledge, strengthen the innovation and competitiveness system and building science technology and innovation policy and Institutional capacity in the region.

III. Description of activities / components and budget

3.1 **Component I. Assessing background conditions for establishing a world class BT center in agri-food and capacity building (US$370,000).** This component will carry-out a complete strengths, weaknesses, opportunities and threats (SWOT) analysis of the different segments of the Uruguay's agri-food value chains with focus on benchmarking the Uruguayan BT research capacity with the international frontier. It will review the national and sector policies, plans, statistical data, economic and thematic sector work to identify key sector development issues and constraints. The consultant team will interview key government agencies, universities, research institutes, companies, start-ups and other relevant stakeholders to gain an in-depth understanding of sectoral capacity including BT research capacity. There will be also an institutional assessment of the national agri-food innovation system. Based on this, the consultants will prepare a diagnostic

report with the sector problem tree of the agri-food industry and proposed solutions to address the problems that currently obstructs upgrading of the agri-food sector. Based on the analysis, strategies to enhancing BT capabilities in terms of human resources, and R&D activities will be suggested. The consultants will also develop a sectoral roadmap for deploying a strategic market-oriented R&D program including target technologies, activities and projects in focused areas of crops, livestock, and food sciences to be able to achieve its goal of doubling high-quality food export by 2050.

3.2 This component also includes a one-week capacity building program of ten sectoral experts and public officials from the relevant ministries and agencies to capture best practices of BT center deployment as well as strengthening university-industry collaboration. Participants in the capacity building program will be able to acquire know-how in relation to the development, operation and management of a world-class biotechnology center. In addition, strategies and instruments to promote university-industry collaboration based on strategic partnership will be shared to provide concrete lessons and recommendations. The capacity building program will include lectures, workshops, discussions, and field visits. In summary, the outputs of this component are: (i) diagnosis report and recommendations, (ii) sectoral roadmap including an R&D program, (iii) strategy for enhancing R&D capacity and (iv) capacity building program.

3.3 **Component II. Developing a BT center master plan and feasibility study (US$ 460,000).** This component will develop a master plan for attracting a world class BT center for the Uruguayan agri-food industry. The BT center will serve as a headquarter of manpower, scientific expertise, research capacity, and infrastructure for knowledge generation, human resources training, and technology transfer to enable innovations in agri-food value-chains. The consultants will first review the rationale, institutional design, governance, policy framework, funding and lessons from implementation of existing world-class BT centers. Applying the best practices and lessons onto the Uruguayan context, the concept, mandate, functions and governance of a BT center in Uruguay will be proposed. A workshop will be organized to discuss the findings and suggested institutional model with research institutes, universities, the business sector and government including the National Research and Innovation Agency (ANII), the Ministry of Livestock and Agriculture (MGAP), the Agricultural National Research Institute (INIA), the National University (UDELAR), among others, as well as representatives from the Ministry of Finance (MEF) and the SNTPC to build consensus. The- master plan for a BT center will include the vision, operational strategies, institutional model, organization, functions, human resources, infrastructure and equipment, support programs and business model for financial sustainability, key R&D programs and projects. Based on the master plan, a detailed architectural design of the BT center will be developed. The feasibility study will detail the analysis to identify the best location of the BT center, calculation of investment costs and benefits will be conducted to be discussed with the authorities. In summary, the main outputs of this component will be: (1) master plan for a BT center, (2) feasibility study including cost-benefit analysis and (3) investment plan.

3.4 **Component III. Building Trade Intelligence and R&D Planning Capacity to upgrade the agri-food sector (US$ 240,000).** The first activity of this component aims to develop methodologies and an institutional framework to monitor and forecast key trade trends, risks and opportunities for key Uruguayan export

products and strategic sectors. Forecasting will also include identification of tariff and non-tariff barriers in client markets that could challenge Uruguayan exports in the near future. Korean Customs Service has developed a trade statistics system called Trade Business Diffusion Index that conducts monthly monitoring of exports and imports. Korea Export-Import Bank (KEXIM) also produces an Export Leading Index based on the economic trends of the export destinations. It has been proven very useful to provide forecast with some accuracy in one to two quarters in advance. In addition, Korea Trade Promotion Agency (KOTRA) in collaboration with Samsung Economics Research Institute (SERI) have developed Export Composite Index (ECI) by conducting surveys targeted to foreign buyers on matters related to the size of the order, price and quality competitiveness of the export destination. Another important partner is the Institute for International Trade under the Korea International Trade Association (KITA) that gathers comprehensive trade information and statistical data based on its comprehensive statistical database platform called K-Stat. Availability of such data and analytic capacity will allow the Government of Uruguay to identify key export niches in the agri-food sector and to develop appropriate export strategy.

3.5 A secondary activity of this component will be the strengthening of the R&D planning function based on technology trend analysis for strategic sectors related to the agri-food value chain. This activity will build capacity for analyzing the information on future and emerging technologies in the key strategic sectors of agri-food industry. Then, based on review of the feasibility, marketability, and existing research and market capacity, R&D agenda and program will be developed with the thematic experts and scholars in the area. Such R&D agenda and program will be in alignment with the 1st Strategic Plan for Productive Transformation and Competitiveness. Additionally, the developed R&D agenda and consequent program will also be in alignment with the government R&D fund to provide directions for the allocations of R&D activities. A training workshop on R&D planning methodology will be held which will includes components of both quantitative and qualitative analysis of big data analysis of the technology and market trends, expert workshop and panel discussion. Key partners for this activity will be Korea Institute of Science and Technology Information (KISTI) that will provide the methodology to identify future promising technologies and Korea Institute of Science and Technology Evaluation and Planning (KISTEP) that identifies future promising technologies focused on overcoming social challenges. In summary, the main outputs of this component will be: (1) the installation of a methodology and capacity building to monitor key global trade trends in the agri-food sector and (2) the installation of a methodology and capacity building for the development of pro-active technology foresight of agri-food related technologies to feedback into an R&D national program. Both outputs will guide the missions for the BT center designed in the previous components.

Indicative Budget

3.6 The total amount of resources needed for this TC is US$ 1,100,000 among which US$1,000,000 will be financed by the Knowledge Partnership Korea Fund for Technology and Innovation (KPK) of the IDB and US$ 100,000 will be in-kind contribution from the Government of Uruguay through National System of Productive Transformation and Competitiveness at the Office of Planning and Budget (OPP). The required funding for each component is described in the below:

Activity/Component	Description	IDB/Fund Funding	Counterpart Funding	Total Funding
Component I. Assessing background conditions and capacity building		**$340,000**	**$30,000**	**$370,000**
1. International consultancy for diagnosis and analysis of agrifood industry & technology level in Uruguay, Sectoral upgrade plan for agrifood industry and strategies for enhancing BT capacity, and Capacity Building Workshop of 10 Uruguayan Stakeholders in Korea		$245,000	0	$245,000
2. Institutional Assessment of the national agri-food innovation system		$60,000	0	$60,000
3. Local consultancy for implementation of the demand surveys and assessment of the initial conditions (7 local consultants)		$35,000	$30,000	$65,000
Component II. Upgrading Plan for BT capabilities and BT center master plan		**$440,000**	**$20,000**	**$460,000**
1. Master plan and feasibility study of the BT center for Agri-food industry		$180,000	0	$180,000
2. Feasibility Study of the Biotechnology Center for Agri-food Industry.		$125,000	0	$125,000
3. Architectural Design of the Biotechnology Center for Agrifood Industry		$105,000	0	$105,000
4. Organization of 3 dissemination workshops in Montevideo (agrifood industry stakeholder workshop)		$30,000	$20,000	$50,000
Component III. Building Trade Intelligence and R&D Planning Capacity to upgrade the agri-food sector		**$220,000**	**$20,000**	**$240,000**
1. Methodologies and an institutional framework to monitor and forecast key trade trends, risks and opportunities for key Uruguayan export products and strategic sectors		$110,000	$10,000	$120,000
2. Methodologies for developing R&D agenda based on technology surveillance and forecasting for the agrifood industry and capacity building workshop		$110,000	$10,000	$120,000
Coordination, Supervision & Evaluation		**0**	**$30,000**	**$30,000**
Total		**$1,000,000**	**$100,000**	**$1,100,000**

IV. Executing agency and execution structure

4.1 This project will be executed by the Competitiveness, Technology and Innovation (CTI) Division of the Institutions for Development (IFD) Department at the request of the Government of Uruguay due to the limited institutional capacity to duly and timely execute the activities as it is an institutional at its incipient stage of development. The request is also based on the Bank's capacity to implement technical cooperation projects, its knowledge to identify highly qualified

international consultants, and its experience in similar operations among different countries in the region. The Beneficiary of this TC, the SNTCP at the Office of Budget and Planning of the Presidency of the Republic will contribute to the discussion of the terms of reference of the different studies, assist the international consultants during their missions to Montevideo and review the outcomes of the TC. Bank's execution is in compliance with the section 4.5 of the Bank's Technical Cooperation Policy (GN-2470-2) which requires, in case of Bank-executed TCs, that: (a) the beneficiary country or group of countries concurs and (b) the proposed activities are consistent with the Bank's country and /or regional strategy and program.

4.2 The Bank through CTI, RND and INT specialists will supervise the technical and operational activities related to the project. Although the Bank will be the executing unit of this project, the Beneficiary will still have to submit technical reports every six months with information about activities, products and results achieved over the last period. The reports will have to include a schedule for using the resources over the next six months period together with information on lessons learned. The half of year reports will be discussed in monitoring meetings with the beneficiary. Additionally, the technical cooperation will have an external evaluation by an independent consultant, paid by the project, who will certify the fulfillment of the indicators and goals included in the results matrix upon completion of the consultancy of the TC. The results of the evaluation may be used for the design and development of the follow up activities based on this TC.

4.3 The consulting services of SNU will be contracted using the non-competitive method of single-source selection contemplate in GN-2765-1, which is justified taking into account the following: The Government of Uruguay has specifically demanded that the SNU conduct the consultancies of this TC in the letter of request to the IDB to establish an international BT center for agrifood industry. In addition, SNU has the experience of exceptional worth for this assignment and it presents a clear advantage over competition. More specifically, the Institute of Green Bio Science and Technology (GBST) of SNU Pyeongchang Campus has vast experience closely working with the industry to foster agri-food industry through its research in the area of biotechnology especially in biofood, seed and crop, animal sciences, and green technology. University-industry collaboration is one of the key areas of interest for the Government of Uruguay to achieve as an objective with the establishment of the new BT center for agrifood industry. SNU will carry out the consultancies of this TC including for assessing the background conditions, capacity building, developing the master plan for the BT center and carrying out the feasibility study and organizing the workshops for the stakeholders to present the results of the consultancy.

4.4 The activities to be executed are included in the Procurement Plan (Annex III) and will be contracted in accordance with Bank policies as follows: (a) AM-650 for Individual consultants; (b) GN-2765-1 and Guidelines OP-1155-4 for Consulting Firms for services of an intellectual nature and; (c) GN-2303-20 for logistics and other related services

V. Project risks and issues

5.1 Potential risks can be anticipated for coordination due to the nature of the project requiring multi-agency participation in each component. Nevertheless, the SNTPC the Beneficiary of the project, has the mandate and experience in coordinating relevant ministries and agencies. The SNTPC, led by the President of the Republic, has the highest-level mandate to coordinate all the different stakeholders and to align incentives for the success of this project. A Steering Committee will be established to integrate the various agencies involved with the objective of facilitating coordination and providing strategic support. This committee will meet on regular basis with the Beneficiary and the consultant. The Steering Committee will have five members: one representative from the SNTPC, one representative for public universities, one representative from the academia, one representative from the National Agricultural Research Institute, National Research and Innovation Agency and one representative from Uruguay's Chamber of Industry. In addition, the IDB through the CTI division will maintain a close collaboration with the Korean consultant and the Beneficiary to facilitate the work and to reassure that the main findings and results of the consultancy are internalized by the Government of Uruguay. A risk with the implementation of this TC is that the Government of Uruguay disagrees with the recommendations emerging form some of the studies and so does not move forward with the implementation of some of the policies. In order to mitigate this risk, the project team will be deeply involved in the dialogue with the Beneficiary in order to accompany the process of discussion and assimilation of the different policy recommendations. In addition, to ensure sustainability of the activities, active participation of the various agencies shall be required throughout the execution of this TC from the beginning to the completion. Regular meetings will be held to reflect the needs and demands of the various institutions involved as well as to discuss the progress. Most of the consultancies will be developed during 2019 and first semester of 2020 so that the final investment plan for the center will be included in the next five-year budget plan (2021-2025).

VI. Exceptions to Bank Policy

6.1 This Project does not foresee any exceptions to Bank policy.

VII. Environmental and Social Strategy

7.1 This TC does not have environmental issues. Regarding Social strategy, this project will be designed addressing gender and minorities' social inclusion concerns. The TC has been qualified by ESG as category "C" (see Safeguard Policy Filter y Safeguard Screening Form). which confirms an environmental, social and / or cultural minimum or no impact. The feasibility study shall be developed in compliance with the Bank's safeguards policies.

Annexes required:

- Annex I: Request Letter
- Annex II: Results Matrix
- Annex III: Terms of Reference
- Annex IV: Procurement Plan

PROMOTING PRODUCTIVE TRANSFORMATION AND COMPETITIVENESS OF URUGUAY'S AGRI-FOOD INDUSTRY BASED ON SCIENCE TECHNOLOGY AND INNOVATION

UR-T1182

CERTIFICATION

I hereby certify that this operation was approved for financing under the **Knowledge Partnership Korea Fund for Technology and Innovation (KPK),** through a communication dated September 12, 2018 and signed by Byoung Kim. Also, I certify that resources from said fund are available for up to **US$1,000,000** in order to finance the activities described and budgeted in this document. This certification reserves resource for the referenced project for a period of four (4) calendar months counted from the date of eligibility from the funding source. If the project is not approved by the IDB within that period, the reserve of resources will be cancelled, except in the case a new certification is granted. The commitment and disbursement of these resources shall be made only by the Bank in US dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except in the case of local consultants working in their own borrowing member country who shall have their remuneration defined and paid in the currency of such country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this operation. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences, representing a risk that will not be absorbed by the Fund.

Certified by:	Original Signed	11/13/2018
	Sonia M. Rivera Chief Grants and Co-Financing Management Unit ORP/GCM	Date

Approved by:	Original Signed	11/19/2018
	Ana Rodriguez-Ortiz Manager Institutions for Development Sector IFD/IFD	Date