DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

URUGUAY

TECHNOLOGY DEVELOPMENT PROGRAM II

(UR-L1030)

LOAN PROPOSAL

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Annex I Results matrix

(A procurement plan is not required for this project.)

Electronic Links

REQUIRED

1. **Annual work plan (AWP)**
   Plan Operativo Anual. POA.
2. **Monitoring and evaluation framework**
   Marco de Monitoreo y Evaluación.
3. **Environmental and safeguards classification (No Environmental and Social Management Report required for this project)**
   Safeguard Policy Filter Report; Anexo II. Clasificación Ambiental y Salvaguardias.

OPTIONAL

1. **Technical and design options**
   Análisis de Casos.
   Análisis Cualitativo de la Ejecución.
   Ciudadanos Uruguayos altamente calificados residentes en el exterior. ANII.
   Aportes al desarrollo de un Sistema Nacional de Becas en Uruguay.
2. **Analysis of project economic viability**
   Subprograma de apoyo ala innovación y mejora de la competitividad de las empresas.
3. **Financial management/fiduciary issues and environmental control**
   CDA
4. **Institutional analysis/personnel, procedures, other aspects of implementation capacity**
   Reglamento Operativo del Programa.
   Organigrama ANII.
   Aspectos ambientales en el PDT II.
   Informe: Evaluación de Capacidad Institucional y Riesgo Fiduciario.
5. **Stakeholders and political analysis**
   Formulario de Evaluación de Riesgos.
6. **Miscellaneous (donor coordination and sector issues)**
   Plan estratégico Nacional PENCTI
   Estudios de Políticas Científico-Tecnológicas.
   Matriz de Coordinación de Proyectos CTI en Uruguay

ABBREVIATIONS

ANII	Agencia Nacional de Investigación e Innovación [National Research and Innovation Agency]
DICyT	Dirección de Innovación, Ciencia y Tecnología [Directorate of Innovation, Science, and Technology]
DINAMA	Dirección Nacional de Medio Ambiente [National Environment Directorate]
DPC	Detailed procurement costing
INE	Instituto Nacional de Estadísticas [National Statistics Institute]
MSMEs	Micro, small, and medium-sized enterprises
OR	Operating Regulations
PDL	Performance-driven loan
PENCTI	National Strategic Plan for Science, Technology, and Innovation
R&D	Research and development
RDI	Research, development, and innovation
S&T	Science and technology
SNI	National Innovation System
STI	Science, technology, and innovation
TDP	Technology Development Program

PROJECT SUMMARY

URUGUAY
TECHNOLOGY DEVELOPMENT PROGRAM II
(UR-L1030)

Financial Terms and Conditions			
Borrower: Eastern Republic of Uruguay		Amortization period:	25 years
Executing agency: Agencia Nacional de Investigación e Innovación [National Research and Innovation Agency] (ANII)		Grace period:	6 years
Source	**Amount**	Disbursement period:	6 years
IDB (Ordinary Capital)	US$34 million	Inspection and supervision fee:	*
Local	-	Interest rate:	Adjustable
Total	US$34 million	Credit fee:	*
		Currency:	U.S. dollars from the Single Currency Facility

Project at a glance

Project objective/description:
The general objective of the program is to help strengthen the components of the National Innovation System. The purpose is to increase the country's investment in innovation. The program has five components: (i) promoting innovation in the business sector; (ii) projects to generate and strengthen science and technology services; (iii) strengthening human resources in science, technology and innovation; (iv) innovation projects of significant public interest; and (v) support for the ANII's monitoring and evaluation capacity.

Special contractual clauses:
- As a special condition precedent to the first disbursement (advance), an administrative agreement must be signed between the borrower and the executing agency, regulating the transfer of program resources.
- As a special condition precedent to the first results-based disbursement, the specialized consulting firm must be hired that will be responsible for verifying that milestones for disbursement are met (paragraph 2.7).

Exceptions to Bank policy:
None.

Project consistent with country strategy:	Yes [X]	No [ ]			
Project qualifies as:	SEQ [ ]	PTI [ ]	Sector [ ]	Geographic [ ]	Headcount [ ]

* The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the applicable provisions of the Bank's policy on lending rate methodology for Ordinary Capital loans. In no case will the credit fee exceed 0.75% or the inspection and supervision fee exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problems, and rationale

1.1 **The macroeconomic setting.** Uruguay's economy has staged a sustained recovery from the crisis of 2002. The unemployment rate was lower in 2007 than it was before the crisis, the primary surplus has increased, capital flight has been reversed, and the reserve assets of the Central Bank have been restored. For the fourth quarter of 2006, GDP was 7.3% above the historic peak, and the growth rate for 2007 exceeded 7%. In the first half of 2007, the poverty level declined to 25%, and unemployment to 9.7% (compared to 20% at the end of 2002). A recent analysis by the Bank concludes that macroeconomic policies are sustainable, unless external conditions change significantly.[1] In this context, the government's priorities are to increase investment, improve the quality of public social expenditure, implement structural reforms to enhance competitiveness, and achieve greater integration into the world economy by diversifying export markets.

1.2 **The business sector** is made up primarily of national firms, a significant proportion of which are small and medium-sized enterprises (SMEs). In 2005, according to the National Statistics Institute (INE), 97% of firms were microenterprises or small businesses, and they accounted for 50% of employed workers. The most important sectors are commerce, transportation and communications, and manufacturing, along with emerging areas such as software and information technology services, biotechnology, and business engineering services.[2]

1.3 Spending on **research and development (R&D)** amounts to only 0.4% of GDP, placing Uruguay among the Latin American countries that invest the least in this area.[3] Moreover, as is typical of most countries in the region, the public sector accounts for the bulk of the R&D effort, with only marginal involvement by the

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[1] Daude, C., and G. Zoccali, "*Evaluación Macroeconómica de Uruguay (2007)*" [Macroeconomic Evaluation of Uruguay (2007)], IDB, concludes that the deterioration of international financial markets will probably not affect Uruguay significantly, and that while high international commodity prices are having an adverse impact, because the country is a fuel importer, they are also boosting export revenues. However, the report signals a note of caution: "an abrupt change in international financial conditions would have an adverse effect for Uruguay because of its high level of public debt and low rates of internal savings".

[2] United Nations Development Programme, 2005, Human Development in Uruguay.

[3] Data estimated by Bértola et al., 2004.

private sector.[4] These indicators, which have not changed substantially over the last two decades, reflect a phenomenon that goes beyond cyclical effects.[5]

1.4 **Weaknesses in the National Innovation System (SNI).** The SNI refers to the institutional network and the human resources of the public and private sectors that interact and work to establish, import, modify, and disseminate new technologies. In the case of Uruguay, the SNI faces the following challenges:

a. **The SNI institutional framework** has weaknesses in the following functions:[6] (i) monitoring policies and programs; (ii) articulating and differentiating support instruments in light of the specific needs of innovators (young people, researchers, entrepreneurs etc.) and types of innovation (radical, non-technological, of high public interest, etc.); (iii) articulation with private-sector demand; and (iv) advisory services to government and Congress. These weaknesses can be seen in the lack of institutional coordination and the absence of guidelines to steer players in the system. The recent creation of the Agencia Nacional de Investigación e Innovación [National Agency for Research and Innovation] (ANII) and preparation of the National Strategic Plan for Science, Technology, and Innovation (PENCTI) represent efforts to address these problems.

b. **The productive sector**. According to data from the Directorate of Innovation, Science, and Technology (DICyT)[7], only 36% of industrial firms engaged in some type of innovation activity in the period 2001-2003. The most common form of innovation was to acquire capital goods (accounting for 70% of investment in 2003), while less effort was devoted to R&D and the design and transfer of technology. This pattern, which was focused on purchasing equipment, limits businesses' capacity to make full use of such equipment and, above all, to generate knowledge and innovation that will have a global impact.[8]

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4 The public research institutions are: Instituto de Investigaciones Biológicas Clemente Estable (IIBCE), the various laboratories and institutes of the Universidad de la República, the Instituto Nacional de Investigaciones Agropecuaria, the Laboratorio Tecnológico del Uruguay, and various units of the Ministry of Livestock, Agriculture and Fisheries. A branch of the Pasteur Institute was recently created and received support from the European Union.

5 Given the country's productive structure, and applying the R&D sector coefficients of the Organization for Economic Cooperation and Development, R&D spending in Uruguay should be close to 1.1% of GDP. However, the country has won recognition in recent decades for its efforts to develop a high-level academic capacity: the number of scientific publications rose by a factor of five from 1990 to 2004.

6 Bértola, L. et al., (2004), "*CTI en Uruguay*" [STI in Uruguay], Montevideo, Universidad de la República.

7 DICyT, 2003, *La innovación en la industria uruguaya (2001-2003)* [Innovation in Uruguayan Industry (2001-2003)].

8 By contrast, emerging sectors such as software, agro-biotechnology, pharmaceuticals and chemicals, audiovisual, logistics, information and communications technology, and tourism make great use of existing support instruments.

c. **Interaction between the productive sector and universities.** In 2003, according to the DICyT, 76% of industrial firms considered the universities and research centers to be of little or no importance as a source of information for innovation. This reflects the problems in terms of human resources, equipment and legal considerations that such institutions face in working with businesses. Another important factor is the reluctance of firms to pay for services and to adjust to the institutions' pace of activity, which does not always follow a business logic.

d. **Human resources.** Uruguay has some 1,200 full-time researchers. The PENCTI is proposing to increase that number substantially by the year 2020. Yet in recent years, the number of Ph.D.s produced by Uruguayan universities in PENCTI's priority research areas has not exceeded 30 a year.[9] In several of these areas, there will have to be a plan for postgraduate training in foreign universities, given the small size of the national scientific community.

1.5 Uruguay's Science, Technology, and Innovation (STI) strategy. In response to these challenges, the government has made STI a priority for the five-year period 2005-2009.[10] This is reflected in: (i) the creation of the ANII; (ii) the budgets submitted to Congress; (iii) requests for financing from the IDB, World Bank, and European Union; and (iv) preparation of the PENCTI.[11] That priority is consistent with the Bank's 2005-2009 strategy with the country, one objective of which is "strengthening competitiveness and Uruguay's international positioning", recognizing that this can be achieved by "encouraging STI and adopting international technical and quality standards" as well as "rethink[ing] Uruguay's current institutional infrastructure for helping businesses".

1.6 **Sectoral aspects and the Bank's role.** The Bank has broad experience and knowledge of the STI sector in Uruguay. During the 1990s, a Bank program (loan 647/OC-UR) had an important impact on scientific infrastructure and the development of human resources, and in 2000 the Bank approved the Technology Development Program, which is now winding up.[12] The positive impact of the program and the lessons learned were examined in studies commissioned by the

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[9] The consultant's report on "Desafíos y alternativas para el desarrollo de los recursos humanos para CTI" [Challenges and alternatives for STI human resource development], by Carlos Abeledo, looks in detail at the issue of human capital, and includes annexes on postgraduate students in priority areas in public and private universities in Uruguay.

[10] See "*Propuestas y Proyectos: El gobierno del cambio: la transición responsable*" [Proposals and Projects: the government of change: responsible transition] http://www.presidencia.gub.uy/_Web/pages/pres02.htm.

[11] The purpose of the PENCTI is "to develop a strong and consolidated STI system, with efficient articulation of STI activities, solid links between business, academia, the state and civil society, that will enhance [the country's] international positioning and improve the lives of its people."

[12] Implementation of that program was delayed by the economic crisis of 2002 (which affected businesses' ability to invest in innovation and the government's ability to come up with financial backing for the program); the pace accelerated once the crisis was over.

Bank.[13] In addition, STI challenges were analyzed for the Bank's strategy with Uruguay.[14] Lastly, the government has received funding from the Knowledge Partnership Korea Fund for Technology and Innovation (UR-T1026) for preparation of the PENCTI and for strengthening sector institutions through the ANII. Uruguay is also taking various steps (some of them with Bank support) that, together with this program, constitute a coherent set of interventions to address priority problems that are hindering the competitiveness of the private sector.[15]

1.7 **Donor coordination.** The program is being coordinated with other initiatives financed by the World Bank and the European Union in support of innovation in Uruguay. The program files contain a matrix summarizing the principal areas of activity of those programs.

B. Objectives, components, costs, and lending modality

1.8 **The general objective of the program** is to help strengthen the components of the SNI. The purpose is to increase the country's investment in innovation. The program is divided into the following five components:

1.9 **Component I. Promoting innovation in the business sector (US$16.6 million).** This component will finance projects of the following types:

(i) **Broad-based innovation projects. Objective:** using flexible criteria, to finance projects that will generate new innovation capacity in businesses. **Beneficiaries:** firms based in the country, operating alone or partnered with other firms, research institutions, or technology centers. **Eligible projects:**[16] innovation in products, processes, organization, and marketing, where the R&D component has significant scope.

(ii) **Management improvement and quality certification projects. Objective:** to promote the competitiveness of micro, small, and medium-sized enterprises (MSMEs). **Beneficiaries:** MSMEs based in

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[13] Rivas, Gerardo (2007) "*Análisis Cualitativo de los Proyectos Financiados a través del subcomponente I*" [Qualitative Analysis of Projects Financed under Subcomponent I]; and López, A. and Svarzman, G. (2007) "*Subprograma de Apoyo a la Innovación y Mejora de la Competitividad de las Empresas: Una Evaluación de sus Beneficios Sociales*" [Subprogram to Support Innovation and Competitiveness Gains in Companies: An Evaluation of Social Benefits]. The latter showed, through a cost-benefit analysis, that 10 selected projects had produced benefits equal to the original cost of the entire program.

[14] Bértola, L. et al., (2004), "*Estudio de Política Científico-Tecnológica*" [Study of Science-Technology Policy]. Thematic Note, IDB.

[15] Activities include the Cluster and Production Chain Competitiveness Program (UR-L1020), the Global Program for Multisectoral Finance (UR-0136), and the Microfinance Support Program for Productive Development (UR-L1010). With MIF support (UR-1024) the government is improving coordination of all business support programs. In addition, the government is undertaking reforms within the Sectoral Program for Competitiveness (UR-L1007) approved in 2007, to establish an institutional framework for microeconomic interventions with common objectives and strategies.

[16] The types of innovation are defined in the program Operating Regulations.

the country. **Eligible projects:** management improvement, installation of quality certification systems, technical standardization, and/or certification of processes and products.

(iii) **High-impact technology-based innovation projects. Objective:** to promote technology-based innovations in products and processes that will expand the export capacity of businesses and/or, when disseminated, will improve living standards. **Beneficiaries:** firms based in the country, operating alone or partnered with other firms and/or institutions. **Eligible projects:** technological innovation in products and/or processes.

(iv) **Sectoral and/or regional innovation programs. Objective:** to meet the collective needs of organized business groups facing shared technological problems that hinder their competitiveness. **Beneficiaries:** solidly organized sectoral and/or regional groups of firms based in the country. **Eligible projects:** collective business projects that require specialized consulting services, strategic plans focused on innovation, and sectoral studies that will help strengthen the use of technology.[17]

(v) **Projects in support of innovative young entrepreneurs. Objective:** to promote the creation and development of new enterprises devoted to marketing innovative products, processes, or services that have been technologically validated. **Beneficiaries:** Uruguayans ages 18 to 35 who have the capacity to create businesses and who have a technologically validated product or process. **Eligible projects:** market studies, business startup expenses, commercial validation and prospecting, and up to one year of the entrepreneur's fees.

1.10 **Component II. Projects to generate and strengthen science and technology (S&T) services (US$7.5 million). Objective:** to generate and/or strengthen S&T services that meet the demands of the productive sector and/or the needs of the public. **Beneficiaries:** public and private nonprofit entities engaged in research and development, comprising at least three S&T groups with a track record in research. **Eligible items:** procurement of equipment and software, insurance, updating of specialized instruments, equipment upgrades, hiring and training of personnel, and minor civil works to adapt existing buildings.

1.11 **Component III. Strengthening human resources in the STI sector (US$5 million). Objective:** to strengthen the human resource base in the STI sector. **Eligible items:** travel, academic enrollment fees, per diems, books and study materials, thesis expenses, and insurance. This component will finance:

[17] Where they exist, the program will rely on active business clusters to avoid duplication of efforts.

a. **Postgraduate fellowships for study abroad** in strategic areas not adequately covered by Master's and Ph.D. programs available in the country.[18]

b. **Mobility for S&T personnel** in- and outside the country, including short-term interships and courses, thesis work, attendance at congresses and events, and postgraduate courses.

c. **Enlisting expatriate Uruguayan scientists and technologists** in giving courses and in R&D activities and the transfer of technology to the country.

1.12 **Component IV. Innovation projects of significant public interest (US$3 million). Objective:** to support innovation projects of significant public interest that will improve the generation and/or supply of public goods not susceptible to private appropriation. The ANII will invite public institutions (in particular ministries and government departments) to identify public problems that require investment in research, development, and innovation (RDI) projects, especially those for enhancing social inclusion. **Beneficiaries:** research groups in public and/or private nonprofit institutions. **Eligible projects:** research and/or development projects that offer solutions to the public problems identified.

1.13 **Component V. Support for the ANII's monitoring and evaluation capacity (US$905,000). Objective:** to generate and analyze information for the systematic monitoring and evaluation of the instruments used by the ANII, and their institutional management. This component will finance: (i) strengthening the information system; (ii) external consulting services for evaluation; and (iii) certification of the ANII quality management system.

1.14 **Cost and financing.** Table 1.1 (see following page) presents the summary budget of the program,[19] the total amount of which is US$34 million, to be financed entirely by the Bank.

1.15 **Lending modality.** The Bank has agreed with the country to provide a performance-driven loan (PDL). A loan of this type (document GN-2462) will assist the ANII in implementing its plans within the managing for results framework, enhancing the efficiency and responsiveness of its activities at a time when the STI sector has acquired great momentum and has become a priority for the government. With a PDL, disbursements are made against the achievement of certain specific targets directly related to the program objective. In this case, the content of the Results Matrix has been agreed with the country, as well as the Milestones Matrix, which distributes these results over the duration of the project. The ANII's organizational structure is appropriate for monitoring both matrices, and component V will provide the funds to do so.

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[18] This refers to the areas indicated in the PENCTI Basic Guidelines of September 2007. They are subject to revision and update.

[19] The detailed budget, including assumptions about expected demand for the activities financed, as well as a projection of expenditure flows over the life of the project, may be found at CDA/Detalle de Costos/Demanda y Montos Máximos/Proyección de Flujos.

C. Key indicators in the Results Matrix

1.16 **The Results Matrix** in Annex I includes the anticipated output and impact indicators for each of the components described above. Each line of financing has indicators for outputs, intermediate outcomes, and final outcomes. The output indicators are expressed in terms of projects completed, with their final reports approved. The outcome indicators measure the effects of the projects on the activities of the beneficiaries—the firms, institutions, and individuals that executed each of the projects. The overall impact of the program will be measured against its objective, using indicators that take as their reference the overall performance of the SNI.

Table 1.1. Technology Development Program II: Summary of Costs by Component (US$)

Categories	Source of financing		Total	%
	IDB	Local		
1. Promoting innovation in the business sector	**16,600,000**	**-**	**16,600,000**	**48.8%**
1.1 Broad-based innovation projects	11,600,000	-	11,600,000	
1.2 High-impact technological innovation	3,600,000	-	3,600,000	10.6%
1.3 Sectoral and/or regional innovation programs	600,000	-	600,000	1.8%
1.4 Support for innovative entrepreneurs	800,000	-	800,000	2.4%
2. Support for S&T services	**7,500,000**	**-**	**7,500,000**	**22.1%**
2.1 S&T service projects	7,500,000	-	7,500,000	22.1%
3. Strengthening human resources in STI	**5,000,000**	**-**	**5,000,000**	**14.7%**
3.1 Postgraduate fellowships in strategic areas	2,000,000	-	2,000,000	5.9%
3.2 Mobility for scientists and technologists	2,000,000	-	2,000,000	5.9%
3.3 Linkages to scientists and technologists living abroad	1,000,000	-	1,000,000	2.9%
4. Innovation projects of significant public interest	**3,000,000**	**-**	**3,000,000**	**8.8%**
4.1 Innovation projects of significant public interest	3,000,000		3,000,000	8.8%
5. Monitoring and evaluation	**905,000**	**-**	**905,000**	**2.7%**
5.1 Strengthening the monitoring and evaluation system	450,000	-	450,000	1.3%
5.2 Evaluation of instruments	160,000	-	160,000	0.5%
5.3 Midterm and final evaluations	240,000	-	240,000	0.7%
5.4 Certification of the ANII quality management system	55,000	-	55,000	0.2%
6. Auditing	**272,000**	**-**	**272,000**	**0.8%**
6.1 Operational, financial, and compliance audits	72,000	-	72,000	0.2%
6.2 Performance audits	200,000	-	200,000	0.6%
7. Contingencies	**723,000**	**-**	**723,000**	**2.1%**
7.1 Contingencies	723,000	-	723,000	2.1%
Subtotal	**34,000,000**	**-**	**34,000,000**	**-**
8. Financial cost	**-**	**-**	**-**	**0.0%**
8.1 Credit fee	-	-	-	0.0%
8.2 Interest	-		-	0.0%
8.3 Inspection and supervision	-		-	0.0%
Total	**34,000,000**		**34,000,000**	100.0%
Percentage	**100.00%**	**0.00%**	**100%**	

1.17 **Key indicators.** Consistent with the objectives and goals described, the key indicators for the program will measure the extent to which economic agents (business firms, research institutions, and individuals) decide to invest in research, development and innovation, and the actual implementation of those investments, that is to say whether decisions are carried out (the firm completes the innovation project that it decided to undertake, or the fellowship recipient graduates, for example). In the end, the intent is to determine whether the investments have had a favorable impact (the innovations achieved their objectives in terms of productivity gains, patents, etc.). Consequently, the final outcome indicators are defined as a proportion of the universe of high-impact and broad-based innovation projects completed that, following evaluation, can be considered successful. The success of projects will be judged in light of their technological as well as their economic and commercial objectives. Table I.2 summarizes these indicators. They are distributed over time, as they constitute five results milestones to be achieved successively during project execution.

Table I-2. Milestones Matrix

Indicator	Measure-ment unit	Baseline	Milestones (*)				
			I (2009)	II (2010)	III (2011)	IV (2012)	V (2014)
1. Intermediate outcome indicators							
1.1. RDI investment decisions							
Businesses	No. of contracts signed (**)	30	42	88	137	181	-
Nonprofit institutions		39	69	69	137	137	-
Individuals		5	11	21	29	36	-
Total		74	122	178	303	354	-
1.2. RDI investments made (***)							
Businesses	No. of projects completed (**)	-	-	0	18	38	84
Nonprofit institutions		-	-	12	25	47	69
Individuals		-	-	0	1	5	13
Total		-	-	12	44	90	166
2. Final outcome indicators							
2.1. Success of the innovation projects	Percentage	45% (****)	-	-	50%	50%	50%
2.2. Academic output	Percentage	(*****)	-	-	-	60%	60%

Notes: Achievement of milestones will be verified in the last quarter of each year, except for the fifth and final milestone, which will be verified in the third quarter of 2014.

(*) The figures in the table are cumulative values.

(**) Expressed as "Broad-based Innovation Project" (see table of project equivalence in the document on the program monitoring and evaluation framework).

(***) The values for this indicator assume that 50% of projects financed by the program will have been completed in the planned time and form.

(****) To be updated with results from the Survey of Innovation Activities in Industry (2007-2009).

(*****) Based on academic output in the year preceding the fellowship.

II. FINANCE STRUCTURE AND RISKS

A. Financial instruments, execution plans, and contractual conditions

2.1 **Borrower and executing agency**. The borrower and guarantor of this operation will be the Eastern Republic of Uruguay. The executing agency will be the Agencia Nacional de Investigación e Innovación [National Research and Innovation Agency] (ANII), created by Law 18,084 of 2006 as a nongovernmental institution under public law. Its mission is to carry out government policies emanating from the PENCTI, and by government mandate it is responsible for coordinating public policies, programs, and actions relating to innovation, which until now had been scattered among various institutions. The ANII Executive Board has seven members appointed by the Executive Branch. Its operational structure is headed by an Executive Secretary, to whom report the managers of operations, instruments and programs, information and evaluation, and administration. The ANII will implement the program with its current organizational structure. Primary responsibility will fall to the Operations Office, assisted by the Administration and the Information and Evaluation offices. The Instruments and Programs Office will become involved if the operational design needs to be adjusted. The program's operating rules are established in the Operating Regulations (OR) that were agreed on with the Bank.

2.2 **Execution period and disbursement schedule**. The program will be implemented over a period of six years, with the last two years reserved exclusively for expenditures previously committed during the first four years. With the exception of the advance payment, program disbursements will be tied to achievement and verification of the respective outcomes indicated in the milestones matrix. The following table shows the schedule of net disbursements, i.e. after subtracting the amount for each tranche allocated to reimbursement of the advance, as agreed between the Bank and the government.

Table II .1. Tentative plan of disbursements by results and discounting of the advance over the program execution period

Item	Advance	Disbursement by results I	Disbursement by results II	Disbursement by results III	Disbursement by results IV	Disbursement by results V	Total
Net disbursement (US$ millions)	6.8	5.9	6.7	6.9	5.2	2.5	34
% of advance repaid*	-	5%	5%	15%	45%	30%	100%

* Percentage of the advance to be deducted from the disbursement for each tranche.

2.3 **Advance and pace of discounting**. The program will receive an advance equivalent to 20% of the total financing for the operation. It will be delivered when the loan contract comes into effect, and will be gradually discounted from the five following disbursements, at the pace specified in Table II.1. The pace of discounting the advance has been agreed on with the government on the basis of

financial projections reflecting the planned program execution schedule, and shown in the annual work plan. That pace of discounting is justified by the need to minimize the requirements for working capital to be advanced by the ANII for timely execution of the program. Although the country has an adequate margin of resources to stabilize financial flows for the initial years of execution, minimizing the required margin is regarded both by the government and by the Bank as an important factor for mitigating financial risk with this type of instrument.[20]

2.4 **Disbursements by results and performance audit**. The program will involve five results-based disbursements. They are not tied to any specific schedule, but are synchronized with the milestones and results matrices so as to coincide with the planned execution period, so disbursements can be expected to be staged at 12- to 14-month intervals. The authorization to release each tranche will depend on: (i) achieving the milestones in the corresponding matrix; (ii) verification of eligibility of expenditures incurred to achieve them (two steps, which taken together are referred to here as a performance audit); and (iii) acceptance by the Bank's Country Office in Uruguay of the performance audit, after verifying that it has been completed as foreseen in the agreed terms of reference. For each results-based disbursement, the supporting documentation that must accompany disbursement requests will be reviewed ex post.

2.5 **Performance audit**. The performance audit will be conducted by a specialized firm that will serve as an independent external evaluator of achievement of the milestones and the eligibility of expenditures incurred in achieving them. The audit firm's task will be to provide the Bank with a performance audit report in advance of each request for a results-based disbursement. The firm must have experience in results-based project evaluation, in STI policies and projects, and in working with indicators and evaluating the reliability of information sources and methods used to produce them. The firm will be hired in accordance with Bank procedures, and the necessary funding will be considered an eligible expenditure under the program.

2.6 **Detailed procurement costing and eligible expenditures**. The detailed procurement costing (DPC) done for this program, as part of the calculations for dimensioning the components and forecasting financial flows and disbursements, will be used by the firm conducting the performance audit as a benchmark for defining eligible expenditure categories for achieving the disbursement milestones. If it is found that in achieving specific targets the ANII incurred expenses not initially foreseen in the DPC, these will be verified by the performance auditors and, if they are demonstrated to be linked to the achievement of program outcomes, they will be considered eligible expenditures for disbursement purposes.

2.7 **Special contractual conditions**. As a special condition precedent to the advance, an administrative agreement must be signed between the borrower and the executing agency, regulating the transfer of program resources. As a special

[20] Details on the financial flows underlying the milestones and discounts planned for the program are available in the document on costs, CDA/Proyección de Flujos.

condition precedent to the first results-based disbursement, the specialized consulting firm responsible for the performance audit will be hired, as specified in paragraph 2.5.

2.8 **Financial audit**. Within 120 days after the close of each fiscal year, the executing agency will submit to the Bank financial statements for the program, audited by a firm of independent public accountants acceptable to the Bank.

2.9 **Procurement**. Consistent with Bank rules for PDLs, the Bank's procurement policies will not apply to purchases and services financed wholly or in part by the loan. Procurement will follow practices and procedures in effect in Uruguay. As established in the Bank's policies, the procedures and practices used must adhere to the basic principles of transparency, competition, economy, equity, publicity, and due diligence (documents GN-2278-2 and GN-2278-3). Specifically, these principles translate into the following guidelines that ANII will observe in executing the program: (i) for open tenders, reasonable and sufficient time must be allowed for bidders to put together their proposals; (ii) consulting services and goods for the equivalent of US$200,000 or more will always be procured through international competitive bidding, with calls for tender published at least 30 calendar days in advance; (iii) Bank policies (documents GN-2350-7 and AF-200) will apply for contracting the specialized consulting firm that will conduct the performance audits, and this will include the use of the thresholds applied by the Bank in Uruguay and ex ante review of procurements; (iv) the executing agency will have a clear mechanism to respond to and resolve any protests that may arise during the bidding process; and (v) auctions (*remate de precios*) will not be allowed.

2.10 **Recognition of expenditures**. The Bank will recognize expenses incurred as a result of ANII activities that relate to the components of this program, provided they are consistent with the OR and were incurred within the 18 months preceding approval of the operation by the Bank's Board of Executive Directors. The total amount of prior expenditures eligible for recognition is estimated at a maximum of US$1.3 million.

B. Environmental and social risks

2.11 The program does not plan to finance new buildings, and the operation is not expected to have any adverse environmental impact. Because it is being funded through a PDL, it did not require classification by the Environmental Safeguard Policy Filter (Policy Directive B.13). The OR will describe the principal measures and criteria to be used for the environmental impact analysis of business innovation projects financed by the Bank, pursuant to Law 17.263 and its regulatory decree 349/2005. The projects submitted for program financing will include a self-evaluation of environmental impacts consistent with that currently required by the National Environment Directorate (DINAMA); this self-evaluation will be verified

by ANII during its evaluation of projects.[21] Where necessary, prior environmental authorization by DINAMA will be required. As to gender issues, Uruguay has one of the highest proportions of female researchers and scientists in the region.

C. Fiduciary risk

2.12 **Institutional capacity and fiduciary risk.** Although the ANII was established only in 2006, it has institutional experience from implementing the Technology Development Program I. Many of its senior staff worked on that program, and they bring with them experience and lessons learned in managing innovation programs financed by the Bank. The ANII can also draw upon the experience of various Uruguayan institutions that have administered programs to promote and finance STI activities since the late 1980s through previous Bank programs, and others that were domestically financed, such as the Clemente Estable Fund, the National Scholarships Program, the National Researchers Fund, and the Basic Sciences Development Program. In addition, the Bank is supporting institutional strengthening of the ANII through the Korean Fund (ATN/KK-10271-UR).

2.13 Fiduciary staff in the Country Office conducted a systematic evaluation of the ANII's institutional capacity in financial and procurement matters, and concluded that it is adequate and that the fiduciary risk is low. The ANII is designing procedures that will result in the preparation of manuals as well as draft terms of reference for the financial and operating audits required by the Bank. It is also in the process of acquiring computer systems (including an accounting system) that will contribute to the program's planning and financial execution processes. The Country Office will supply the Disbursement Preparation System (SISPREDES) for automatic preparation of disbursement requests, and this will minimize the risk of errors as well as standardize the forms used. In addition, both the technical-cooperation program ATN/KK-10271-UR and this program have funds earmarked for strengthening critical aspects of ANII's capacity (particularly for monitoring and evaluation).

D. Other risks

2.14 **Risk analysis workshop.** A risk analysis workshop was held during program preparation[22] and produced an overall risk rating of low-moderate (14.11%). The principal risks identified relate to the potential for (i) opposition or conflicts among project stakeholders; and (ii) frequent turnover among key government officials heading up project execution. These risks are considered to have been reduced through the broad dialogue that was maintained with all SNI participants during the design of the operation, and which revealed a very positive opinion of Technology Development Program (TDP) activities, and a strong expectation that TDP II will facilitate the continuity of innovation policies. The technical-cooperation program

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[21] Details on the environmental precautions to be taken by the ANII in implementing the program are available in the document on Aspectos Ambientales [Environmental Consideration].

[22] See Report of the Taller de Análisis de Riesgo [Risk Analysis Workshop].

ATN/KK-10271-UR also has funds for consensus-building among all institutional and political players with respect to strategic policies in the RDI sector. It is expected that the consensus established in this way will mitigate the political risks to the operation.

III. MANAGEMENT AND IMPLEMENTATION PLAN

A. Summary of the execution scheme

3.1 **Executing agency.** The ANII has the following functions under the program: (i) prepare and publish notification to beneficiaries of the innovation incentives financed by the program; (ii) receive and process financing applications from SNI participants (firms, research institutions, and individuals); and (iii) coordinate the technical and economic evaluation of applications, using independent external evaluators. When the financing has been approved by the Board of Executive Directors, the ANII will formalize the contracts and deliver the funds according to the schedule for each project, and will supervise the execution of projects through to the ex post evaluation report, in the case of business innovation projects, or to graduation, in the case of fellowship recipients. The ANII has tools for handling proposals online: this will facilitate access by interested firms and individuals as well as the management of proposals once they are submitted to the Agency. The operating procedures and criteria governing fulfillment of these activities are included in the OR agreed on with the Bank.

3.2 **Execution mechanisms.** These will vary by subcomponent, within a limited range, from the "open window" to periodic notifications or calls for proposals. With the business innovation instruments, the maximum amount granted per project will be set at between US$12,000 and US$400,000, and the applicant firm will be required to contribute between 20% and 50% of the total project cost. These variations reflect the need for targeted instruments that will stimulate innovations with different degrees of economic and technological risk. They have been designed in light of the country's experience with the Technology Development Program, as well as the recommendations from an evaluation of that program. In the case of postgraduate fellowships and other instruments to facilitate mobility of members of the SNI and the scientific diaspora, periodic notifications will be used. Table III.1 provides details on this information, a complete version of which is in the Operating Regulations agreed on between the Bank and the national authorities.

Table III.1. Summary of execution characteristics for components of TDP II

Project/Activity	Execution mechanism	Financing %	Maximum cofinancing (in US$000)	No. of expected projects
Component I: Promoting innovation in the business sector				
Broad-based coverage	Window	Up to 60/70*	250	135
Quality improvement	Window	Up to 50	12	100
High-impact	Window	Up to 70/80**	400	20
Innovation programs	Window	Up to 80	20	30
Entrepreneurs	Notification	Up to 80	20	40
Component II. Generating and strengthening S&T services				
	Notification	80	500***	30
Component III. Strengthening human resources				
Postgraduate fellowships	Notification	n.a.	Between 60 & 80	16-20
Mobility of scientists	Notification		15	1160
Linkages	Notification		15	100
Component IV. Innovation projects of significant public interest				
	Notification	Up to 80	150	20

* May be up to 70% in the case of projects that involve partnering with public or private research institutions, other businesses, and/or technology centers.

** May be up to 80% in the case of partnering projects.

*** A minimum of US$50,000 has been set for projects of this type.

B. Summary of the monitoring and evaluation scheme

3.3 The monitoring and evaluation activities under component V will be the responsibility of the ANII's Information and Evaluation Office, and will be performed in coordination with other areas of the institution (in particular Operations, and Program and Instrument Design), as well as with other players involved in executing the program, compiling information, and/or analyzing it.

3.4 The ANII will submit semiannual reports on activities under the annual work plan (which is to be submitted at the beginning of each year) and on the indicators included in the results matrix. Those reports will be considered at joint ANII-Bank evaluation meetings within 60 days of their receipt.

3.5 **Midterm and final evaluation.** The midterm program evaluation will be conducted when the second disbursement milestone is reached, and the final evaluation when the fourth milestone is reached. These evaluations will be performed by international consultants, under terms of reference to be agreed on between the ANII and the Bank.[23]

[23] See the Marco de Monitoreo y Evaluación [Monitoring and Evaluation Framework] for further information on the planned evaluation of the program, and on the conceptualization of the results framework and the milestones matrix for this program.

TECHNOLOGY DEVELOPMENT PROGRAM II
(UR-L1030)

ANII RESULTS MATRIX
MATRIX OF INDICATORS FOR 2008-2014

General objective of the program	*To help strengthen the National Innovation System*

Outcome indicators	Baseline	Targets (*)	Means of verification
1. Percentage of R&D/GDP	1. 0.41% in 2000 (Bértola et al, 2004) (**)	1. 1% in 2014	Survey of R&D Human Resources and Spending, 2014. ANII.
2. Percentage of private investment in total R&D investment	2. 38% in 2000 (Bértola et al, 2004) (**)	2. 43% in 2014	Survey of R&D Human Resources and Spending, 2014. ANII.
3. Number of researchers (full-time equivalent)	3. 1,242 in 2004 (DICyT, 2006) (**)	3. Up 25% by 2014	Survey of R&D Human Resources and Spending, 2014. ANII.
4. Number of national postgraduate degrees per year (Master's and Ph.D.s) in research careers	4. 112 in 2006 (21 doctorates and 91 Master's) (2006 Education Statistics Yearbook) (***)	4. 40% more postgraduates per year in 2014	*Anuario Estadístico de Educación* [Education Statistics Yearbook], MEC
5. Number of publications in SCI Search	5. 533 in 2007 (ISI-Thompson)	5. 666 in 2014 (up 25%)	Science Citation Index; ISI-Thompson
6. Percentage of innovating firms among total manufacturing firms	6. 34% in 2001-2003 (Survey of Innovation Activities (SIA), DICyT-INE)	6. 40% in 2015	Survey of Innovation Activities, 2013-2015. ANII
7. Percentage of firms engaged in R&D among total manufacturing firms	7. 14% in 2001-2003 (SIA, DICyT-INE)	7. 17% in 2015	Survey of Innovation Activities, 2013-2015. ANII
8. Percentage of manufacturing firms with links to academic institutions	8. 15% in 2001-2003. (SIA, DICyT-INE)	8. 23% in 2015	Survey of Innovation Activities, 2013-2015. ANII
9. Patents (filed and obtained) by residents and nonresidents	9. 550 patents filed (37 by residents and 513 by nonresidents) and 87 granted (4 for residents and 83 for nonresidents) in 2004 (DNPI)	9. 688 patents filed (46 by residents) and 109 (5 for residents) granted in 2014 (up 25%)	Dirección Nacional de Propiedad Industrial, MIEM

Notes:

(*): Estimates based on the targets established by the Ministerial Committee on Innovation (2007) *"Plan Estratégico Nacional en Ciencia, Tecnología e Innovación (PENCTI): Lineamientos fundamentales para la discusión*" [National Strategic Plan in Science, Technology, and Innovation (PENCTI): Fundamental Guidelines for Discussion].

(**): Provisional date and subject to review in light of the Survey of R&D Human Resources and Spending (DICyT-INE), now being conducted.

(***): The CVUy will provide an estimate of postgraduate degrees in the country, and this will be available in the second half of 2008.

Component 1	Baseline	2008- 2009	2010	2011	2012	Target (2014)	Means of verification
Component 1: Promoting innovation in the business sector *Objective*: To promote innovation and technological networking by firms in order to enhance their competitiveness, productivity and profitability							
Subcomponent 1.1: Broad-based innovation projects							
Output 1: Innovation projects implemented with program financing							
Output indicators (1): 1. Operational:		1. Opening of the "window", establish-ment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	-Evaluation of new proposals	- Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 27 contracts signed (average 2005-2006)	2. 35 contracts signed	2. 70 contracts signed	2. 105 contracts signed	2. 135 contracts signed		- Contracts signed
3. Projects completed				3. 25 projects completed	3. 49 projects completed	3. 95 innovation projects completed	- Final reports
Intermediate outcomes (1): Innovations developed by program beneficiary firms							
Intermediate outcome indicators (1): 4. Success of innovation projects (***)	4. 45% of Uruguayan industrial firms that pursued innovation introduced innovations for the local and/or international market in 2001-2003 (SIA, DICyT-INE)				4. At least 60% of beneficiary firms that completed the project have seen successful results	4. At least 60% of beneficiary firms that completed the project have seen successful results	- Project proposal form - Final reports - Ex post valuation reports

Notes:

(*) The indicators shown in the table are cumulative values.

(**) The targets are for 2014, except where otherwise indicated.

(***) A project is deemed to have been successfully concluded when firms have met at least 60% of the specific objectives defined in the Project Proposal Form..

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Final outcomes (1): More firms are more competitive, productive, and profitable							
Final outcome indicators (1): 5. Intensity of R&D investment (R&D investment/sales)	5. 0.14% in 2003 in industry		5. At least 50% of beneficiary firms that completed the project stepped up R&D investment by more than 20%			5. At least 70% of beneficiary firms that completed the project stepped up R&D investment by more than 20%	Survey of Innovation Activities applied to beneficiary firms upon project presentation, in 2010 and in 2013
6. Intensity of investment in innovation activities (IA investment/sales)	6. 2.3% in 2003 in industry (Source: SIA, DICyT-INE)		6. At least 50% of beneficiary firms that completed the project stepped up investment in innovation activities by more than 20%			6. At least 70% of beneficiary firms that completed the project stepped up investment in innovation activities by more than 20%	

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Output 2: Management improvement and quality certification projects implemented with program financing							
Output Indicators (2): 1. Operational:		1. Opening of the "window", establishment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 40 contracts signed (average 2005-2006)	2. 35 contracts signed	2. 60 contracts signed	2. 85 contracts signed	2. 100 contracts signed		- Contracts signed
3. Projects completed			3. 25 projects completed	3. 42 projects completed	3. 60 projects completed	3. 70 management improvement and quality certification projects completed	- Final reports
Intermediate outcomes (2): ISO 9000 or 14000 certification, or other internationally recognized certification for program beneficiary firms							
Intermediate outcome indicators (2): 4.Quality and management systems certification	4. 728 ISO 9000 and 14000 certifications valid in 2008 (UNIT and LATU statistics)		4. At least 13 beneficiary firms have achieved ISO 9000, 14000 or other internationally recognized certification	4. At least 21 beneficiary firms have achieved ISO 9000, 14000 or other internationally recognized certification	4. At least 30 beneficiary firms have achieved ISO 9000, 14000 or other internationally recognized certification	4. At least 35 beneficiary firms have achieved ISO 9000, 14000 or other internationally recognized certification.	- Technical Progress Reports - Final reports - Certifications

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Final outcomes (2): More MSMEs have improved their competitiveness							
Final outcome indicators (2): 5. Trained staff/total staff	5. 7% in 2003 in industry		5. At least 50% of beneficiary firms that completed the project have increased their trained staff/total staff ratio by more than 20%			5. At least 70% of beneficiary firms that completed the project have increased their trained staff/total staff ratio by more than 20%	- Survey of Innovation Activities applied to beneficiary firms upon project presentation, in 2010 and in 2013
6. Access to new markets and/or greater market share	6. In 32% of industrial firms, innovations had a high impact on access to new markets and/or greater market share (2001-2003) (Source: SIA, DICyT-INE)		6. At least 50% of beneficiary firms that have completed the project gained access to new markets and/or increased their market share			6. At least 70% of beneficiary firms gained access to new markets and/or increased their market share	

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Subcomponent 1.2: Technology-based high-impact innovation projects							
Output: Technology-based high-impact projects implemented with program financing							
Output indicators: 1. Operational:		1. Opening of the "window", establishment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 3 contracts signed (average 2005-2006)	2. 3 contracts signed	2. 8 contracts signed	2. 14 contracts signed	2. 20 contracts signed		- Contracts signed
3. Projects completed					3. 2 projects completed	3. 14 technology-based high-impact projects completed in 2015	- Final reports
Intermediate outcomes: Technology-based high impact innovations developed by program beneficiary firms							
Intermediate outcome indicators: 4. Success of innovation projects	4. TDP: to date, 60% of projects of this kind have been technologically successful				4. At least 60% of beneficiary firms that completed the project have had successful results	4. At least 60% of beneficiary firms that completed the project have had successful results	- Project proposal form - Midterm evaluation reports - Final reports - Ex post evaluation reports

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Final outcomes: More firms are developing technology-based high-impact innovations							
Final outcome indicators:							
5.Intensity of R&D investment (R&D investment/sales)	5. 0.14% in 2003 in industry		5. At least 50% of beneficiary firms that completed the project stepped up R&D investment by more than 20%			5. At least 50% of beneficiary firms that completed the project stepped up R&D investment by more than 20%	- Survey of Innovation Activities applied to beneficiary firms upon project presentation, in 2010 and in 2013
6.Intensity of investment in innovation activities (IA investment/sales)	6. 2.3% in 2003 in industry		6. At least 50% of beneficiary firms that completed the project stepped up investment in innovation activities by more than 20%			6. At least 50% of beneficiary firms that completed the project stepped up investment in innovation activities by more than 20%	- Consultant's external evaluation report for the sub-component
7.Social benefit of the projects	(Source: SIA, DICyT-INE)					7. The social benefit generated by such projects is at least 50% greater than total investment in those projects in 2015	

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Subcomponent 1.3: Sectoral and/or regional innovation programs							
Output: Sectoral and/or regional innovation programs implemented with program financing							
Output indicators: 1. Operational:		1. Opening of the "window", establishment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 4 contracts for partnering projects (average 2005-2006), PACC: 9 clusters and PACPYME: 5 clusters formed in 2006-2007	2. 10 contracts signed	2. 20 contracts signed	2. 25 contracts signed	2. 30 contracts signed		- Contracts signed
3. Projects completed					3. 7 projects completed	3. 21 sectoral and/or regional innovation projects in 2015	- Final reports
Intermediate outcomes: Management and production technology disseminated and transferred to firms participating in sectoral and/or regional innovation programs							
Intermediate outcome indicators: 4. Coverage in terms of sectors and/or regions			4. At least 4 different sectors and/or regions participate in the program	4. At least 8 different sectors and/or regions participate in the program	4. At least 10 different sectors and/or regions participate in the program	4. At least 10 different sectors and/or regions participate in the program	- Midterm evaluation reports - Final reports - Workshop reports - Ex post evaluation reports
5. Coverage in terms of firms			5. At least 21 firms participate	5. At least 42 firms participate	5. At least 53 firms participate	5. At least 63 firms participate	

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
6. Consulting assignments	6-7. 4% of industrial firms pursued technology transfer activities and/or hired consultants during 2001-2003 (SIA, DICyT-INE)		6. At least 7 technology consulting assignments carried out	6. At least 14 technology consulting assignments carried out	6. At least 18 technology consulting assignments carried out	6. At least 21 technology consulting assignments carried out	
Final Outcomes: Technological modernization and access to new markets for firms participating in sectoral and/or regional innovation programs							
Final outcome indicators: 9. Intensity of investment in technology transfer by firms in the sector and/or region	9. 0.13% in 2003 in industry					9. The intensity of investment in technology transfer by beneficiary firms of the sectors/region has increased by more than 20%	- Survey of Innovation Activities applied to firms upon project presentation, in 2010 and in 2013
10. Intensity of investment in innovation activities by firms in the sector and/or region	10. 2.3% in 2003 in industry					10. The intensity of investment in innovation activities by beneficiary firms of the sectors and/or region has increased by more than 20%	- Consultant's external evaluation report on sectoral and/or regional innovation programs

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
11. Linkage of firms in the sector/region with the SNI for technical assistance, training and/or R&D	11. 35% in 2003 in industry (SIA, DICyT-INE)					11. The linkage of beneficiary firms in the sector and/or region with the SNI for technical assistance, training and/or R&D has increased by more than 20%	

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Subcomponent 1.4: Projects in support of innovative entrepreneurs							
Output: Projects in support of innovative entrepreneurial activity implemented with program financing							
Output indicators: 1. Operational:		1. Opening of the "window", establishment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. "Emprender" program: 18 dynamic projects submitted executive summaries in 2007	2. 10 contracts signed	2. 20 contracts signed	2. 30 contracts signed	2. 40 contracts signed		- Contracts signed
3. Projects completed				3. 7 projects completed	3. 14 projects completed	3. 28 projects in support of innovative entrepreneurial activity completed.	- Final reports
Intermediate outcomes: Creation and development of innovative enterprises							
Intermediate outcome indicators: 4. Innovative enterprises created and developed	4. In 2001, 45 industrial firms with more than 5 employees were created, of which 20% achieved technological innovations for the local and/or international market during 2001-2003 (SIA, DICyT-INE)			4. At least 70% of program beneficiaries that completed the project have created and developed new enterprises	4. At least 70% of program beneficiaries that completed the project have created and developed new enterprises	4. At least 70% of program beneficiaries that completed the project have created and developed new enterprises	- Midterm evaluation reports - Final reports - Ex post evaluation reports

Component 1 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Final outcomes: More firms developing innovations							
Final outcome indicators: 5. Development of innovations	5. 45% of Uruguayan industrial firms that pursued innovation introduced innovations for the local and/or international market in 2001-2003. (SIA, DICyT-INE)					5. At least 60% of the firms created under this program have introduced innovations for the local and/or international market	- Survey of Innovation Activities applied to beneficiary firms in 2010 (which will be taken as the base) and in 2013

Component 2	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Component 2: Projects to generate and/or strengthen S&T services *Objective:* Generate and strengthen S&T services to meet the demand of the productive sector and/or the needs of the population in general, and promote better performance of skilled human resources							
Output: S&T services that meet the demand of the productive sector or the needs of the population in general implemented with program financing							
Output indicators: 1. Operational:		1. First call for proposals, establishment of eligibility criteria and Evaluation Committee, evaluation of proposals		1. Second call for proposals, establishment of eligibility criteria and Evaluation Committee, evaluation of proposals			- Ex ante evaluation reports
2. Contracts signed	2. TDP: 8 contracts signed (annual average)	2. 10 contracts signed	2. 10 contracts signed	2. 20 contracts signed	2. 20 contracts signed		- Contracts signed
3. Projects completed			3. 4 projects completed	3. 7 projects completed	3. 10 projects completed	3. 14 S&T projects completed	- Final reports
Intermediate Outcomes: New or improved S&T services operating and meeting the demand of the productive sector and/or the needs of the population in general, offered by trained technicians							
Intermediate Outcome indicators: 4. Human resource training			4. At least 8 persons trained in S&T services financed by the program (at least 1 per service)	4. At least 14 persons trained in S&T services financed by the program (at least 1 per service)	4. At least 20 persons trained in S&T services financed by the program (at least 1 per service)	4. At least 28 persons trained in S&T services financed by the program (at least 1 per service)	- Technical progress reports - Final reports - Ex post evaluation reports
5. Functioning of the service			5. At least 4 services will be operating (with user regulations, pricing and dissemination policy)	5. At least 7 services will be operating	5. At least 10 services will be operating	5 . At least 14 services supported by the program will be operating	

Component 2 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Final outcomes: New and better S&T services for productive activity and/or the general population							
Final outcome indicators: 6. Demand for the service				6. In the year the service begins, real demand in at least 50% of cases is at least 50% of that forecast in the duly submitted business plan.	6. In the year the service begins, real demand in at least 50% of cases is at least 50% of that forecast in the duly submitted business plan.	6. In the year the service begins, real demand in at least 50% of cases is at least 50% of that forecast in the duly submitted business plan.	- Ex ante evaluation reports - Ex post evaluation reports one and two years after the service begins
7. Sustainability				7. In the year the service begins, it generates enough income to cover variable operating costs in at least 50% of cases.	7. In the year the service begins, it generates enough income to cover variable operating costs in at least 50% of cases.	7. In the year the service begins, it generates enough income to cover variable operating costs in at least 50% of cases.	

Component 3	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Component 3: Strengthening human resources in science, technology and innovation *Objective:* Strengthening the country's human resource capacities through financing for postgraduate fellowships							
Subcomponent 3.1: Fellowships for postgraduate study abroad in strategic areas							
Output: Postgraduate fellowships (Master's and Ph.D.s) being pursued abroad in strategic areas.							
Output indicators: 1. Operational		1. Call for proposals, establishment of eligibility criteria and Evaluation Committee, evaluation of proposals	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 3 fellowships approved for postgraduate study abroad (average 2005-2006)	2. 8 contracts signed (7 Doctorates, 1 Master's)	2. 16 contracts signed (14 Doctorates, 2 Master's)	2. 21 contracts signed (18 Doctorates, 3 Master's)	2. 26 contracts signed (22 Doctorates, 4 Master's)	2. 26 contracts signed for fellowships abroad (22 Doctorates, 4 Master's)	- Contracts signed
Intermediate outcomes: Program beneficiaries have completed postgraduate studies abroad in strategic areas							
Intermediate outcome indicators: 3. Postgraduate studies completed					3. At least in 6 beneficiaries have completed postgraduate studies abroad in strategic areas	3. At least in 18 beneficiaries have completed postgraduate studies abroad in strategic areas in 2016	- Progress reports - Final reports - Ex post evaluation reports
4. Postgrads return to the country					4. At least 5 beneficiaries have completed postgraduate work and returned to the country	4. At least 15 beneficiaries have completed postgraduate work and returned to the country in 2016	

Component 3 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
5. Postgrads find employment opportunities					5. At least 4 postgrad beneficiaries have found employment in the country in their area of specialty	5. At least 12 postgrad beneficiaries have found employment in the country in their area of specialty in 2016	
Final outcomes: Trained human resources are contributing to national research and innovation and the country's productive structure							
Final outcome indicators:							
(a) Beneficiaries 4. Academic output (articles in journals as included or not in the ISI databases, books, monographs and chapters of books) 5. Technical output (patents, prototypes, utility models, etc.)	4. 533 publications of Uruguayan researchers in SCI Search in 2007 (Source: ISI-Thompson) + information from CVUy 5.Information from CVUy			4-5. At least 30% of beneficiaries who completed postgraduate studies have increased their academic and/or technical output	4-5. At least 50% of beneficiaries who completed postgraduate studies have increased their academic and/or technical output	4 and 5. At least 70% of beneficiaries who completed postgraduate studies have increased their academic and/or technical output by one year later	- Final reports - CVUy - Ex post evaluation reports - Survey of R&D human resources and spending
(b) System 7. Human resources with postgraduate degrees in strategic areas	7. Information to be supplied by CVUy			7. The number of postgraduates in strategic areas is up by at least 5%	7. The number of postgraduates in strategic areas is up by at least 10%	7. The number of postgraduates in strategic areas is up by at least 15% by 2016	

Component 3 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Subcomponent 3.2: Mobility for scientists and technologists							
Output: Activities offering mobility for scientists and technologists in- and outside the country implemented with program financing							
Output indicators: 1. Operational		1. Call for proposals, establishment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 14 "sandwich" postgrad fellowships approved (average 2005-2006)	2. 165 contracts signed (15 "sandwich" fellowships, 50 short internships, 100 participants in congresses)	2. 330 contracts signed (30 "sandwich" fellowships, 100 short internships, 200 participants in congresses)	2. 495 contracts signed (45 "sandwich" fellowships, 150 short internships, 300 participants in congresses)	2. 660 contracts signed (60 "sandwich" fellowships, 200 short internships, 400 participants in congresses)	2. 660 contracts signed for mobility of scientists and technologists (60 "sandwich" fellowships, 200 short internships, 400 participants in congresses)	- Contracts signed
Intermediate outcomes: Program beneficiaries have completed their activities involving mobility in- and outside the country							
Intermediate outcome indicators:							
3. Partial postgrad fellowships outside the country ("sandwich" fellowships) completed				3. At least 11 beneficiaries have completed their "sandwich" fellowship	3. At least 21 beneficiaries have completed their "sandwich" fellowship	3. At least 42 beneficiaries have completed their "sandwich" fellowship	- Final reports - Ex post evaluation reports
4. Internships abroad completed				4. At least 50 beneficiaries have completed their internship abroad	4. At least 100 beneficiaries have completed their internship abroad	4. At least 200 beneficiaries have completed their internship abroad	
5. Participation in congresses and events				5. At least 100 beneficiaries have attended congresses and events abroad	5. At least 200 beneficiaries have attended congresses and	5. At least 400 beneficiaries have attended congresses and events abroad	

					events abroad		
Component 3 (continued)	**Base**	**2008-2009**	**2010**	**2011**	**2012**	**Target (2014)**	**Means of verification**
Final outcomes: Human resources trained in strategic technology areas							
Final outcome indicators: 6. Completed postgraduate studies				6. At least 70% of beneficiaries who finished their "sandwich" fellowship completed their postgraduate studies	6. At least 70% of beneficiaries who finished their "sandwich" fellowship completed their postgraduate studies	6. At least 70% of beneficiaries who finished their "sandwich" fellowship completed their postgraduate studies	- Final reports - CVUy - Ex post evaluation reports - Survey of R&D human resources and spending
7. Academic output (articles in journals as included or not in the ISI databases, books, monographs and chapters of books)	7. 533 publications of Uruguayan researchers in SCI Search in 2006 (Source: ISI-Thompson) + information from CVUy			7 and 8. At least 70% of beneficiaries who completed postgraduate studies have increased their annual academic and/or technical output	7 and 8. At least 70% of beneficiaries who completed postgraduate studies have increased their annual academic and/or technical output	7 and 8. At least 70% of beneficiaries who completed postgraduate studies have increased their annual academic and/or technical output	
8. Technical output (patents, prototypes, utility models, etc.)	8.Information from CVUy						
9. "Sandwich" postgrads find employment					9. At least 50% of postgraduate “sandwich” fellowship recipients have found employment in the country in their area of specialty	9. At least 70% of postgraduate “sandwich” fellowship recipients have found employment in the country in their area of specialty	

Component 3 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Subcomponent 3.3: Links to Uruguayan scientists and technologists living abroad							
Output: Uruguayan scientists and technologists living abroad are pursuing activities in the country with program financing							
Output indicators:							
1. Operational		1.Call for proposals, establishment of eligibility criteria and Evaluation Committee evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed		2. 50 contracts signed	2. 100 contracts signed	2. 150 contracts signed	2. 200 contracts signed	2. 200 contracts signed	- Contracts signed
Intermediate outcomes: Uruguayan scientists and technologists living abroad are disseminating their knowledge through STI activities							
3. Dissemination of knowledge			3. At least 50 training courses, workshops and/or seminars held	3. At least 100 training courses, workshops and/or seminars held	3. At least 150 training courses, workshops and/or seminars held	3. At least 200 training courses, workshops and/or seminars held	- Final reports - Ex post evaluation reports
4. Coverage (Number of persons)			4. At least 250 people have participated in training courses, workshops, seminars and/or courses given by Uruguayan scientists and technologists living abroad	4. At least 500 people have participated in training courses, workshops, seminars and/or courses given by Uruguayan scientists and technologists living abroad	4. At least 750 people have participated in training courses, workshops, seminars and/or courses given by Uruguayan scientists and technologists living abroad	4. At least 1,000 people have participated in training courses, workshops, seminars and/or courses given by Uruguayan scientists and technologists living abroad	
Final outcomes: Uruguayan scientists and technologists living abroad have links to the country							
Final outcome indicators:							
4. Uruguayan scientists and technologists living abroad have links to local institutions			4. At least 50 Uruguayan scientists and technologists living abroad have established links with local institutions through the program	4. At least 100 Uruguayan scientists and technologists living abroad have established links with local institutions through the program	4. At least 150 Uruguayan scientists and technologists living abroad have established links with local institutions through the program	4. At least 200 Uruguayan scientists and technologists living abroad have established links with local institutions through the program	- Final reports - CVUy - Ex post evaluation reports

Component 4	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Component 4: Innovation projects of significant public interest *Objective:* Support for innovation projects of significant public interest							
Output: Innovation projects of significant public interest implemented with program financing							
Output indicators (1): 1. Operational:		1. Opening of the "window", establishment of eligibility criteria and Evaluation Committee, evaluation of proposals.	1. Evaluation of new proposals	1. Evaluation of new proposals	1. Evaluation of new proposals		- Ex ante evaluation reports
2. Contracts signed	2. TDP: 0	2. 10 contracts signed	2. 10 contracts signed	2. 20 contracts signed	2. 20 contracts signed		- Contracts signed
3. Projects completed					3. 7 projects completed	3. 14 innovation projects of significant public interest completed in 2015	- Final reports
Intermediate outcomes: Research on topics of public interest conducted under the program							
Intermediate outcome indicators: 4. Research on topics of significant public interest					4. At least 7 research projects conducted on topics of significant public interest	4. At least 14 research projects conducted on topics of significant public interest in 2015	- Midterm evaluation reports - Final reports - Ex post evaluation reports

Component 4	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Final outcomes: Beneficiary public institutions under the program are introducing innovations in areas of significant public interest							
Final outcome indicators: 5. Innovations introduced						5. At least 70% of beneficiary institutions that completed the project have introduced innovations in areas of significant public interest in 2015	- Ex post evaluation reports

Component 5	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
Component 5: Support for monitoring and evaluation capacity in the ANII *Objective:* Strengthening the monitoring and evaluation capacities of the ANII							
Output: The ANII is conducting monitoring and evaluation activities							
Output indicators: 1. Operational		1.Preparation of the ANII Monitoring and Evaluation Plan					- ANII Monitoring and Evaluation Plan approved
2. Monitoring reports		2. Preparation of 2 semiannual reports on the monitoring of ANII instruments and programs	2. Preparation of 4 semiannual reports on the monitoring of ANII instruments and programs	2. Preparation of 6 semiannual reports on the monitoring of ANII instruments and programs	2. Preparation of 8 semiannual reports on the monitoring of ANII instruments and programs	2. Preparation of 11 semiannual reports on the monitoring of ANII instruments and programs	- Semiannual monitoring reports
3. STI surveys	3. TDP: 3 STI surveys during 2001-2007	3. Survey of Innovation Activities in the Agriculture Sector and R&D Human Resources and Spending Survey	3. Survey of Innovation Activities in Industry and Services, and STI Public Perceptions Survey	3. Survey of Innovation Activities in the Agriculture Sector and R&D Human Resources and Spending Survey	3. Survey of Innovation Activities in Industry and Services, STI Public Perceptions Survey, and R&D Human Resources and Spending Survey	- Preparation of at least 11 periodic STI surveys	- Databases from the surveys

Component 5 (continued)	Base	2008-2009	2010	2011	2012	Target (2014)	Means of verification
4. External evaluation reports	4. TDP: 3 External Evaluation Reports on the Program during 2001-2007	4. External evaluation of programs and instruments implemented by the ANII	4. External evaluation of programs and instruments implemented by the ANII	4. External evaluation of programs and instruments implemented by the ANII	4. External evaluation of programs and instruments implemented by the ANII	4. At least 6 external evaluation reports on programs and instruments over the period 2008-2014 (including final evaluation of TDP I and midterm and final evaluations of the IDB program)	- External evaluation reports
5. ANII certification				5. ISO 9001 Certification of the ANII quality management system	5.Maintenance of certification	5. Maintenance of ISO 9001 Certification of the ANII quality management system	- ISO 9001 certification
Outcomes: Use of the information produced for the design and implementation of corrective measures							
Outcome indicators:							
- STI operating and strategy documents contain quotes or references to the surveys, monitoring reports and external evaluations conducted under the program			- At least 3 quotes or references	- At least 6 quotes or references	- At least 10 quotes or references	- At least 15 quotes or references	- ANII Operating Plans and Regulations - Strategy documents prepared by the Ministerial Committee on Innovation