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ARGENTINA

CONDITIONAL CREDIT LINE FOR INVESTMENT PROJECTS (CCLIP)

(AR-X1015)

TECHNOLOGICAL INNOVATION PROGRAM III

(AR-L1141)

LOAN PROPOSAL

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15. Cost-benefit analysis of the main program instruments
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16. Detailed, annualized program costs
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ABBREVIATIONS

ANPCyT	Agencia Nacional de Promoción Científica y Tecnológica [National Agency for the Promotion of Science and Technology]
CCLIP	Conditional Credit Line for Investment Projects
DIGFE	Dirección General de Proyectos con Financiamiento Externo [General Office of Externally-financed projects]
FIT-R	Fondo de Innovación Tecnológica Regional [Regional Fund for Technological Innovation]
FIT-S	Fondos para la Innovación Tecnológica Sectorial [Sector Funds for Technological Innovation]
FONCyT	Fondo para la Investigación Científica y Tecnológica [Science and Technology Research Fund]
FONTAR	Fondo Tecnológico Argentino [Argentine Technology Fund]
GIOL	Polo Científico Tecnológico [Science and technology complex]
INDEC	Instituto Nacional de Estadísticas y Censos [National Statistics and Census Bureau]
JGM	Jefatura de Gabinete de Ministros [Federal Cabinet Office]
MINCYT	Ministry of Science, Technology, and Productive Innovation
OECD	Organization for Economic Cooperation and Development
OVE	Office of Evaluation and Oversight
PNCTI	National Science, Technology, and Innovation Plan 2012-2015
R&D	Research and development
RD&I	Research, development, and innovation
RICyT	Red de Indicadores de Ciencia y Tecnología [Network of Science and Technology Indicators]
SGEP	Subsecretaría de Gestión y Empleo Público [Undersecretariat of Public Management and Employment]
SMEs	Small and medium-sized enterprises
SNI	Sistema Nacional de Innovación [National Innovation System]
STRPs	Science and technology research projects
TIP	Technological Innovation Program
TMP III	Technological Modernization Program III
UGSA	Unidad de Gestión Socio Ambiental [Socioenvironmental Management Unit]

PROJECT SUMMARY

ARGENTINA
CONDITIONAL CREDIT LINE FOR INVESTMENT PROJECTS (CCLIP)
(AR-X1015)
TECHNOLOGICAL INNOVATION PROGRAM III
(AR-L1141)

<table>
<tr><th colspan="5">Financial Terms and Conditions</th></tr>
<tr><td colspan="3" rowspan="5">Borrower: Argentine Republic
Executing agency: Ministry of Science, Technology, and Productive Innovation (MINCYT); Jefatura de Gabinete de Ministros [Federal Cabinet Office] (JGM) (subprogram 2)</td><td colspan="2">Flexible financing facility*</td></tr>
<tr><td>Amortization period:</td><td>25 years</td></tr>
<tr><td>Original weighted average life:</td><td>15.25 years</td></tr>
<tr><td>Disbursement period:</td><td>5 years</td></tr>
<tr><td>Grace period:</td><td>5.5 years</td></tr>
<tr><td>Source</td><td>Amount (US$)</td><td>%</td><td>Inspection and supervision fee:</td><td>**</td></tr>
<tr><td>IDB (OC)</td><td>US$200 million</td><td>75.19</td><td>Interest rate:</td><td>LIBOR-based</td></tr>
<tr><td>Local</td><td>US$66 million</td><td>24.81</td><td>Credit fee:</td><td>**</td></tr>
<tr><td>Total</td><td>US$266 million</td><td>100</td><td>Currency:</td><td>U.S. dollars from the Bank’s Ordinary Capital</td></tr>
<tr><th colspan="5">Project at a Glance</th></tr>
<tr><td colspan="5">Program objective/description: The project’s general objective is to increase investment in research, development, and innovation with the aim of boosting the competitiveness and productivity of enterprises. The specific objectives are to: (i) increase technological and innovative capacity in sectors and regions that are prioritized in the National Science, Technology, and Innovation Plan 2012-2015 (PNCTI); (ii) increase the innovation capacity of small and medium-sized enterprises (SMEs); (iii) strengthen human capital for innovation in enterprises and institutions; and (iv) promote coordination and consolidation of the National Innovation System (SNI).</td></tr>
<tr><td colspan="5">Special conditions precedent to the first disbursement: Submission of evidence that the program’s Operating Regulations, agreed on beforehand with the Bank, have taken effect will be a condition precedent to the first disbursement (paragraph 2.2).
A condition precedent to the first disbursement for subprogram 2 will be submission of evidence that the executing unit for the subprogram has been established, consisting of a minimum of one specialist in human capital formation, one in financial administration, and one in procurement (paragraph 2.2).
Special execution conditions: All the terms and conditions for the calls for projects included in the program will have the Bank’s prior no objection. For subprogram 2, at the end of year one of execution, the executing agency will submit evidence that a competition has been held to contract a consulting service to review the initial execution of the subprogram, in accordance with terms previously agreed upon with the Bank (paragraph 2.2).</td></tr>
<tr><td colspan="5">Exceptions to Bank policies: None</td></tr>
<tr><td colspan="5">Procurement: Procurement will be conducted in accordance with Bank policies (documents GN-2349-9 and GN-2350-9).</td></tr>
<tr><td colspan="5">Project qualifies as: SEQ [ ] PTI [ ] Sector [ ] Geographic [ ] Headcount [ ]</td></tr>
</table>

* Under the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the repayment schedule, and currency and interest rate conversions, subject in all cases to the date of final amortization and the original average weighted life. When considering such requests, the Bank will take account of market conditions, operational aspects, and risk management.

** 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, problem addressed, and rationale

1.1 The Argentine economy is experiencing a transition from high growth to more moderate growth. GDP grew at an average of 6.9% a year during the period 2007-2011, spurred by favorable external conditions and procyclical macroeconomic and income policies. This momentum has largely been based on expansion in the domestic market and high growth in exports. However given the scant leeway for expansionary fiscal policies and uncertain prospects for the global economy in the coming years, the Argentine economy is expected to grow at between 3% and 4% a year. Also, even though growth in output has been accompanied by a slight increase in productivity, the gap with other developed countries remains wide. The medium-to-long-term sustainability of the country's growth hinges crucially on its ability to boost the competitiveness of the productive sector. To move toward these objectives, international experience suggests that it is important to promote policies supporting technology development and innovation.

1.2 Over the last two decades, the Bank has provided sustained support for Argentina's technology policy, contributing to its sustainability and a closer focus on results. Since 2003, the government has prioritized investments in this field, and established the Ministry of Science, Technology, and Productive Innovation (MINCYT) in 2007. The Contingent Credit Line for Investment Projects (CCLIP) for US$750 million agreed on by the country and the Bank in 2009 (operation AR-X1015), which constitutes the framework for the proposed program, has been consolidating the role of the MINCYT as coordinator of the National Innovation System (SNI) and of the technology efforts of other ministries, such as the Ministries of Industry, Health, and Agriculture. The first two programs under the CCLIP have targeted technology policies to strategic sectors, in addition to providing continuity for instruments for horizontal promotion of innovation (support for enterprises and researchers without regard to economic sector or scientific field). In addition to targeting strategic sectors, the MINCYT's new National Science, Technology, and Innovation Plan 2012-2015 (PNCTI) seeks to have impacts on prioritized regions.[1]

1.3 The PNCTI 2012-2015 was prepared with the participation of over 350 experts, including private sector representatives, and has been validated by other entities such as the Consejo Federal de Ciencia y Tecnología [Federal Science and Technology Council] (COFECYT) and the Consejo Interinstitucional de Ciencia y Tecnología [Interagency Science and Technology Council] (CICYT). The plan includes two strategies: (i) institutional strengthening; and (ii) closer targeting. The first is intended to strengthen the SNI's institutional framework, seeking to improve its endowment of resources and infrastructure, and coordination among its public-sector components, with the private sector, and on the territorial and international levels. With respect to targeting, the plan is based on the identification of

[1] See PNCTI 2012-2015 at optional link 9.

intervention priorities in terms of human resources and financial instruments, starting with territorial and sector business clusters named in the Strategic Socioproductive Clusters Plan, gradually complementing the horizontal promotion instruments.

1.4 This program will provide continuity for the medium-term efforts that the country has been making, with Bank support, to improve the performance and coordination of the public and private stakeholders that make up the national innovation system. This program, the third under the CCLIP,[2] will mainly address the challenge of boosting the competitiveness of businesses, particularly SMEs. Recent studies show that Argentina has a productivity gap compared to the developed countries and the difference in productivity between Argentina's large companies and its SMEs is also wider than in more advanced countries.[3] Among the many factors that limit business competitiveness and productivity, the program will address those linked to knowledge and technology, including: (i) low investments in research, development, and innovation (RD&I), particularly in the private sector; (ii) the shortage of qualified resources to develop and manage business innovation processes; and (iii) the limited capacity of outlying regions to make better use of knowledge and technology to improve their productive performance. Other relevant factors for competitiveness will not be addressed by the program since they do not come under the direct responsibility of the executing agencies (MINCYT and the JGM) (see Figure 1).

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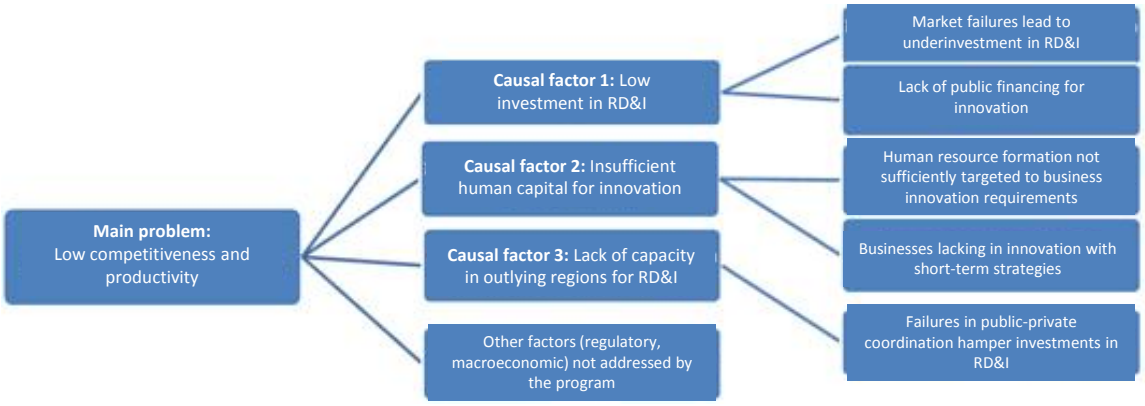
[2] Fulfillment of conditions for the triggering of this operation under CCLIP AR-X1015 have been confirmed: (i) as of 20 June 2012, TIP I had its resources committed and execution stands at 72%. For TIP II, the commitment level is 77.5% and disbursements stand at 35.6%; (ii) the executing agency is the same (MINCYT), with the exception of subprogram 2, which, as explained in paragraphs 3.1 and 3.3, will be executed by the JGM.

[3] The total factor productivity index with regard to the United States is 0.72%. The productivity of small and medium-sized enterprises represents 23.42% and 44.69% of the productivity of larger enterprises, respectively, while in countries like the United Kingdom or France, these percentages range between 60% and 80% (see optional link No. 10).

Figure 1. Challenges for TIP III



1.5 **Low investment in innovation.** In Argentina, investment in research and development (R&D) grew from 0.44% of GDP in 2004 (equivalent to Arg$1.630 billion) to 0.52% in 2008 (Arg$3.480 billion), but they are still below the average for the region (0.67%) and of the Organization for Economic Cooperation and Development (OECD) countries (2.29%). According to the Network of Science and Technology Indicators (RICyT) in 2009 spending on R&D per researcher in Argentina (US$42,000 in full-time equivalents) was far below the levels for Spain (US$151,000) and the United States (US$263,000) in 2007, putting Argentine researchers at a disadvantage compared to their international peers. The scant investment in R&D is a problem that cuts across all sectors and is of particular concern in the private sector, which contributes just 29.3% of that investment, while OECD businesses contribute 63.8%. Something similar happens with the intensity of R&D in Argentine firms (as a percentage of sales) which is 0.2%, far below the 2.2% in the OECD countries.

1.6 Greater private sector participation in R&D and other innovative activities (purchase of equipment, training, consulting services, etc.) is fundamental, since evidence shows that these efforts translate into innovations and productivity increases. Different studies conclude that R&D in the manufacturing industry are relevant for obtaining innovative products and processes which, in turn, increase the productivity of labor and boost the performance of businesses.[4] However, market failures caused by information asymmetry between firms and financiers and difficulties encountered by businesses in taking ownership of all the benefits generated by RD&I activities, lead to suboptimum private investment in RD&I (see paragraph 1.5), and therefore public interventions, such as the ones envisaged in the proposed program, are required.

[4] Crespi, G. and Zuñiga, P. (2010), Innovation and productivity: evidence from six Latin American countries. IDB working paper series (218).

1.7 **Insufficient human capital for innovation.** In recent years, the increase in R&D investment made for strong growth in human resources. The number of researchers for every 1,000 people in the economically active population rose from 1.8 in 1997 to 2.7 in 2009, which positions Argentine well in Latin America, but still significantly below the averages for the OECD countries,[5] where the indicator is close to 8. Even more worrisome is the number of qualified personnel working on innovation in the private sector. Since 1997, the percentage of businesses employing researchers has fallen from 16.3% to 9.6% (verified in 2009), which ranks Argentina below Brazil (28.2%), Mexico (37.65%), and Chile (29.50%), and even further behind the OECD countries (64.85%).[6]

1.8 Greater use of qualified human capital (with postgraduate education) by companies is fundamental for boosting their capacity to adapt and create new technologies which, in turn, can help to raise productivity levels. In recent years, the most innovative Argentine firms have been hiring larger numbers of qualified personnel (Novick, M. et al., 2010). A survey by the Ministry of Industry (2011) shows that the largest firms have growing demand for human capital for innovation. However, several studies mention the lack of qualified resources in Argentina as a factor in its lower level of competitiveness compared to other emerging economies (World Economic Forum, 2010), and the firms mention the high cost of training as one of the main obstacles to innovation (Innovation Survey, 2006). Therefore, one of the challenges for Argentine productivity is to increase the supply of human capital with higher levels of education in strategic areas for technology and innovation. In particular, to achieve higher levels of technology transfer, the internationalization and linkage of this human capital must be promoted with research centers, laboratories, companies, and universities in countries where innovation is more highly developed. Human resource training through postgraduate studies and specialization abroad can help increase the supply of professionals able to address the country's needs.[7]

1.9 **Uneven regional economic performance.** Performance by the country's different regions between 2003 and 2010 exhibited imbalances in productivity. Although all the regions saw an improvement after 2002, the nine provinces in the Norte Grande region had relatively lower development. This region has the smallest stock of infrastructure in the country and the widest productivity gap with the Buenos Aires area, compared to the other provinces. For example, according to the Enterprise

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[5] Data from RICyT and the OECD (MSTI database).

[6] Data in full-time equivalent researchers. IDB (2010), "*Science, Technology and Innovation in LAC: A Statistical Compendium,"* IDB.

[7] Novick, M. et al. (2010), "La compleja relación entre innovación y empleo," Observatorio del Empleo y Dinámica Empresarial; Centro de Estudios para la Producción (CEP) (2011), "11º Encuesta Cualitativa a Grandes Empresas Industriales," Ministry of Industry; World Economic Forum (WEF) (2010), "Stimulating Economies through Fostering Talent Mobility," WEF with the collaboration of the Boston Consulting Group.

Survey 2010 (World Bank and the IDB), in Chaco province average company productivity is 63% of the productivity of firms in Buenos Aires. One of the factors associated with the lag in the Norte Grande region is the lack of investment in RD&I. According to the Instituto Nacional de Estadísticas y Censos [National Statistics and Census Bureau] (INDEC), in 2008, four of Argentina's 25 provinces (City of Buenos Aires and the provinces of Buenos Aires, Córdoba, and Santa Fé) accounted for over 70% of investments in innovation and had 70% of researchers while the provinces in the Norte Grande region had just 10% of investment. The PNCTI 2012-2015 identifies a series of strategic socioproductive clusters where, if efforts can be coordinated to obtain investments in innovation, the result would be a high impact on the productivity of local businesses. Moreover, this territorial approach follows the guidelines of the Bank's strategy with the country (currently in preparation) and the Bank's sector vision, which views regional innovation systems as an important factor in country competitiveness and innovation (see optional electronic links 13 and 14).

1.10 **Prior Bank interventions.** As indicated above, the Bank has provided sustained support for the country's efforts in recent decades to strengthen its SNI. The Technological Modernization Program III (TMP III) (operation 1728/OC-AR), with Bank financing of US$280 million, executed between 2006 and 2010, focused on support for enterprise innovation (1,500 innovation projects for supported businesses), science and technology research (4,000 projects supported), and training for human resources in the country and repatriation of researchers.[8] The lessons learned from TMP III and the priorities established when the MINCYT was created were used as key inputs for preparation of the CCLIP and its first two operations (Technological Innovation Programs [TIPs] I and II, operations AR-L1073 and AR-L1111). Novel aspects of TIP I, approved in 2009, with Bank financing of US$100 million, included the creation of Sector Funds for Technological Innovation (FIT-S) in the fields of sustainable energy, health, agroindustry, the social sectors, and support for new science and technology infrastructure. The FIT-S investments are prioritized by councils including private sector representatives. TIP II built on the experience of the FIT-S, creating an additional fund in the area of the environment and climate change and reinforcing the investments in infrastructure. Another notable point in the TIP I and II programs is their business innovation approach. Unlike in prior efforts, in both of these programs more than half of their resources are aimed at promoting investment in RD&I in the private sector. Moreover, both programs were structured with results-based disbursements, which has helped improve the monitoring and evaluation systems of the MINCYT and the National Agency for the Promotion of Science and Technology (ANPCyT). To date, the programs have had high resource commitment and execution levels and have fulfilled the targets agreed upon with the Bank with

[8] See "Investigación Científica e Innovación Tecnológica en la Argentina: Impacto de los Fondos de la Agencia Nacional de Promoción Científica y Tecnológica" at optional link 12.

respect to the number of firms, business consortia, universities, and researchers supported and the construction of new research and technology centers.

1.11 The programs supported by the Bank have performed positively, as shown by independent evaluations, and have helped to improve the country's innovation indicators. They also produced lessons learned regarding the management and evaluation of instruments and policies to support research and innovation, which have helped increase the effectiveness of successive Bank support, particularly support targeting the promotion of innovation in the private sector (see optional electronic links 1, 7, 12, and 17). However, much remains to be done to narrow the gaps with the OECD countries. Larger investments and new promotional tools continue to be needed to encourage more businesses and consortia to invest in innovation to boost their competitiveness.

1.12 **Program strategy.** The proposed program includes a mix of activities (some continuing earlier programs and some new) to address the technological challenges that limit enterprise productivity. To tackle the challenge of increasing investment in RD&I, components 1 and 2 of subprogram 1 will finance projects for innovation, research, and the creation and strengthening of technology service centers which are expected to leverage additional private sector funds. In turn, the challenge of the shortage of human capital for innovation will be addressed through a series of supports under subprogram 2 to train professionals abroad in areas of science and technology for which there is private sector and institutional demand. Lastly, to promote regional development, component 1 of subprogram 1 will establish a new regional technological innovation fund to tackle the challenges of the strategic socioproductive clusters identified in PNCTI 2012-2015 and will also support new technology service centers to spur local productive innovation processes in the private sector. As in the first two operations under the CCLIP, execution will be the responsibility of the MINCYT, with the exception of subprogram 2, which will be executed by the JGM (paragraphs 3.1 and 3.3).

1.13 **Strategic alignment.** Under the framework of the Ninth General Capital Increase, the operation will contribute to the regional development goals through financing for SMEs, by promoting their involvement in innovative activities, and will also have favorable impacts on the country's capacity to carry out pilot projects in the fields of energy, agriculture, health, and water, which will have environmental benefits. The operation is aligned with the Bank's Country Strategy Update (document GN-2570), which includes growth and competitiveness in a context more favorable to investment and productivity as one of its strategic areas. The program will contribute to that objective. The project is also included in the 2012 Operational Program Report (document GN-2661-4) and complements others that

promote research and innovation in the agricultural sector and business development.[9]

1.14 **Coordination with multilateral agencies.** This program complements another initiative financed by the World Bank to promote productive innovation in Argentina. The project team has held frequent meetings with its counterparts at the World Bank during the design stage and will continue to hold them during execution, to ensure that synergies exist between the two operations.[10]

B. Objectives and components

1.15 **Objectives.** The general objective is to increase investment in research, development, and innovation with the aim of boosting the competitiveness and productivity of enterprises. The specific objectives are to: (i) increase technological and innovative capacity in sectors and regions that are prioritized in the PNCTI 2012-2015; (ii) increase the innovation capacity of SMEs; (iii) strengthen human capital for innovation in enterprises and institutions; and (iv) promote coordination and consolidation of the SNI.

1. Subprogram 1: Building technological innovation capacity (IDB: US$180 million; counterpart: US$66 million)

a. Component 1: Support for sector and regional technological innovation (IDB: US$45 million; counterpart: US$12 million)

1.16 The objective of this component is to expand technological capacities and innovations having an impact on the sectors and regions prioritized by the PNCTI 2012-2015. To that end, this component will provide two lines of support. The first line, whose details are set out in the program's Operating Regulations, will finance projects through the FIT-S established under the TIP I and TIP II programs, in the fields of sustainable energy, health, agroindustry, the social sectors, and environment and climate change, and through a new fund, the Regional Fund for Technological Innovation (FIT-R) to be established under the proposed program. The FIT-R will finance regional projects to create scientific and technological capacities to help launch innovative processes in the strategic socioproductive clusters identified in the PNCTI 2012-2015. The second line will finance projects to establish technology development centers and services to cover unmet needs in business clusters. At least half of the projects financed under this component will be implemented by consortiums of stakeholders from relatively less developed provinces (see optional electronic links 1 and 6).

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[9] Provincial Agricultural Services Program III (operation AR-L1120); Program to Strengthen the Agricultural Innovation System (operation AR-L1064); MSME Credit Access and Competitiveness Program (operation AR-L1033); and Norte Grande Competitiveness Program (operation AR-L1013).

[10] The World Bank's Unleashing Productive Innovation Project (45165-AR) supports sector funds in biotechnology, nanotechnology, and information and communication technologies. These funds complement the funds provided by the IDB in the areas of energy, health, agroindustry, and environment and climate change.

1.17 The beneficiaries of this component's projects will be consortia composed of public and private entities. In the case of FIT-S and FIT-R projects, the support will consist of a nonreimbursable contribution of up to 60% of the total cost of the project, with a maximum of US$10 million and a minimum of US$400,000.[11] It is estimated that 30 FIT-S and FIT-R projects will be financed, which should be aimed at building key new technological capacity for a sector or region, predominantly in the form of public or semipublic goods, or considerably increasing the quantity and quality of RD&I to boost the competitiveness of a sector or region. For the projects establishing technology development centers and services linked to business clusters, the nonreimbursable contribution will be up to 80% with a maximum of US$2.5 million. The support will be used to build service supply capacity (four new centers) and facilitate their access to businesses. Apart from the centers, this component will also finance an innovation and knowledge management center that will provide highly-specialized services in the areas of intellectual property and technology transfer, cutting across sectors and regions.

1.18 Following practices already adopted in FIT-S, all the projects will be selected competitively based on external evaluations by experts with verifiable national and international experience. On an exceptional basis, FIT-S projects with outcomes that cannot be appropriated may be assigned directly to an institution or consortium, for which the Bank's prior no objection is required. The Operating Regulations provide details on the procedure for the selection and award of projects.

b. Component 2: Strengthening of capacity for innovation and science and technology research (IDB: US$99 million; counterpart: US$30 million)

1.19 The objectives of this component are to increase investment in innovations by SMEs, thereby helping to boost their competitiveness and increasing the volume and quality of the SNI's science and technology production.

(i) Subcomponent 2.1. Support for business innovation (IDB: US$48.6 million; counterpart: US$10 million)

1.20 This subcomponent will finance two lines of support. The first will finance enterprise innovation projects, such as technological development, R&D, international cooperation, cleaner production, patents, and technological advisory services, whose different modalities are established in the Operating Regulations. The financing will take the form of a nonreimbursable contribution of up to 50% of the project cost, with a maximum of US$250,000, except for projects involving clean technology, support for patent registration, international cooperation, and technology advisory services, which may have higher cofinancing percentages, given that they require larger incentives for their development. It is estimated that

[11] The amounts and percentages of nonreimbursable cofinancing for the different program instruments were determined based on specific cost studies and the lessons learned from previous programs. See optional links 1, 5, 6, 7, and 12.

financing will be provided for some 250 projects selected competitively through periodic public calls for submissions, except for the group technology advisory projects and the patent registration projects, which will be awarded under the open-window method. The second line will support projects to strengthen technology services that will expand the supply of services such as metrology and certification, engineering, product and process design, shared use of equipment, training in the use of new technologies, etc. The beneficiaries will be institutions and businesses that jointly commit to making investments to expand or improve existing services. An estimated nine projects will be supported through nonreimbursable contributions that will cover up to 80% of their total cost, with a maximum of US$1.5 million per project. The counterpart will be financed jointly by the beneficiary institutions and firms.

(ii) Subcomponent 2.2. Support for science and technology research (IDB: US$50.4 million; counterpart: US$20 million)

1.21 This subcomponent will support public and private institutions engaged in research, development, and transfers of knowledge through the following project modalities. (i) Science and technology research projects (STRPs) that will support groups of researchers in the generation of new knowledge and its transfer to society and the private sector. The STRPs will be supported through nonreimbursable contributions of up to 50% of the project cost, with a maximum of US$100,000. Financing will be provided for an estimated 1,260 to be selected through competitive public calls for submissions in the following categories: (a) open—in all fields of knowledge; and (b) specific—such as startups, regional, and international projects, etc. (ii) Technology platform projects, to support the establishment of units with cutting-edge technology and highly specialized staff devoted to providing the advanced, highly specialized science and technology products and services needed for research groups of excellence and technology-based businesses. Support will be provided for five platforms to be selected through calls for proposals, which address challenges in the following areas: pre-clinical drug development, software engineering, animal facilities, proteomics, and translational medicine.[12] The maximum to be financed for each platform is an estimated US$2 million, with a duration of up to three years. In addition, this subcomponent will finance activities to determine the value of the knowledge developed in the STRPs to promote increased transfers of research.

c. Component 3: Infrastructure and consolidation of the SNI (IDB: US$27 million; counterpart: US$23 million)

1.22 The objective of this component is to improve the science and technology infrastructure and promote the coordination and consolidation of the SNI.

[12] Proteomics is the large scale study of proteins, their structure, and functions. Translational medicine refers to the orientation used in clinics for the application of research results. This line of platforms began under TIP II and is being executed satisfactorily (see optional electronic link 1).

(i) Subcomponent 3.1. Science and technology infrastructure (IDB: US$27 million; counterpart: US$10 million)

1.23 This subcomponent will finance the continuation of phase two of the science and technology complex (GIOL),[13] which receives partial financing under TIP-II and a new building on the campus of the Universidad de Buenos Aires (UBA) to build capacity in the fields of information technology, atmospheric science, and applied mathematics. This new building, which will be work number 24 in the MINCYT's federal science and technology infrastructure plan, will be financed by the Bank. The 23 remaining works have been financed through TIP I and TIP II. This work will include the construction of new research spaces and laboratories to permit more and better interaction between teaching and research, with a view to increasing technology transfers to the private sector in areas of growing interest for the country's development, such as the information technology industry and disciplines related to numerical calculations, which are relevant for industries with high technology content and thematic industries such as meteorology and climate change.

(ii) Subcomponent 3.2. Coordination and consolidation of the national innovation system (counterpart: US$9 million)

1.24 This subcomponent will provide continuity for the national large instrument and database programs and the programs for evaluation and consolidation of science and technology institutions begun under TIP I and TIP II. It will also support the design and startup on an experimental level of new programs to spur innovation in businesses, including: (i) a platform to identify company demands for technologies; (ii) techno-business rounds and venture capital forums; (iii) an innovation help desk; (iv) techno-entrepreneurs; (v) observatory of productive investments by enterprises; and (vi) design as an innovative element in businesses.

2. Subprogram 2: Human capital formation for innovation (IDB: US$20 million)

1.25 The objective of this subprogram is to increase the supply of highly-skilled human resources in strategic areas for promoting enterprise innovation. In this first stage, the subprogram expects to train 700 professionals abroad in science and technology who, in the future, will rejoin businesses and institutions in the country. The beneficiaries will be selected through public, transparent, competitive processes, which will be widely publicized throughout the country and supervised by the Bank. Before being published, the results of the competitions will have the Bank's no objection. To spur demand by Argentine businesses and institutions for trained human resources, agreements will be entered into with them to promote the reintegration of grant recipients. To mitigate the risk that the country will be unable

[13] GIOL is an undertaking that will house the headquarters of MINCYT, ANPCyT, and the National Science and Technology Research Council, in addition to three international research centers, and an interactive science and technology museum.

to take advantage of the resources trained, the grant recipients will be required to repay the aid received in the event they do not return to the country to work in the public or private sectors.[14]

a. Component 1: Training for professionals in priority science and technology areas (IDB: US$8.8 million)

1.26 This component will provide financial and logistical support to enable Argentine professionals to study in master's programs of up to two years in priority areas. The grant recipients will be selected by a tripartite committee consisting of experts from the Fulbright Commission, the MINCYT, and the JGM, which will be supervised by the Bank. Financing will be up to US$90,000 per beneficiary and will cover tuition, travel, and living expenses. This component will also finance communication and publicity activities for all of subprogram 2. The eligibility and evaluation criteria and selection mechanisms and the Bank's control points will be spelled out in the program's Operating Regulations.

b. Component 2: Short specialization stays and/or technical visits to institutions in other countries (IDB: US$10.8 million)

1.27 This component will support two types of training for Argentine professionals: (i) specialization in business and technology management; (ii) short stays or technical visits to acquire specific knowledge or to develop practical knowledge of technology tools.

1.28 The first type (specialization in business management and technology in Brazil) will consist of a theoretical/practical program to include training in business management, technical visits to companies, and a research component, which will receive organizational and technical support from the Getulio Vargas Foundation of Brazil (FGV) and will be supervised by the Bank. It will have a duration of about 450 hours over a four-month period. It will be targeted to university or technical college graduates working in businesses and institutions linked to science and technology, who will be selected by a tripartite committee of experts from the MINCYT, the FGV, and the JGM. The support will be up to US$25,000 per beneficiary and will cover tuition, travel, and living expenses. The FGV of Brazil, with which the Argentine government has a cooperation agreement within the framework of MERCOSUR integration efforts, was selected to provide support in training Argentine professionals due to its noted technical and academic capacity for organizing training activities in management and business tailored to the needs identified in this program.

[14] The Bank supported the JGM in designing the terms and conditions for the training methods planned under subprogram 2. In June an initial competitive process was conducted with satisfactory results in terms of applications received (over 800). The Bank will continue to support execution of this subprogram to ensure fulfillment of the agreed upon objectives and procedures.

1.29 The second type will consist of short stays or technical visits of up to four months to enable professional Argentine graduates to acquire specific technological knowledge abroad. The grant recipients will be selected by a committee of experts from the MINCYT and the JGM and the support will be up to US$25,000 per person, including travel, living expenses, and tuition (if necessary, it will cover the costs of a specific academic training activity). The details are included in the Operating Regulations.

C. Program cost and financing

1.30 The program will cost an estimated total of US$266 million, of which the Bank will finance US$200 million and the local counterpart US$66 million (see the itemized costs at optional electronic link 16).

Table 1. Budget

	Investment category	Source		Total	%
		IDB	LOCAL		
1	**Subprogram 1**	**180,000,000**	**66,000,000**	**246,000,000**	**92.48**
1	Component 1: Support for sector and regional technological innovation	45,000,000	12,000,000	57,000,000	21.43
2	Component 2: Strengthening of capacity for innovation and research	99,000,000	30,000,000	129,000,000	48.50
	Subcomponent 2.1: Support for business innovation	48,600,000	10,000,000	58,600,000	22.03
	Subcomponent 2.2: Support for science and technology research	50,400,000	20,000,000	70,400,000	26.47
3	Component 3. Infrastructure and consolidation of the SNI	27,000,000	23,000,000	50,000,000	15.04
4	Administration, evaluation, and audits	9,000,000	1,000,000	10,000,000	3.76
2	**Subprogram 2**	**20,000,000**	**0**	**20,000,000**	**7.52**
1	Component 1: Training for professionals in priority science and technology areas	8,800,000	0	8,800,000	3.31
2	Component 2: Short specialization stays and/or technical visits to institutions in other countries	10,800,000	0	10,800,000	4.06
3	Administration, evaluation, communication, and audits	400,000	0	400,000	0.15
	TOTAL	**200,000,000**	**66,000,000**	**266,000,000**	**100.0**
	%	**75**	**25**	**100**	

D. Key results indicators

1.31 **Expected outcomes**. The program is expected to help increase aggregate investment in innovation. This will be measured through the aggregate indicators shown in the Results Matrix: (i) investment in R&D as a percentage of GDP; (ii) degree of coordination of the SNI estimated by stakeholders participating in research and innovation projects under partnership arrangements; (iii) annual number of businesses receiving financial support from the Argentine Technology Fund (FONTAR); and (iv) regional targeting of resources.

1.32 **Key indicators.** In accordance with the objective and targets described, the key project indicators involve holding competitions for the selection of projects, contracts signed for RD&I activities with businesses, consortia, and researchers, and the effective execution of those investments, i.e. completed research and

innovation projects and the percentage of them successfully completed (fulfilled technical targets). With regard to the final outcomes, the investments are expected to have a favorable impact on the generation of new knowledge, the development and strengthening of technology services, and the introduction of innovations in products and processes which, in the medium term, will enhance the performance of businesses and the prioritized sectors and regions (see the Results Matrix in Annex II).

1.33 **Focus on outcomes, impact, and evaluability.** To achieve the proposed outcomes, the program includes a mix of instruments to promote research and innovation, characterized by their specificity and complementarity. The cross-cutting instruments will enable the program to reach a large number of researchers and businesses in different fields of knowledge and economic sectors, to carry out research and innovation projects. In turn, researchers and businesses will benefit from platforms and service centers that will help them to address common needs more efficiently. Lastly, the sector and regional projects will give rise to partnering activities (involving businesses, researchers, and research centers) leading to innovations with high economic and social impacts. All these instruments can be evaluated. In the case of the cross-cutting instruments, the Bank's Office of Evaluation and Oversight (OVE) and other independent evaluators have already conducted studies that indicate positive impacts and the viability of conducting complex evaluations.[15] In the case of the platforms and service centers, experience indicates that they can be evaluated. Lastly, for the sector and regional projects, whose costs are significant, specific indicators must be determined and selected so that their technological, economic, and social impacts can be evaluated.

1.34 **Economic viability and solidity of the project's benefits.** A cost-benefit analysis has been performed on the most relevant instruments in each subprogram and component. In the case of FIT-S, the analysis was based on 16 projects selected from the TIP I and TIP II programs, in which 68 institutions and 32 businesses participated. This exercise showed positive social benefits in a very conservative scenario. A study was also conducted for the enterprise projects on technological innovation and development. In this case, 10 successful projects supported by earlier programs were analyzed and it was concluded that for each US$100 invested, a social benefit of US$1,100 was obtained. These results indicate that with a success rate of 10%, which is considered reasonable, this tool will have a positive social benefit under the proposed program. Lastly, for the case of subprogram 2, an analysis was performed based on the expected income associated with training. The results of the estimate suggest that financing 100 master's degree

[15] Chudnovsky, D. et al. (2006). "Evaluating a Program of Public Funding of Private Innovation Activities. An Econometric Study of FONTAR in Argentina," Working Paper, OVE/IDB; Chudnovsky, D. et al. (2006), "Programa de aportes no reembolsables del FONTAR: Una evaluación de sus beneficios sociales a través de estudios de casos," Working paper, CENIT; Chudnovsky, D. et al. (2006c), "Evaluating a Program of Public Funding of Scientific Activity. A Case Study of Foncyt in Argentina," Working Paper, OVE/IDB.

grants has a positive net present value of US$12.4 million. It can be concluded from these partial analyses that the program as a whole is economically viable (see optional link 11).

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instrument

2.1 The project is structured as an investment loan and will be executed in five years.

2.2 **Special contractual conditions. As a condition precedent to the first disbursement of the loan, evidence will be submitted that the program's Operating Regulations, the content of which will be aligned with terms previously agreed upon with the Bank, have taken effect.** A condition precedent to the first disbursement for subprogram 2 is submission of evidence that the executing unit for the subprogram has been established, consisting of a minimum of one specialist in human capital formation, one in financial administration, and one in procurement. As a special execution condition, all the terms and conditions for the calls for projects included in the program will have the Bank's prior no objection. For subprogram 2, at the end of year one of execution, the executing agency will submit evidence that a competition has been held to contract a consulting service to review the initial execution of the subprogram, in accordance with terms previously agreed upon with the Bank.

2.3 **Retroactive financing.** The Bank may recognize, with a charge to the loan proceeds, up to US$1 million in expenditures incurred to undertake the first training of professionals under subprogram 2, provided that these expenditures are incurred after 20 June 2012 (approval date of the draft loan proposal by the Operations Policy Committee). These expenditures must comply with the Bank's policy on retroactive financing (Operational Policy OP-504).

B. Environmental and social safeguard risks

2.4 The program's environmental and social considerations will be managed under the working framework agreed on by the MINCYT and the Bank and will be the responsibility of the Socioenvironmental Management Unit (UGSA) established in 2007, which has extensive experience in project review and in raising awareness and training agency personnel in environmental and labor security. The UGSA has a team of seven professionals led by a specialist in environmental management and is organized into two areas: evaluation and monitoring, and legal. In accordance with the Environment and Safeguards Compliance Policy (Operational Policy OP-703), the program was classified as a Category "C" operation. The socioenvironmental management guidelines for the program are included in the Operating Regulations.

C. Technical and fiduciary risks

2.5 During the analysis mission, a risk management workshop was held, attended by the executing agencies and the Bank. It concluded that the risk level is medium. Fiduciary risks were identified, including the weak management capacity of the executing agency of subprogram 2, which will be mitigated by contracting and training professionals and by the technical support from the MINCYT. Nonfiduciary risks include the sustainability of the technology centers to be supported by the program and the return and reemployment of the grant recipients. To mitigate the first, the MINCYT will provide technical support in the centers' design stage, ensuring that the services are required and valued by the businesses. In the second case, the JGM will reach agreements with the businesses to facilitate the rehiring of grant recipients.

III. Implementation and Management Plan

A. Summary of implementation arrangements

3.1 The borrower will be the Argentine Republic. The program's executing agency will be the MINCYT, except for subprogram 2, which will be executed by the JGM.

3.2 In the case of subprogram 1, the MINCYT will delegate certain activities to ANPCyT. Both the MINCYT and ANPCyT have extensive experience in Bank-financed programs. In particular, under component 1, the fields of competition will be prioritized by the MINCYT in consultation with the sector technology councils and implementation roundtables under the PNCTI 2012-2015, while project selection and execution will be delegated to ANPCyT. The MINCYT will also delegate execution of component 2 to ANPCyT. Component 3 will be executed by the MINCYT. Fiduciary management will be the responsibility of the General Office of Externally-financed Projects (DIGFE).

3.3 Execution of subprogram 2 will be the responsibility of the Undersecretariat of Public Management and Employment (SGEP) of the JGM,[16] which will use program financing to establish a specialized executing unit to carry out the tasks of selection and monitoring of grant recipients, evaluation of results, and financial and procurement management. Contracting key staff for this unit will be a condition precedent to the first disbursement. The JGM's SGEP will be responsible for executing this subprogram given its experience in human capital formation policy and program design for the State. The JGM has signed agreements with the Fulbright Commission and the FGV and has the tools to effectively publicize and administer the subprogram.

3.4 The fiduciary agreements and requirements appearing in Annex III were established during program preparation.

[16] As a new executing agency under the CCLIP, during program preparation, the institutional capacity of the SGEP was assessed pursuant to the requirements under the respective policies.

B. Summary of results monitoring arrangements

3.5 For subprogram 1, monitoring and evaluation will be the responsibility of the MINCYT, which will delegate those activities to the Evaluation and Quality Assurance Unit (UEAC). Monitoring and evaluation of subprogram 2 will be the responsibility of the SGEP, which reports to the JGM and will appoint a full-time staff member for this activity. Midterm evaluations will be performed for each of the subprograms after 24 months and a final evaluation will be carried out at 60 months. For subprogram 2, a consulting project will be carried out at the end of the first year of execution to review the performance of the instruments and make recommendations to improve their operation. The MINCYT and the SGEP will submit semiannual reports on the activities in the annual work plan and fulfillment of the indicators in the Results Matrix.

Development Effectiveness Matrix			
Summary			
I. Strategic Alignment			
1. IDB Strategic Development Objectives	Aligned		
Lending Program			
Regional Development Goals			
Bank Output Contribution (as defined in Results Framework of IDB-9)	The intervention contributes to the following Bank outputs: (i) Individuals (all, men, women, youth) benefited from programs to promote higher labor market productivity, (ii) Micro/small/medium productive enterprises financed, and (iii) Climate change pilot projects in agriculture, energy, health, water and sanitation, transport, and housing.		
2. Country Strategy Development Objectives	Aligned		
Country Strategy Results Matrix	GN-2328-3	The intervention contributes to creating a more favorable climate for investment and productivity growth, to enhance the country's competitiveness.	
Country Program Results Matrix	GN-2661-4	The intervention is included in the 2012 Country Program Document.	
Relevance of this project to country development challenges (If not aligned to country strategy or country program)			
II. Development Outcomes - Evaluability	Highly Evaluable	Weight	Maximum Score
	8.3		10
3. Evidence-based Assessment & Solution	7.2	25%	10
4. Ex ante Economic Analysis	8.5	25%	10
5. Monitoring and Evaluation	7.4	25%	10
6. Risks & Mitigation Monitoring Matrix	10.0	25%	10
Overall risks rate = magnitude of risks*likelihood	Medium		
Environmental & social risk classification	C		
III. IDB´s Role - Additionality			
The project relies on the use of country systems (VPC/PDP criteria)	Yes	Financial Management (Budget, Treasury, Accounting and Reporting).	
The project uses another country system different from the ones above for implementing the program			
The IDB's involvement promotes improvements of the intended beneficiaries and/or public sector entity in the following dimensions:			
Gender Equality			
Labor			
Environment	Yes	Funds for Environment and Energy and Agro-business will be created.	
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	A number of specific reports were financed in order to evaluate the performance of the instruments and to learn how to improve their design and maximize their impact.	
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan.	Yes	Based on previous interventions in the sector, there exist several studies of the direct and indirect impact of the instruments. In addition to that, this intervention will allow the measurement of the impact of new instruments to support firm innovation.	

The project is aligned with IDB institutional priorities. The project contributes to three of the Bank's outputs: (i) Individuals (all, men, women, youth) benefited from programs to promote higher labor market productivity, (ii) Micro/small/medium productive enterprises financed, and (iii) Climate change pilot projects in agriculture, energy, health, water and sanitation, transport, and housing. The project is also aligned with the Country Strategy's objectives to create a more favorable climate for investment and productivity growth and enhance the country's competitiveness, and it is included in the Country Programming.

The objective of the project is to increase investment in research, development and innovation to improve competitiveness and productivity companies. The project document and its annexes provide a clear justification for the intervention and identify potential beneficiaries. Although the project clearly discusses the evidence of the effectiveness of the interventions included in subprogram 1 (Technological Innovation Capacity Building), no clear evidence of potential effectiveness of the interventions included in subprogram 2 (Formation of human capital for innovation) are identified. The project's metric is well defined and the result matrix includes valid indicators with baselines and targets at all levels.

The project's economic analysis is complete and based on realistic assumptions, but it does not include a sensitivity analysis. The monitoring and evaluation plan is complete and follows the DEM outline. Non-Experimental methods and ex-post cost-benefit analysis are proposed to evaluate the impact of the proposed interventions.

The risk matrix rates risks for magnitude and likelihood, identifies mitigation measure and defines a metric to track their implementation.

RESULTS MATRIX

2012-2016				
General program objective	The project's general objective is to increase investment in research, development, and innovation with the aim of boosting the competitiveness and productivity of enterprises. The specific objectives are to increase technological and innovative capacity in sectors and regions that are prioritized in the National Science, Technology, and Innovation Plan 2012-2015 (PNCTI); increase the innovation capacity of small and medium-sized enterprises (SMEs); strengthen human capital for innovation in enterprises and institutions; and promote coordination and consolidation of the National Innovation System (SNI).			
Impact indicators	**Baselines**	**Targets**	**Unit of measure**	**Means of verification/comments**
1. Productivity gap between medium-sized and large firms	52.1% in 2010	60% in 2016	Percentage	Median labor productivity ratio of medium-sized firms compared to large ones. World Bank Enterprise Survey 2010
2. R&D/GDP	0.62% in 2010	0.65% in 2016	Percentage	Information from the Ministry of the Economy
3. Private sector's share of total investment in R&D	30% in 2010	35% in 2016	Percentage	Information from the Ministry of the Economy
4. Regional targeting of resources	0	≥ 50%	Percentage	At least 50% of consortia awarded grants under FIT-R include stakeholders from outside the area comprising the City of Buenos Aires and the provinces of Buenos Aires, Santa Fé, and Córdoba. FONARSEC database

SUBPROGRAM 1 BUILDING TECHNOLOGICAL INNOVATION CAPACITY

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
Component 1: Support for sector and regional technological innovation **Objective**: To support the development of technological capacities and innovations with an impact on strategic economic sectors and specific geographic areas of the country.									
Sector Funds for Technological Innovation (FIT-S) and the Regional Fund for Technological Innovation (FIT-R)[1]									
Output indicators									
1. Number of competitions	5		4	5	5		14	Competitions	Based on approved proposal profiles. Agency web page.
2. Number of projects awarded	16		6	15	9		30	Projects	Projects awarded. Award decisions. Agency web page.
3. Number of projects financed	4		4	11	15		30	Projects	Projects that received the first disbursement during the year in question. DIGFE database.
Midterm outcome indicators									
4. Number of projects that have executed more than 40% of the funds awarded	0				2	3	5	Projects	Projects that received more than 40% of the funds awarded. FONARSEC and DIGFE databases.
Final outcome indicators									
5. Number of innovative products or services implemented	0				4	6	10	Products or services	Refers to innovative products or services implemented under projects financed by FIT-S and FIT-R. Specific study performed by an external consultant in the final evaluation.
New technology development and service centers									
Output indicators									
1. Number of competitions	0		1				1	Competitions	A competition for regional centers. Agency web page.
2. Number of projects awarded	0		2	2			4	Projects	Decisions on awards. Agency web page.
3. Number of projects financed	0			3	2		5	Projects	Projects that received the first disbursement during the year in question. DIGFE database. The financing modality for the innovation management center will be determined during 2013.
Midterm outcome indicators									
4. Number of projects that have executed more than 40% of the funds awarded	0				1	2	3	Projects	Projects that received more than 40% of the funds awarded. FONARSEC and DIGFE databases.
Final outcome indicators									
5. Number of technology services provided sustainably by the centers established	0					4	4	Technology services	Specific study by an external consultant.
6. Number of companies assisted by the new centers	0					50*	50*	Companies	* Provisional number that will be adjusted and reported when the projects approved under the competition are analyzed. Specific study conducted by an external consultant.

[1]The amounts for the entire subcomponent are additional to the expected outcomes of TIP I and TIP II under the CCLIP.

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
7. Percentage of companies assisted by the new centers that are satisfied with the services received	0					60%*	60%	Percentage	*Provisional percentage to be adjusted and reported when the projects approved in the competition are analyzed. Specific study by an external consultant.
Component 2: Strengthening of capacity for innovation and science and technology research Objective: To increase investments in innovation by SMEs thereby helping to boost their productivity and competitiveness. Increase the volume and quality of science and technology production.									
Subcomponent 2.1 - Support for business innovation									
Individual projects for technological innovation and development									
Output indicators									
1. Number of competitions held to select projects	2	2	2	2	2	2	6	Competitions	Competitions published on the Agency web page. FONTAR database. Years highlighted in gray are monitored in TIP I and TIP II.
2. Number of projects awarded	60	120	120	120	120	120	360	Projects	DIGFE database. Years highlighted in gray are monitored in TIP II.
3. Number of projects financed*	40	50	100	100	100	100	250	Projects	*The competition and award were carried out under TIP II. FONTAR and DIGFE databases. The years highlighted in turquoise correspond to financing planned for TIP IV.
Midterm outcome indicators									
4. Number of projects completed	65	65	70	85	100	105	105	Projects	FONTAR database. The years highlighted in gray are monitored in TIP II.
Final outcome indicators									
5. Investment in RD&I per peso invested by the program	0					11%		Percentage	Study on beneficiary and nonbeneficiary companies. Baseline defined in Working Paper OVE/WP-03/10 June 2010.
Projects to improve and expand the capacity to provide technology services									
Output indicators									
1. Number of competitions	0		1	1			2	Competitions	Agency web page. Second competition is possible.
2. Number of projects awarded	0		3	4	2		9	Projects	FONTAR database.
3. Number of companies committed to projects	0		9	12	6		27	Companies	A baseline will be produced for each project awarded for technology services.
4. Number of projects financed	0			3	3	3	9	Projects	EMERIX database.
Midterm outcome indicators									
5. Number of projects completed	0				1	2	3	Projects	FONTAR database.
Final outcome indicators									
6. Number of companies assisted by strengthened technology service centers	0					50*	50*	Percentage	*Provisional percentage to be adjusted and reported when the projects approved in the competition are analyzed. Specific study on projects completed or nearing completion by an external consultant in the final evaluation.
7. Percentage of companies assisted by the new centers that are satisfied with the services received	0					60%*	60%	Percentage	*Provisional percentage to be adjusted and reported when the projects approved in the competition are analyzed. Specific study by an external consultant.

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
Subcomponent 2.2 Support for science and technology research									
Science and technology research projects (STRPs)									
Output indicators									
1. Number of STRPs approved	500	500	500	500	500	500	500	Projects	FONCYT database. Years highlighted in gray are monitored in TIP II.
2. Number of STRPs approved, excluding open topics (as defined in the Operating Regulations)	100	100	100	100	100	100	100	Projects	FONCYT database. Years highlighted in gray are monitored in TIP II.
3. Number of projects financed with signed contracts	420	420	420	420	420	420	1260	Projects	DIGFE database. Years highlighted in gray are monitored in TIP II.
Midterm outcome indicators									
4. Number of projects completed	350	350	350	350	350	350	350	Projects	Years highlighted in gray are monitored in TIP I and TIP II. FONCYT database
Final outcome indicators									
5. Growth (%) in the number of publications in indexed journals (researchers supported and controls)	35%				>0	>0	>0	Percentage	Study on beneficiary and nonbeneficiary companies. Baseline defined according to the study by Codner et al. (2011). See optional link 13.
Value of the results of STRPs									
Output indicators									
1. Proposal to determine the value of the results of STRPs	0		1				1	Reports	Report to be submitted in the first half of 2013.
2. Proposal implemented	0				1		1	Percentage	Report to be submitted at the end of 2015.
Final outcome indicators									
3. % STRPs of consolidated groups that carry out valuation and transfer activities	30%					35%	35%	Percentage	Report for the final program evaluation by an independent consultant. Baseline defined according to the study by Codner and Porta (2012). See optional link 18.
Science and technology services platform projects									
Output indicators									
1. Number of competitions	2		1				1	Competitions	Agency web page
2. Number of projects awarded	4		4				4	Projects	Unidad de Control de la Gestión y Asuntos Legales [Management and Legal Affairs Control Unit] (UCGAL) database
3. Number of projects financed	0	1	4 / 2	2			4	Projects	DIGFE database. The projects included in 2012 and 2013 (in gray) were awarded under TIP II and are monitored in the pertinent results matrix.
Midterm outcome indicators									
4. Number of projects completed	0					3	3	Projects	DIGFE and FONCYT databases. Includes projects in the TIP II results matrix.

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
Final outcome indicators									
5. Platforms providing services that are sustainable (technically and financially)	0					3	3	Platforms	Three platforms operating. Verification of the new services provided under completed projects. Governance resolved. Specific study.
Component 3: Infrastructure and consolidation of the SNI Objective: To improve the science and technology infrastructure and promote the coordination and consolidation of the SNI.									
Subcomponent 3.1 Science and technology infrastructure									
Science and technology infrastructure									
Output indicators									
1. Number of works contracts signed	0	1	1				2	Works	MINCyT/ANPCyT files on works on the exact sciences building ("0+Infinity") and phase II of the science and technology complex (GIOL).
Midterm outcome indicators									
2. Number of works completed	0			1		1	2	Works	Completed work includes provisional acceptance of the facilities ready for use. Reports on acceptance of the works.
Final outcome indicators									
3. Increase in enrollment in university majors in exact sciences.	TBD					20%	20%	Percentage	The baseline will be defined in 2012. Specific report. Database on enrollment in the School of Exact and Natural Sciences/University of Buenos Aires.
4. Increase in the number of services provided for the private sector	TBD					80%	80%	Percentage	The baseline will be defined in 2012. To be measured two years after completion of the project works.
Subcomponent 3.2. Coordination and consolidation of the SNI									
Coordination of the national innovation system									
Output indicators[2]									
1. Number of resolutions on the creation of networks of large equipment and databases	8	1	1				2	Networks	MINCyT records. The baseline is cumulative between 2009 and 2011.
2. Number of institutions that are members of networks under SACT/MINCyT resolutions	112	1 / 10	8	5	5		28	Institutions	Department of Science and Technology Coordination (SACT) resolutions. Cumulative goal of 113 under TIP II to be complemented with 1 more (highlighted in gray) in 2012. The rest are targets for TIP III.
3. Number of projects financed for member institutions	52	7	7	6	4	2	26	Projects	EMERIX database.
4. Number of data collections or sets reported	117	8	5	5	3		21	Collections	SACT specific report.
5. Number of pieces of equipment improved	24	3	3	3	1	1	11	Equipment	MINCyT database.
6. Number of training activities held	25	4	3	2	2	1	12	Activities	MINCyT database.

[2] The baseline is cumulative for 2010 and 2011.

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
7. National Systems of Large Tools and Databases (SNGIByD) maps published	0		1	2	1		4	Maps	SNGIByD information.
Final outcome indicators									
8. Increase in the use of large scientific equipment by external users	0					25%	25%	Percentage	The baseline will be defined in 2012. See the definition for calculating the indicator in the monitoring and evaluation plan.
Consolidation of the SNI									
Output indicators									
1. Number of self-evaluations financed	9	4	4	4	1	1	2	Reports	Source EMERIX. The results highlighted in gray are monitored in TIP II.
2. Financing of external evaluations	5	4	4	4	1	1	2	Reports	Source EMERIX. The results highlighted in gray are monitored in TIP II.
3. Financing the implementation of improvement plans	2	6	4	4	3	2	5	Plans	Source EMERIX. The results highlighted in gray are monitored in TIP II.
4. Institutions evaluated	6	5	4	4	1	1	2	Institutions	The results highlighted in gray are monitored in TIP II. Source MINCyT.
Final outcome indicators									
5. Number of science and technology institutions that have increased their institutional capacity	0	1	2	3	3	2	5	Institutions	Specific study. See definition of the indicator in the monitoring and evaluation plan.

SUBPROGRAM 2: HUMAN CAPITAL FOR INNOVATION

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
Subprogram 2: Human capital formation for innovation General objective: To contribute to the development of science and technology in Argentina by training professionals abroad in areas of strategic relevance for the country. Specific objective: To support postgraduate training for 700 Argentine professionals in science and technology, promoting their return to the country, over the next four years.									
Component 1: Training of professionals in priority science and technology areas									
Output indicators									
1. Number of competitions held to select 100 Fulbright scholars to obtain master's degrees in the United States	0	1	1				2	Competitions	JGM web page and press releases.
2. Number of grants awarded	0		50	50			100	Grant recipients	Fulbright database.
Midterm outcome indicators									
3. Number and % of grant holders who complete their training with good evaluations	0				45	45	90 (90%)	Grant recipients	Fulbright database.
Final outcome indicators									
4. Number and % of grant holders who complete their training and are hired by private companies in Argentina	0				20	20	40 (40%)	Grant recipients	TBD. Specific study by an external consultant.
5. % of grant holders who raise their income levels and/or improve their professional development as a result of the training received	0					70%	70%	Percentage	TBD. Specific study by an external consultant.
Component 2: Short specialization stays in the management of innovation, science, and technology									
Subcomponent 2.1: Specialization in the management of innovation, science, and technology									
Output indicators									
1. Number of competitions held to select grant recipients	0	1	1	2	2	2	8	Competitions	JGM web page and press releases.
2. Number of grants awarded	0	40	40	80	80	80	320	Grant recipients	Specific reports based on verifiable documentation. Includes the competition for Getulio Vargas Foundation grants.
Midterm outcome indicators									
3. Number and % of grant recipients who complete their training with good evaluations	0	38	38	76	76	76	304	Grant recipients	Getulio Vargas Foundation database.
Final outcome indicators									
4. Number and % of grant recipients who are hired by private companies in Argentina	0		20	20	40	40	120 (37%)	Grant recipients	TBD. Specific study by an external consultant.
Subcomponent 2.2: Short stays for specialization and/or technical visits to institutions in other countries									
Output indicators									
1. Number of competitions in thematic areas to select grant recipients	0	2	4	4	4		14	Competitions	JGM web page and press releases.

	Base	2012	2013	2014	2015	2016	Total	Unit of measure	Comments and means of verification
2. Number of grants awarded	0		50	80	150		280	Grant recipients	Executing unit database.
Midterm outcome indicators									
3. Number and % of grant recipients who complete their training with good evaluations	0	0	50	80	150		280 (100%)	Grant recipients	Executing unit database.
Final outcome indicators									
4. Number of graduates who are hired by private companies in Argentina	0		20	20	40	40	60 (20%)	Grant recipients	TBD. Specific study by an external consultant.

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country:	Argentina
Project number:	AR-L1141
Name:	Technological Innovation Program III (TIP III)
Executing agencies:	Ministry of Science, Technology, and Productive Innovation (MINCyT) and the Federal Cabinet Office (JGM)
Fiduciary team:	Ignacio Vinocur and Gumersindo Velazquez

I. Executive Summary

1. The evaluation was performed using the Project Risk Management (PRM) methodology and weaknesses and their inherent fiduciary risks were identified. These elements have been included in the proposed supervision plan.
2. The country's fiduciary management systems were evaluated through the Country Financial Accountability Assessment (CFAA) of 2008 and other means, and the executing agency was evaluated using the above-mentioned tool and found to be satisfactory.
3. The project does not include financing from other multilateral agencies.
4. The program will be executed by two executing agencies: subprogram 1 by the MINCyT and subprogram 2 by the JGM. The fiduciary agreements described below distinguish between the executing agencies.

II. Fiduciary Context of the Executing Agency

1. The MINCyT's fiduciary systems were previously evaluated and are considered satisfactory. It is an executing agency with broad working experience with the Bank. The JGM's fiduciary systems have not been evaluated. This will be done concomitantly with application of the Institutional Capacity Assessment System (ICAS), since this executing agency has no prior experience with the Bank. Notwithstanding the results of the institutional assessment to be performed, subprogram 2 will use the UEPEX financial management and information system.

III. Fiduciary Risk Evaluation and Mitigation Measures

The Bank's PRM methodology was used to analyze the project's fiduciary risks, which were identified and rated. A risk mitigation matrix and a preliminary risk mitigation plan were prepared for the project. The fiduciary risk of the project was found to be low in general terms, however individual risks and the corresponding mitigation measures were

identified. No irremediable high-impact risks were found that would impede effective project execution. *To mitigate the risk of weakness in the financial administration of subprogram 2, as a result of the lack of prior experience by the executing agency with Bank-financed programs, an ICAS will be conducted to assess its institutional capacity and training will be provided in procurement and financial management. The UEPEX system will be implemented. The recommendations arising from the ICAS will be used as inputs to determine strengthening activities and the level of fiduciary supervision to be used.*

IV. Considerations for the Special Conditions of the Contracts

To streamline contract negotiations by the project team and the Legal Department, in particular, the following agreements and requirements should be included in the Special Conditions:

1. *Conditions precedent to the first disbursement:* Submission of evidence that the program's Operating Regulations, agreed on in advance with the Bank, have taken effect. As a condition precedent to the first disbursement for subprogram 2, evidence will be submitted that the executing unit for the subprogram has been established, consisting of the following specialists as a minimum: one specialist in human capital formation, one in financial administration, and one in procurement. *Other execution conditions*: With regard to subprogram 1, all the terms and conditions for the calls for projects included in the program will have the Bank's prior no objection. For subprogram 2, at the end of year one of execution, the executing agency will submit evidence that a competition has been held to contract a consulting service to review the initial execution of the subprogram, in accordance with terms previously agreed upon with the Bank.

2. *Exchange rate agreed on with the executing agency.* The exchange rate will be established as follows:

   a. *Reimbursement of expenses incurred:* Both subprograms will use the exchange rate indicated in Article 4.09 (b) (i) of the General Conditions (Advances of Funds). Subprogram 1 will use the exchange rate indicated in Article 4.09 (a) (ii). Subprogram 2 will use the exchange rate indicated in Article 4.09 (a) (i).

   b. *Counterpart*: Both subprograms will use the exchange rate indicated in Article 4.09 (b) (i) of the General Conditions.

   c. *Disbursements in a currency other than U.S. dollars or Argentine pesos:* In cases of direct payment and letter of credit guarantee reimbursement, the equivalence to the loan currency will be determined based on the amount actually disbursed by the Bank.

3. *Records, inspections and reports:* The Bank will perform reviews in accordance with the fiduciary supervision plan. The records of subprogram 1 will be kept using the EMERIX system, and the reports to be submitted to the Bank will be produced directly by the system. The records of subprogram 2 will be kept using the UEPEX

system, and the reports to be submitted to the Bank will be produced directly by that system.

4. *Other specific requirements for financial management of projects that need to be established in the loan contract or agreement to be signed with the Bank:* Disbursements will be made as established in Articles 4.03, 4.05, 4.06, and 4.07 of the General Conditions.

V. Agreements and Requirements for Procurement Execution

Procurement of goods, works, nonconsulting services, and consulting services by the MINCyT through the National Agency for the Promotion of Science and Technology (ANPCyT) and by the JGN will be carried out in accordance with the policies set forth in documents GN-2349-9 and GN-2350-9, respectively. The executing agency has extensive experience in procurement gained over many years, most recently in loans 1728/OC-AR (TMP III), 2180/OC-AR (TIP I), and 2437/OC-AR (TIP II) financed by the IDB, in which those policies have been applied. Procurement will mainly be decentralized, except for items related to program administration and the works for components 1 and 3 of subprogram 1 and the related equipment, for an approximate cost of US$40 million.

1. Procurement execution

a. Procurement of works, goods, and nonconsulting services: Contracts for works, goods, and nonconsulting services[1] arising under the project will be included in the initial procurement plan and procurement subject to international competitive bidding (ICB) will use the Bank's standard bidding documents (SBDs). The program's sector specialist is responsible for reviewing the technical specifications for procurement when selection processes are being prepared. To strengthen the planning of procurement-related activities, the executing agency will use the online system known as the Procurement Plan Execution System (SEPA). The procurement plan will cover the first 18 months and will be updated annually or whenever necessary, using SEPA. Also, selection processes to be contracted directly[2] have been identified, such as the technology platform projects in component 2.

b. Selection and contracting of consultants: Consulting service contracts arising under the program will be included in the initial procurement plan and will use the Bank's standard request for proposals (SRFP). The program's sector specialist is responsible for reviewing the terms of reference for consulting services. Each area requiring consulting services will be responsible for determining the technical viability of the terms of reference, while the unit in charge of process management will verify their consistency with the SRFP. Also, for the methodologies for the selection and contacting of consulting

[1] Policy for the procurement of works and goods financed by the Inter-American Development Bank (document GN-2349-9), paragraph 1.1: Nonconsulting services are treated as goods.

[2] Direct contracting must be duly justified.

services, the executing agencies will use SEPA for process planning and administration.

Selection of individual consultants*:* In cases identified in the approved procurement plans, individual consultants may be solicited through local or international advertisements in order to assemble a shortlist of qualified individuals, as established in document GN-2350-9, Section V, paragraphs 5.1 to 5.4. In cases of service contracts, the consultants will provide the executing agency with the midterm or final reports requested. Approval by the competent authority of a performance evaluation with a minimum rating of satisfactory will be sufficient for contract renewal. This evaluation will be conducted once annually to facilitate approval by the relevant authorities. The consultants in the ANPCyT who have been providing services under loans 2180/OC-AR (TIP I) and 2437/OC-AR (TIP II) meet the above requirements and may be contracted to ensure the continuity of services.

Training: The procurement plan describes the procurement applicable to program components that include training, which are contracted as consulting and nonconsulting services.

c. Recurring expenses: Will be covered by the counterpart and incurred following the administrative procedures of the executing agency, which have been reviewed and accepted by the Bank. These expenses are mainly related to program administration and include: office rental, automobile leasing for supervisory tasks, communications, translations, banking fees, office supplies, advertising or notices, photocopies, per diems, travel, electricity, telephone, security, and postage.

d. Business practices: Procurement for projects selected through public competitions or the open-window method, whose beneficiaries are small and medium-sized enterprises, will be carried out in accordance with the private sector rules.

e. Other: The program will finance projects selected through national public competitions or the open-window method. It also includes a component for postgraduate study grants abroad to be executed by the JGM. The Operating Regulations will establish: (i) eligibility and evaluation criteria for project selection and the entities responsible for the different evaluation phases; and (ii) eligibility criteria and procedures for the recruitment and selection of grant recipients.

2. Table of thresholds (US$ thousands)

Works			Goods[3]			Consulting	
International competitive bidding	National competitive bidding	Shopping	International competitive bidding	National competitive bidding	Shopping	International consulting advertising	Shortlist 100% national
≥ 5,000,000	< 5,000,000 ≥ 350,000	< 350,000	≥ 500,000	< 500,000 ≥ 100,000	< 100,000	> 200,000	< 500,000

3. Major procurement processes

See summarized procurement plan at required link 2.

4. Procurement supervision

Procurements will be supervised on an ex post basis according to the following table.[4] The ex post review visits will take place every 12 months, according to the program supervision plan. The ex post review reports will include at least one physical inspection visit[5] selected from the procurement processes subject to ex post review. It should be noted that at least 10% of the contracts reviewed will be physically inspected during the program.

Threshold for ex post review Consulting services			
Works	Goods	Consulting services	Individual consultant
< 5,000,000	< 500,000	< 200,000	< 50,000

Note: The thresholds established for ex post review are applied on the basis of the executing agency's fiduciary execution capacity and may be modified by the Bank to the extent that this capacity changes.

5. Special provisions

a. **Measures to reduce the likelihood of corruption:** The provisions of documents GN-2349-9 and GN-2350-9 relating to prohibited practices (lists of ineligible companies and individuals kept by multilateral agencies) will apply.

6. Records and files

Documentation of procurement processes will be kept at the offices of MINCyT-ANPCyT, as the entity responsible for the central program executing unit, and by the JGM. It is very important for ex post reviews that the records and files be kept in due order, classified, and updated, including all the documentation arising

[3] Includes nonconsulting services.

[4] The methodology described in the document on ex post procurement guidelines will be used.

[5] The inspection verifies the existence of the procurement, leaving quality and compliance with specifications to be verified by the sector specialist.

from the procurement and contracting processes, which will be described in the Operating Regulations.

Financial management

1. Programming and budget

The executing agency's budget includes programmatic categories and other classifications by expenditure purpose (subheadings), namely: personnel expenses, consumer goods, nonpersonnel services, fixed assets, transfers, financial assets, debt service and reduction in other liabilities, and other expenses. Depending on their economic nature, items are classified as current expenditures, capital expenditures, or financial application of funds. Furthermore, internal financing sources may include the national treasury, own resources, specific appropriations, and internal transfers. External financing includes external transfers and credits.

No problems are expected in terms of management, timeliness of local counterpart contributions, or system delays affecting execution.

2. Accounting and information systems

Subprogram 1 will use the EMERIX system as the **financial management system.** Subprogram 2 will use the UEPEX system as the **financial management system.** Cash-basis accounting will be used and the International Financial Reporting Standards (IFRS) will be followed when applicable, in accordance with national criteria. The financial reports required will be those established in Clause 5.03 of the Special Conditions. Subprogram 2 will also submit audited midterm financial statements covering the first half of each year to be submitted to the Bank by 30 August of each year.

3. Disbursements and cash flow

Loan proceeds requested from the Bank will be disbursed as established in clauses 4.03, 4.05, 4.06, and 4.07 of the Special Conditions. The funds will be deposited in a special bank account to be opened by each of the subprograms for that purpose and will be used to pay for project expenses and investments, as planned. The executing agencies will maintain strict and adequate control over use of the funds disbursed, using mechanisms to verify and reconcile the balances appearing in their records with the balances for the same items appearing in the Bank's records (LMS1 report).

Supporting documents for expenses or payments to the accounts need not be appended to the accounts, however, this does not imply Bank approves of those expenditures.

At the request of the JGM, the MINCyT will use its own resources to finance initial eligible expenditures under subprogram 2 for up to US$1 million. For purposes of reimbursing the expenditures from the Bank loan, the MINCyT and the JGM will exchange notes that fully establish the nature and origin of the advances of funds and precise instructions on how timely reimbursement of the funds advanced by the MINCyT is to be made. Drafts of the notes were submitted to the Bank for review and comment. The Bank expressed its agreement with the mechanism selected and with the texts of the notes. Therefore, the exchange of those notes will be considered sufficient evidence of the JGM's instructions authorizing use of a Bank disbursement to repay the advance made by the MINCyT, with

the funds to be deposited into a different account from the one assigned to subprogram 2. The Bank will act expeditiously in accordance with the instructions.

4. Internal control and internal audit

The national internal audit authority is the Sindicatura General de la Nación [Office of the Comptroller General] (SIGEN). Internal audits of each executing agency will be conducted by the internal audit unit (UAI).

5. External control and reports

The Auditoría General de la Nación (AGN) [National General Auditing Office] is an agency of, and provides assistance to, the National Congress in controlling public sector accounts. Its creation and functions are regulated under Title VII, Chapter I of Law 24,156 on Financial Administration and External Control Systems, which specifies that the AGN has its own legal status and operational independence and is therefore also financially independent. Its assets are composed of all the property assigned to it by the State, the assets formerly belonging to the Tribunal de Cuentas de la Nación, and those transferred under court proceedings.

The agreement with the AGN, which will perform the external audits of the program, will include:

> The annual financial statements and a report on the internal control system of each subprogram will be included in the scope of the audits.
>
> Audited financial statements corresponding to the first half of each year for subprogram 2.

6. Financial supervision plan

The initial financial supervision plan is based on the risk, institutional, and fiduciary capacity assessments conducted on the basis of onsite and desk reviews of the project, and includes operational, financial, and accounting activities; compliance and legal considerations; their frequency; and identification of responsible parties.

At least one annual visit is planned to the executing units to evaluate the internal control environment, use of the financial management system, compliance with procedures, security of documentation, compliance with the recommendations made by the external auditors and the Bank, and the effectiveness of control over the resources of subexecuting agencies in the case of subprogram I.

7. Execution arrangements

The details on program execution can be found in the draft Operating Regulations and in the Proposal for Operation Development.

8. Other financial management agreements and requirements

It will be necessary to establish and formalize the entities with financial and procurement responsibilities which will be accountable for fulfilling the fiduciary obligations and acting as liaison with the Bank.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/12

Argentina. Loan ____/OC-AR to the Argentine Republic
Technological Innovation Program III

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Argentine Republic, as Borrower, for the purpose of granting it a financing to cooperate in the execution of a technological innovation program III, which constitutes an individual operation under the Conditional Credit Line for Investment Projects (CCLIP) approved on 2 de September de 2009 by Resolution DE-90/09. Such financing will be for an amount of up to US$200,000,000 from the Ordinary Capital resources of the Bank, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on __ _____ 2012)

LEG/SGO/CSC/IDBDOCS#36892642
AR-L1141