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Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 17-Jan-2017 | Report No: PIDISDSC20388



BASIC INFORMATION

A. Basic Project Data

Country Argentina	Project ID P161798	Parent Project ID (if any)	Project Name Salado Integrated River Basin Management Support Project (P161798)
Region LATIN AMERICA AND CARIBBEAN	Estimated Appraisal Date Feb 13, 2017	Estimated Board Date Apr 06, 2017	Practice Area (Lead) Water
Lending Instrument Investment Project Financing	Borrower(s) Province of Buenos Aires	Implementing Agency Ministry of Economy, Province of Buenos Aires	

Proposed Development Objective(s)

To strengthen the capacity of the Provincial Water Authority for integrated water resources planning, management and monitoring, and enhance flood protection in the Salado River Basin.

Financing (in USD Million)

Financing Source	Amount
Borrower	75.00
International Bank for Reconstruction and Development	300.00
Total Project Cost	375.00

Environmental Assessment Category A-Full Assessment	Concept Review Decision Track II-The review did authorize the preparation to continue
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Other Decision (as needed)

B. Introduction and Context

Country Context



1. **After taking office in December 2015, the new Argentine Government moved with significant speed to implement reforms.** The Government has rapidly implemented various macroeconomic reforms and initiated a program of structural reforms. These include inter alia (a) the elimination of export taxes on major crops, beef, and most industrial manufacturing products and the reduction by 5 percent of export taxes on soy; (b) unification of the exchange rate, effectively ending most foreign exchange restrictions; (c) moving from a system of discretionary to automatically provided import licenses in line with World Trade Organization procedures; (d) resolution of the dispute with holdout creditors; and (e) measures to enhance public transparency and accountability. In addition, the National Institute for Statistics launched a new inflation index and improved the overall quality of statistics. Electricity tariffs and transport fees were increased to reduce subsidies, while protecting low-income users with a social tariff. Broader efforts to reduce energy subsidies (which account for a large portion of fiscal deficit) are under way.
2. **Economic activity is estimated to have contracted in 2016, but growth is expected in 2017.** Economic activity is estimated to have contracted by 2.3 percent¹ during 2016, taking a toll on labor markets, where 92,000² formal private sector jobs were lost since October 2015 (1.5 percent of total employment). However, the economic contraction has been decelerating during the second semester of 2016 and economic growth is expected in 2017 (+2.7 percent³) on the assumption that the positive impact of recent policy changes kicks in and the global economy recovers. The median estimate for inflation for 2016 is 40 percent⁴, mostly due to currency depreciation and the reduction of energy and transport subsidies. However, inflation has decelerated since August 2016. The central government primary deficit in 2016 was in line with the target established (-4.8 percent). Fiscal consolidation in 2017 will be more gradual than originally planned due to increased social spending, including the adjustment of pension transfers.
3. **The Argentine Government has made important steps to address the key macroeconomic imbalances with the objective of creating an environment conducive to economic growth and employment creation.** Argentina offers many opportunities in a weak global environment, and there is a strong interest from foreign investors and firms. Going forward, Argentina aims to continue building a growth enabling policy framework to enhance credibility and support broad based growth and quality employment. In particular, the following policies will be important to permanently reduce inflation and put Argentina on a sustainable growth path: (a) increase public spending efficiency as well as its efficacy and reduce the fiscal deficit in line with government targets; (b) continue fostering the credibility of the Central Bank so that monetary policy can further anchor inflation expectations; (c) strengthen competitiveness and productivity through an improved business environment and investments in infrastructure and increasing competition in markets and improving the regulatory framework in sectors; (d) continue strengthening the credibility of official statistics; and (e) continue improving the provision of public goods (including transportation, health, and education) and reducing regional disparities.
4. **Because of its geographical characteristics, Argentina is exposed to a variety of natural hazards.** The intensity of natural climate variations in many parts of Argentina with several wet years following a period of dry years has significantly increased during the last decades due to the influence of stronger El Niño Southern Oscillation (ENSO)

¹ Source: World Bank Group. 2017. *Global Economic Prospects, January 2017 Weak Investment in Uncertain Times*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1016-9.

² Source: Ministerio de Trabajo, Empleo y Seguridad Social

³ Source: World Bank Group. 2017. *Global Economic Prospects, January 2017 Weak Investment in Uncertain Times*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1016-9.

⁴ Source: Banco Central de la República Argentina. 2016. *Resultados del Relevamiento de Expectativas de Mercado (REM)*, Diciembre 2016.



events and due to climate change.⁵ The natural disaster loss per capita in Argentina is high and relates predominantly to hydro-meteorological hazards, which represent 58 percent of the total economic losses over the last 50 years.⁶ According to Swiss-Re, Argentina is among the 10 emerging economies with the highest flood hazard exposure, with potential losses in excess of US\$ 3 billion a year (0.5% of GDP).

Sector and Institutional Context

5. The Province of Buenos Aires, with an area of over 300,000 km² and 16.5 million people, is the largest in the country and accounts for over 3 percent of Argentina's GDP.⁷ Over recent decades, extreme flood and drought events caused casualties and severely affected the economy, in particular the important agriculture and livestock sector. During the period 2000-2011, floods in the province caused nearly US\$4.5 billion in losses and affected 5.5 million people⁸. In 1980 over 30 percent of the total area of the Province was flooded, the damp phases 1985-1987 with devastating flood events throughout the Province generated constant flooding of up 11 consecutive months in some of the areas. During the 2001 event, 2,000,000 ha were flooded resulting in losses of US\$700 million in the agriculture and livestock sectors⁹. Between the cyclic wet periods, several droughts, the strongest being in 1999 and 2007, affected the Province and caused significant losses in agriculture and livestock production.^{10,11}

6. The Salado River Basin has a total area of 170,000 km² covering over 50 percent of the Province of Buenos Aires. With over 1.4 million inhabitants, the highly productive basin generates 25-30 percent of Argentina's grain and meat production¹² contributing significantly to country's exports and global food security. The Salado River is 640 km long and has an average flow of 80 m³/s. It is a lowland river and its basin is characterized by very mild slopes and poor natural drainage. Population density is low, and land use is characterized by extensive agriculture and livestock. In the humid pampa, virtually no autochthonic habitat remains. The Samborombón Bay, located downstream the basin, is a RAMSAR site, a wetland considered to be of international importance¹³, and the basin includes a number of other wetlands with great importance for bird populations.

7. Hydrological processes are mainly vertical and the water balance is controlled by precipitation and evapotranspiration with only about 10 percent of the 870 mm average rainfall (1911-1996)¹⁴ generating runoff. Slopes of less than 0.01 percent in many parts of the basin and the low natural drainage capacity of the system result in very low velocities of water flow. The infiltration of standing rainfall water results in rising groundwater tables that, during large rainfall events, often lead to long-lasting and widespread flooding.¹⁵ As throughout the Province, since

⁵ Caprioli (2010): Extreme Hydrologic Events in North Area of Buenos Aires Province (Argentina)

⁶ 'Staying afloat: Flood Risk in Argentina', Swiss-Re, 2016,

http://media.swissre.com/documents/Swiss_Re_Argentina_Flood_Risk_Publ_long.PDF.

⁷ 'Buenos Aires—Ficha Provincial, Octubre 2015', Ministry of Economy,

http://www.economia.gov.ar/peconomica/dnper/fichas_provinciales/Buenos_Aires.pdf.

⁸ World Bank 2016, PID AR Flood Risk Management Support Project for the City of Buenos Aires (P145686)

⁹ Scarpatto (2008): La inundación del año 2001 en la Provincia de Buenos Aires, Argentina

¹⁰ Caprioli (2010): Extreme Hydrologic Events in North Area of Buenos Aires Province (Argentina)

¹¹ Provincial Directorate for Hydraulic Works (DPOH, 2016): "Los desastres en la cuenca del Salado", short summary provided by DPOH

¹² Halcrow (1999): Plan Maestro Integral Cuenca del Rio Salado

¹³ The Ramsar Convention is an international treaty for the conservation and sustainable use of wetlands, also known as the Convention on Wetlands. It is named after the city of Ramsar in Iran, where the Convention was signed in 1971.

¹⁴ Halcrow (1999): Plan Maestro Integral Cuenca del Rio Salado

¹⁵ Kuppel (2015): What does it take to flood the Pampas? Lessons from a decade of strong hydrological fluctuations



1980s a significant increase in flood frequency and intensity can also be observed in the Salado Basin. In 2015 the highest observed precipitation ever over the basin resulted in the flooding of over 800,000 ha and killed 6,000 cattle.¹⁶

8. The increased flood risk is related to the higher average rainfalls, land use changes and the resulting higher groundwater tables. Over the last twenty years, the average level of groundwater in the Argentine Pampa has risen by over 2 meter¹⁷. In large parts of the upper river basin, annual precipitation increased from 750 mm (1920-1985) to 1100 mm (1986-2001), and also in the lower Salado an increase of over 10 percent can be observed during the same period¹⁸. At the same time, evapotranspiration decreased substantially due to the transition from pasture land (cattle breeding) to intensive agriculture, in particular soya. From 1975 to 2005, the area cultivated with soy bean increased from 1 to 25 percent, mainly at the cost of pasture land.¹⁹ The evapotranspiration over the perennial pasture with an average root depth of 3.5 m is much higher than over soya with shallower roots covering the soil for only 5 months a year (November to March). Dry periods between the wet years cause agricultural droughts with significant losses, as in 2007 when over 20 percent of the wheat production was lost due to water scarcity.²⁰

9. In response to the higher flood and drought risks, the Province of Buenos Aires with the support of the World Bank elaborated the Integrated Salado River Basin Management Plan (PMI – Plan de Manejo Integral de la Cuenca del Río Salado) in 1997-1999. This masterplan for the Salado River has three main objectives: (i) reduce negative impacts of floods and droughts on the basin's economy and consequently on the provincial and national economy; (ii) improve the economic conditions of the basin through sustainable development and in particular economic activities in the agriculture and livestock sector; and (iii) develop and preserve the environmental value of the basin, in particular the wetlands. To achieve these objectives, a timeframe of 15 years was anticipated and the following activities were identified: institutional reform, non-structural measures to improve water resources management, drought risk reduction, environmental protection and promote tourism, measures to promote the economic development in the agriculture and livestock sector and a set of structural measures for improving drainage, flood protection, rural infrastructure and connectivity. The most important infrastructure works proposed in the plan were flood regulation along the main river, hydraulic works to raise and regulate existing lagoons, flood protection for urban centers, and improvement of rural roads, bridges, powerlines, and culverts.

10. PMI implementation started in 2000 and important progress has been made in particular in the execution of structural measures. Major investments were made in the canalization and infrastructure for the regulation of two lagoons in the upstream section (Mar Chiquita and Laguna Salado). Table 1 summarizes the progress made in canalization of the main river and the sections still to be implemented. Until September 2016, 477 km of the Salado River were canalized and 99,151,883m³ of sediments dredged.²¹ Effectiveness of the canalization has already been proven. The flood generated by the highest so far observed precipitation in 2015 drained in a record time of 6 weeks. Similar events prior to the canalization produced flooding that lasted 3-6 months.²²

¹⁶ La Nación (2015): <http://www.lanacion.com.ar/1822371-inundaciones-cuenca-salado>

¹⁷ Garcia (2016): Land-use as a potential strategy for managing water table depth in flat basins with shallow groundwater

¹⁸ Herzer (2013): Flooding in the Pampean Region of Argentina: The Salado Basin in Building Safer Cities: The Future of Disaster Risk

¹⁹ López Laxague et al (2014): Influencia sobre el nivel freático en zonas de llanura debido al efecto del cambio en el uso del suelo y los condicionantes climáticos

²⁰ DPOH (2016): "Los desastres en la cuenca del Salado", short summary provided by DPOH

²¹ DPOH (2016): Presentation on the implementation of the Salado River Basin Plan, June 2016

²² DPOH (2016): Personal conversation with Marcelo Rastelli



Section	Length	Volume dredged	% Progress	Year completed	Investment
I	48 km	19,210,615 m ³	100	2004	US\$ 44,664,255
II	57 km	22,441,268 m ³	100	2006	US\$ 68,004,079
III	118 km	44,000,000 m ³	91	2010	US\$ 392,984,733
IV	199 km	100,000,000 m ³	0	Not started	US\$ 792,000,000
V	84 km	20,000,000 m ³	0	Not started	US\$ 198,000,000
Canal Las Horquetas	254 km	13,500,000 m ³	199	2001/2002	US\$ 133,333,333

Table 1: Canalization of the Salado River. Progress made until June 2016 (Source: DPOH)

11. Despite the progress in the implementation of the structural measures of the PMI, only little progress has been made in the implementation of the recommended non-structural measures and institutional reform. The Province has thus far implemented the PMI with the sole priority in the infrastructure component; no funds have been allocated for the implementation of soft measures. Relatedly, institutional capacity for environmental monitoring and planning is still low.

12. The Provincial Water Authority (Agencia del Agua, ADA) is the competent authority for water management with more than 600 staff and a large number of functions and responsibilities, including the inventory and preservation of water resources, issuing water use permits, developing and enforcing norms and regulations. ADA is the core entity responsible of implementing the provincial water law and it has very limited local presence in the vast territory of the Province. It has created 9 sub-basin committees within the River Salado Basin, in compliance with the provincial water law. But a basin-wide commission does not exist. The committees' members are representatives of municipalities, the Ministry of Infrastructure and Public Services and the Ministry of Agroindustry; farmer groups, civil society and academia are not yet represented. Said membership composition is one of the main reasons that none of the conformed committees is actually functioning. Some consortia of farmers to develop local flood protection infrastructure are functioning but with limited coordination with ADA.

13. In 2007, the Province of Buenos Aires together with the National Technical University updated the PMI and assessed its implementation progress²³. A new hydrological and hydraulic model (MIKE-SHE) was developed to assess the impact of the already executed structural measures and to re-evaluate the designs of planned infrastructure projects. The study concluded that the PMI overall objectives and proposed structural and non-structural measures are still valid and that the Province should seek to continue their implementation. The study further underlined the importance of the integrality of the plan and suggested not to disregard the proposed non-structural measures on institutional strengthening.

14. The management of the Salado river and the continued implementation of the PMI are priorities for the Province of Buenos Aires. The provincial authorities acknowledge the need for an integral approach, rather than just focusing on the structural measures and recognize the importance of strengthening capacities for water resources management not only in the Salado Basin, but in all the Province to be able to manage flood and drought risks. The project will support the Province in building institutional capacity for integrated water resources management in the basin and in the Province and finance the continuation of the PMI infrastructure works.

²³ Ministry of Infrastructure (2007): Plan de Desarrollo Integral de la Cuenca del Rio Salado



C. Proposed Development Objective(s)

15. To strengthen the capacity of the Provincial Water Authority for integrated water resources planning, management and monitoring, and enhance flood protection in the Salado River Basin.

Key Results (From PCN)

1. Decentralized offices established and operational* of the Provincial Water Authority with capacities to regulate the management of water resources, facilitate dispute resolution, and support the creation and functioning of basin committees and farmer associations to manage flood and drought risks;
2. Participative water basin committees established and in operation* with a clear legal framework defining competencies of its members including government officials, representatives of the civil society, the productive sector and academia;
3. Comprehensive River Basin Management Plan, including an environmental management plan for the Salado Basin developed and under implementation;
4. Hydraulic discharge capacity of the Salado River in 33 Km of its middle section increased to contain events of an average return period of 10 years;
5. Area under enhanced flood protection;
6. Development and initial operation of an early warning system for the Salado River, embedded in a provincial hydro-meteorological monitoring and information system;
7. Number of project beneficiaries of which X% are women.

D. Concept Description

16. **The project will contribute to the implementation of the PMI that remains valid, and intervene and create impact at different scales:** Strengthen the capacities of the Provincial Water Authority (ADA) and the direction of hydraulic works of the Provincial Directorate for Hydraulic Works (DPOH); support and further improve the implementation of an integral management approach for the Salado Basin; and improve drainage capacity of the Salado River through canalization works in the section IV-1-B.

Component 1: Integral Basin Management (US\$ 28 million, of which WB loan is US\$ 22.4 million)

17. This component aims at strengthening institutional capacity for water resources management and environmental and hydrological monitoring at different levels through the implementation of non-structural measures of the PMI, contributing significantly to achieving a holistic and sustainable management approach.

18. Review of the regulatory framework: The project will review a number of existing norms to facilitate the institutional reform of ADA and DPOH. The most urgent review and adjustment will be needed in order to make the water committees operative. Technical norms for hydraulic works and environmental management, and regulations to identify flood prone areas with restricted land will also be revised under this sub-component.

19. Strengthening water resources planning and management functions assigned to ADA by the Water Law. With this objective, the inventory of surface and ground water resources, the cadastral survey of land and water uses and infrastructure along with the studies and knowledge creation activities, studies and data collection systems financed by the component will be integrated in a *Salado River Basin Management Plan (SRBMP)*, conceived as the operational instrument for WRM in the basin.²⁴ A technically solid, transparent and participatory water planning process will create

²⁴ Different from the more strategic, less operational MPI. The SRBMP will be a planning tool to include specific measures for WRM in short periods of time and will be frequently updated.



the space for supporting decisions to be taken in the basin. The Plan will propose and implement a gradual and realistic institutional strengthening program, assessing the existing challenges and propose measures to improve flood and drought management infrastructure. The SRBMP, in the context of the economic, social and environmental development policies, will propose water resources management targets and support any other activity in the Water Resources Management (WRM)'s domain to reduce risks of floods and droughts and make agriculture more resilient to climate variability and change.

20. Decentralization of WRM functions: To address the limited institutional outreach of ADA, the project will provide technical assistance to establish a decentralized structure with local offices with capability of monitoring the system and delivering water resources management and regulatory services in a timely manner. For the time being water charges are representing only 40 percent of ADA's budget. This sub-component will study and implement measures to drastically increase the number of users registered and billed, to make the water charges collection system more effective and ADA's finances more sustainable. The project will also support ADA in developing and implementing a new structure for water basin committees with clearly defined competencies that include all relevant stakeholders.

21. Strengthening Environmental Management. The project will support the environmental department of DPOH through collaboration with the Provincial Agency for Sustainable Development (OPDS) and the ADA's environmental staff, to elaborate an Environmental Management Plan for the basin, and support its initial implementation, including monitoring of wetland ecosystem variables and identification of measures to preserve the environmental benefits of flooding in the Salado basin. This will be embedded in the SRBMP.

22. Management of Hydro-meteorological Risks: This sub-component aims to develop capacity for hydro-meteorological observation and analysis, using information to better understand climate variability in the context of the ENSO cycle, enabling seasonal forecast for better agricultural planning, and overall management of hydro-meteorological extremes. In 2015, the World Bank assisted the Province to analyze the current capacities and develop a concept to improve both data collection and use of related information by building a new institutional framework that fosters exchange and coordination amongst all involved stakeholders²⁵. The project will install an observation network in the Salado Basin and establish a Hydro-environmental Monitoring and Control Center at central level to administer, analyze and publish collected data throughout the Province. An early warning System to provide meteorological and climate forecast and warning flood and drought events in the Salado River Basin will be designed and implemented by the Hydro-environmental Monitoring and Control Center at ADA.

23. Knowledge management: DPOH and ADA have identified a series of surveys and studies required to support the planning process and decision making at different stages and levels. Reducing the considerable gap of information and knowledge requires a consistent a systematic effort to develop further scientific knowledge existing in various academic institutions through a series studies to be financed by this component covering the following topics: systematic assessment of the impact of changes on land use and cropping pattern on flood and drought generation, sediment dynamics in the basin, impact of deforestation, evaluation of the irrigation potential of the basin, ground water resources and management strategy, water and salt balance, and land erosion conditions and trends at SRB.

24. Planning Land Use Management: Research shows that an active land use management can contribute to decreasing flood risks. More specifically, the project will systematize existing evidence²⁶ suggesting that the land use change from perennial pasture to soya crops during summer months, often without any winter crops, led to a significant rise of the

²⁵ World Bank (2016): Observatorio Hidro-ambiental

²⁶ Garcia (2016), Lopez (2014), Badano (2010) and others



groundwater table with strong effects on flood frequency.

25. GIS platform for planning and decision making: The information generated by these studies and other inventories, surveys and monitoring campaigns, processing of remote sensing datasets and thematic maps collected regularly will be incorporated into a large *GIS platform* financed by the project, accessible by ADA/DPOH operators, decision makers at GoBA and SRB committees, and by users from different sectors.

Component 2: Canalization, River Dredging and Rural Infrastructure (*US\$ 341 million, of which WB loan is US\$ 273 million*)

26. **Since 2000, the Province has been implementing structural measures of the PMI, in particular the canalization of the lower Salado and the Las Horquetas Canal in the west of the basin to increase drainage capacity.** The river cross sections are being augmented by dredging and widening the river bed (40 m), leaving also adjacent 60 m wide berms. Dredged sediments are used to elevate adjacent farmlands and improve their productivity. The canalization of the Salado River enables the DPOH to construct secondary dams and gives the farmers the chance to better drain their fields by tertiary canals. The impacts of all canalization works, including tributary canals, have been thoroughly modelled:²⁷ Effects of the already implemented canalization on flood duration have been significant, even though the canalization of the upper Salado and the construction of secondary and tertiary canals remain to be completed. In addition to the reduction of the flood risk (from 1-2 years of return period to 10 year flood return period), and consequent reduction of impacts in agriculture / livestock production, avoided damage of important roads and bridges will be an important benefit of this component.

27. Sections I and II of the canalization in the lower river have been finalized, and Section III has reached 91 percent implementation. For the full implementation of the structural PMI components, the Province foresees to canalize the remaining Sections IV and V. Section IV has been parted into four legs. The first half of leg 1 (IV-1-A) of 26km will be financed by the Federal Government. For the second leg (IV-1-B), a 33 km long stage from Beguerie-Lobos Bridge to the Bridge of National Route No 5, close to the city of Roque Perez, the Province is seeking for World Bank financing. This will include the dredging of the respective river section and the deposition of the nutrient-rich sediment in ring-fenced parcels on agricultural farmland, as well as enhancement of four road bridges, and three railroad bridges.

²⁷ Menéndez (2012): Evaluación de las Inundaciones y las Obras de Drenaje en la Cuenca del Salado (Prov. Buenos Aires) mediante Modelación Numérica

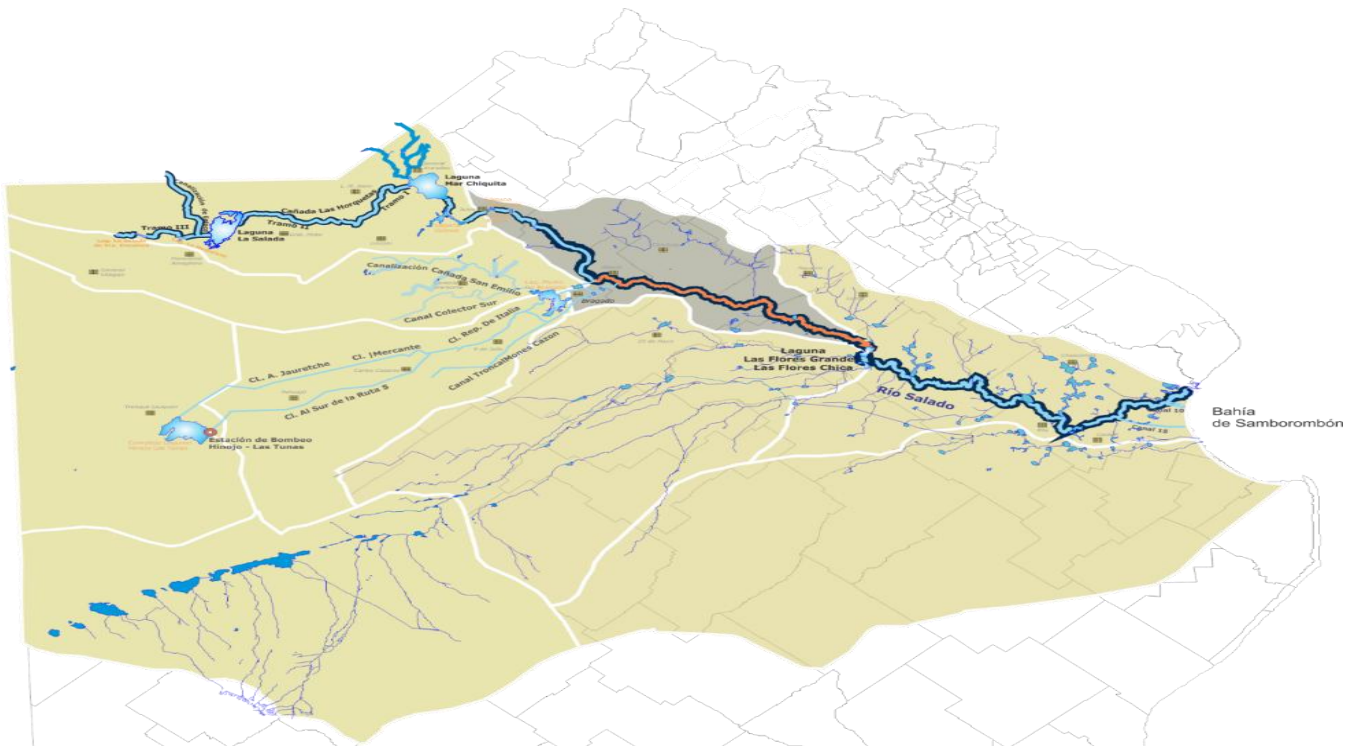


Figure 1: Salado Basin with the canalized main stream. Section IV is marked in orange. Source: DPOH

28. Thus far, experience with the deposition of sediments²⁸ on adjacent farmland has been positive, yet no systematic evaluation of the approach has been conducted. Nonetheless, interviewed farmers that have benefited from the interventions are satisfied. The process entails removal of the topsoil layer, deposition of the dredged material, and re-deposition of the original soil on top. A number of criteria have been established for the site selection of the deposits, the principal one is the need to have mutual agreement with the landowners. Other criteria include: no deposit in wetlands or within the inundation area of the 2001 flood, and hydraulic modelling has to prove that the deposit will not obstruct the flow of the main river or any tributary water courses.

Component 3: Project Implementation, Supervision and Communication (US\$ 5.7 million, of which WB loan is US\$ 4.6 million)

29. This component seeks to support the Province in efficient project management. It covers fiduciary arrangements and audits, environmental and social management of the project activities, including coverage of sufficient and qualified human resources. This component will also provide assistance in the formulation and implementation of a communication strategy and plan, including consultation on the project objectives and activities with local stakeholders. A “citizen engagement strategy” will be developed involving farmers, as co-owners and main beneficiaries of the project in the supervision of the river works.

²⁸The canalized lower Salado River already suffered a number of large flood events, including the highest ever observed rainfall event in 2015 without any structural damage. Observed sedimentation that would require further dredging in the river bed has been minimal. Observed erosion on the fields is rather related to land use change than the higher drainage velocity. The selected approach to flood protection through the canalization of the river has proven to be effective, but it still needs to be analyzed and evaluated in a systematic way.



Note to Task Teams: The following sections are system generated and can only be edited online in the Portal.

SAFEGUARDS

A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The Salado River (SR) Basin is mainly flat, the groundwater table is very high and the river often overflows, creating large floods that take months to drain. The river is not navigable and there are no fishermen whose livelihood would depend on the river; the fishing along the river is recreational/sportive, including a couple of private installations for said activities outside the direct impact area of the project works. To a lesser extent, unregulated trade of fish for aquariums also takes place along the river. Regarding the application of the World Bank environmental safeguards in the project area, particular attention was paid to natural habitats and physical cultural resources: Despite the fact that the humid pampa in the intervention area is overall intervened by anthropogenic activities, presence of numerous wetlands with important bird populations highlights the environmental value of the Salado River Basin. Particularly, the basin includes the Samborombon Bay, approximately 300 km away from the leg of canalization and dredging works to be financed by the project. This is a RAMSAR site recognized as a wetland of international importance. Otherwise, mapping of the wetlands within the basin and the rest of the Province of Buenos Aires (PBA) remains a pending task that the project will address amongst the initial activities to create a basin-level Environmental and Natural Resources Management Plan (ENRMP). In terms of physical cultural resources (PCR), the basin as a whole is known for paleontological findings, such as a number of prehistoric animal fossils discovered during the exceptional droughts of 2009 in the municipalities of Roque Perez and Lobos when the SR dried up. There are, however, no known PCR within the direct impact area of the projected canalization and dredging works. In terms of land use, the Salado Basin has low population density, the main land use consisting of large-scale agriculture and livestock. The project will invest in improving the knowledge related to the effects of land use changes in the basin's hydrology.

B. Borrower's Institutional Capacity for Safeguard Policies

The environmental management of Component 2 will rely on the Department of Environmental Studies (DES) of the DPOH. The DES has a small inter-disciplinary team of competent professionals in charge of the EIAs, monitoring the sustainability of the structural works along the SR dredging. Based on the available information, past experience, and the WB assessment, including consultation with relevant NGO's, there are no outstanding environmental or social issues and/or observed negative impacts or complaints related with the execution of the PMI works. The DPOH has solid capacity in and significant experience with the environmental and social management of the structural PMI works that include formal and informal mechanisms of public involvement in place since the initial PMI implementation. The Bank has conducted "due diligence" on the already conducted downstream works based on desk review of relevant documents, discussions with the DPOH personnel, and field visits.

Consistent and systematic environmental monitoring of the dredging works is being conducted by the DPOH. Nevertheless, lack of closer assessment or studies on the hydrological dynamics within the SR Basin in general, and the aquatic and bird life in the wetlands in particular, have been identified as a key weakness of the PMI implementation to date. The PBA will assign project funds under Component 1 to address said weaknesses and to elaborate the ENRMP at the basin level. The capacity of the DES will be strengthened to lead the preparation of the ENRMP. The ADA will be supported to gain capacity and adopt tasks geared at integrated environmental management and inter-institutional collaboration. During project preparation the Bank will conduct a capacity assessment to identify specific measures that will be taken to strengthen the capacity of DES/DPOH and ADA to manage environmental and social risks.



The project social management will rely on the DPOH, which has a vast experience executing the canalization works using communications and negotiations with landowners. Although with no formal grievance and redress mechanism (GRM) established to date, affected farmers and the DPOH supervision team have had a clear and timely communication system in place. The DPOH will adopt enhancements to strengthen this system and will add a social specialist to the DES to help implement and document the negotiation processes and manage grievances following the GRM to be developed as one of the ESMP Programs.

C. Environmental and Social Safeguards Specialists on the Team

Tuuli Johanna Bernardini, Pilar Clemente Fernandez, Eleonora Beatriz Camalli

D. Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>The project merits classification as Category A project due to (i) the type and scale of the structural works to be constructed: 33 km of river dredging -widening and deepening-; replacement and/or enhancement works of the deposition of the nutrient-rich sediment in ring-fenced parcels on agricultural farmland, as well as enhancement of lines, four road bridges, three railroad bridges, and enhancement works in two recreational areas (“balnearios”); and (ii) the sensitivity of the area due to presence of water bodies and riparian buffers with environmental value particularly for avifauna. However, the track record of the environmental and social management of the 223 km of river dredging works done so far has not presented issues in the field, and such are neither expected due to the project-financed works.</p> <p>The environmental and social screening conducted on the project activities resulted in the identification of three key issues that the project will address under Component 1: (i) the lack of environmental monitoring on the PMI works’ impacts on the basin-level ecological balance; (ii) the study on the effects of the PMI works’ impacts on the basin-level hydrological balance; and (iii) the need to strengthen particularly the ADA capacity in environmental and integrated water resources management.</p> <p>A Regional Environmental Impact Assessment (REIA) at the PMI level was undertaken in 1999, putting emphasis on global and sectoral aspects and following</p>



key WB safeguard policies and guidelines. The sections of the river already dredged followed environmental management guidelines prepared as a result of the REIA process. The REIA baseline was updated in 2007, and an Environmental Management Manual for Hydraulic Works in the Rio Salado Basin was created for detailed design of the works.

A project-level Environmental and Social Impact Assessment (ESIA) and related Environmental and Social Management Plan (ESMP) is under preparation as per the requirements of a Category A project and will be completed by appraisal, based on the preliminary design of the proposed structural measures. Both documents will be based on the applicable WB requirements and the EIA undertaken by the DPOH at feasibility level.

The induced and cumulative impacts potentially caused by the river canalization and dredging works relate with: i) water quality (sedimentation and turbidity during the construction phase and potential increases of nutrients and fertilizers due to the increase of drainage from agricultural areas); and ii) ichthyofauna affectation (fish populations and fishing quality). Said impacts will be addressed in the ESIA and ESMP.

The ESIA report will also propose the basic alignments and features for the development of the Environmental and Natural Resources Management Plan (ENRMP) for the entire Salado River Basin that will be prepared during project implementation, based on an updated environmental and social diagnosis of the Rio Salado Basin. The ENRMP will contribute to mitigate, rehabilitate and offset those potential cumulative and indirect impacts to be generated through the construction and operation of the hydraulic works (e.g. water quality, fishery and other recreational activities, wetland management). The ENRMP will also address social impacts and be prepared through an inter-institutional and participatory process with consultations with local and regional actors on the scope and content of the ENRMP. Further, measures will be taken for institutional strengthening within the agencies



		<p>responsible to elaborate and initially implement the ENRMP; DPOH, OPDS and ADA.</p> <p>Regarding potential downstream social impacts of Component 1, (e.g. the possible implementation of measures that increase formal billing and registration of water users, or potential changes to tariffs, fees, or water allocation) low-income households may be disproportionately impacted. To mitigate such impacts, the ESIA will recommend that potential downstream social impacts be taken into account when assessing different measures to improve basin level management systems. This could include, for example, the consideration of targeted subsidies and lifeline water rates for low-income households.</p>
Natural Habitats OP/BP 4.04	Yes	<p>The project’s area of direct impact does not include natural habitats like wetlands as defined in Annex A of the OP 4.04, which could be affected by the planned canalization and dredging works, including the land parcels to be used to deposit the dredged material (“recintos”). However, the OP 4.04 is triggered, as the entire river bed of the Salado River is considered an important bird area despite the current overall heavy impact of anthropogenic activities at the basin level. The ESIA will cover the key aspects of a cumulative impact assessment of the river canalization and dredging works and Component 1 is expected to improve environmental monitoring and management at the basin level, affecting positively the Samborombon RAMSAR site and a couple of other existing, but currently scarcely managed protected areas. Yet the ESIA baseline information at the project-level confirms there are no wetlands in the project’s direct impact area, the environmental selection criteria set for the “recintos”, to be applied during project implementation, excludes any area that would imply degradation of a wetland or any remnant of natural or critical natural habitat. Overall, the ESMP under preparation will include provisions to ensure full compliance with this policy. At the basin level, the preparation of the ENRMP will cover identification of wetlands as the first step to improve management of wetlands and flooding plains.</p>
Forests OP/BP 4.36	No	<p>OP 4.36 is not triggered as the native vegetation of the project area does not include forests. Any potential</p>



		impact on planted trees will be covered through OP 4.01.
Pest Management OP 4.09	Yes	OP 4.09 is triggered for precautionary purposes yet the project will not imply direct consequences in increased use of pesticides or herbicides, nor require a stand-alone Integrated Pest Management Plan prior to Appraisal. Triggering the policy secures the project is prepared to address integrated pest management in any agriculture related activities in terms of indirect/inducted impacts as the increase in productive agricultural land may induce increased use of agrochemicals. The project will consider such use and include related measures, consistent with OP 4.09, in the project-level ESMP as needed, and particularly in the basin-level ENRMP that will pay attention to potential increase of the load of chemicals and nutrients flowing into the Samborombon RAMSAR site. Further, the ENRMP will strive to maximize other methods to reduce farming related pollution, e.g. guidelines on adequate rotation of crops and sowing of environmentally beneficial plant species.
Physical Cultural Resources OP/BP 4.11	Yes	There are no known physical cultural resources within the project's area of direct impact. OP 4.11 is triggered as the Salado Basin is known for paleontological findings of prehistoric animal fossils and the canalization and infrastructure works under the project might result in chance finds. A number of prehistoric animal fossils were discovered and rescued during the exceptional droughts of 2009 in the municipalities of Roque Pérez and Lobos when the Salado River dried up. The ESIA and related ESMP under preparation will include specific requirements and guidance to address potential chance finds in the civil works' contracts.
Indigenous Peoples OP/BP 4.10	Yes	According to the National Registry of Indigenous Communities, produced by the National Institute of Indigenous Affairs, there are no indigenous communities in the area impacted by the dredging and canalization works under Component 2. This information was confirmed through particular consultations conducted by the head of the Department of Environmental Studies of the DPOH with specialists e.g. from the School of Natural Science y Museum of the Universidad Nacional de La Plata.



However, there are indigenous peoples present in the Basin area, and the policy will be triggered due to the activities under Component 1. According to the current map of indigenous peoples developed by the “Encuentro Nacional de Naciones Originarias, ENOPO” four indigenous peoples are represented in different parts of the Province of Buenos Aires, all outside of the areas where the Component 2 works will be built. These peoples are: Tonokotes (31), Tehuelches (30), Querandies (25 communities), and Mapuches (13). In the Salado River Basin, according to the National Registry of Indigenous Communities, which provides information on the localization of the communities, only rural communities of Mapuches and Tehuelches are present.

Given that the nature, timing, and scope of the potential TA is not yet known, consultations on the IPPF will be limited to virtual consultations with the INAI (National Institute for Indigenous Affairs), and will be conducted prior to appraisal. Broad community support is therefore interpreted as general support from this national organization to the project and the IPPF. Broad community support for specific activities/sub-projects would then be obtained during implementation (with preparation of site specific IPPF-as and if required - following the procedures detailed in the IPPF). More in-depth consultations will be undertaken for site-specific activities during implementation as required.

Regarding the dredging and canalization works, the project doesn't trigger OP 4.12 due to the fact that the rich material dredged and excavated from the river is highly desired by many farmers and its disposal on private land bases on documented voluntary agreements. There are also potential dredging impacts on some small strips of land that some farmers may periodically use even though they know the land is not theirs (belongs to the GoA) and that its use is a calculated risk because floods often wipe out any investments. The existing information compiled so far indicates that the policy will not be triggered, but the final decision will be made after proper due diligence following recommendations by the Regional Safeguards Advisor (RSA) is completed. On the other hand, regarding the additional works, the policy is also

Involuntary Resettlement OP/BP 4.12

TBD



left TBD because the Bank is still awaiting more information on the need or not for land acquisition for seven bridges and access roads and the two recreational beach areas. So far there is no evidence (as the client has expressed) that land acquisition will be required.

The DPOH will document how the process of voluntary agreements with farmers have been implemented in the past, and determine if any cases of adverse (and unmitigated) crop damage on encroached river bank land has occurred in previous efforts prior to the World Bank involvement. If such cases are discovered in earlier phases prior to World Bank financing, some corrective actions may need to be considered, if there is a clear demonstration that such cases occurred in projects that are clearly linked or associated to the current Bank-financed project. The DPOH explained that information about the older works is difficult to find and therefore it was agreed that the documentation process will start with the most recent works: Sections 3I, 3II and 3III (built between 2011 and 2016). If evidence is found that cases of adverse (and unmitigated) crop damage on encroached river bank land has occurred in these sections, the documentation process will then continue with Sections 2 and 1.

Going forward, the DPOH will implement a Voluntary Agreement Protocol established for the project. This protocol will provide the basic principles and conditions to avoid potential impacts on the agricultural/cattle production as a result of the works under Component 2, and to implement the necessary mitigation measures when needed. The procedure described in the Protocol is based on principles of informed consent and power of choice. In the case of a farmer using the public domain land adjacent to their property for economic activities, the DPOH will announce in a timely manner and providing written warning in order to give enough time and information to harvest crops or move cattle prior works. It is worth noting that the DPOH cannot do anything on a farmer's property without their explicit permission. The Protocol also states that the agreements will be properly documented and defines a grievance redress



		mechanism to address any doubts and complaints that might appear during the development and implementation of the agreements.
Safety of Dams OP/BP 4.37	No	OP 4.37 is not triggered as the proposed project will neither support the construction or rehabilitation of dams nor will it support other investments which rely on the performance of existing dams.
Projects on International Waterways OP/BP 7.50	Yes	OP 7.50 is triggered as (i) the proposed project is located in the Rio Salado Basin that is a tributary of the Río de la Plata, a water course shared with Uruguay and subject to the Rio de la Plata Treaty and its Common Maritime Front, approved by Law 20645; and (ii) the project involves infrastructure works to improve the drainage of the river basin. However, the project deserves an exception from the obligation to inform the neighboring country Uruguay, since Argentina is the final down-stream country and the Rio Salado Basin is entirely within Argentina. The team is preparing a memo to request said exception.
Projects in Disputed Areas OP/BP 7.60	No	OP 7.60 is not triggered as the proposed project will not finance activities in disputed areas as defined in the policy.

E. Safeguard Preparation Plan

Tentative target date for preparing the Appraisal Stage PID/ISDS

Feb 01, 2017

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

The preparation of the Project-level ESIA report and ESMP by the PDOH is at a final stage and will be completed prior to appraisal.

Regarding consultations, the preparation of the PMI and the advance with the Salado River works have included different participation instances that have allowed inclusion of community concerns to the global project. In the case of the PMI, the results of said interaction with representatives of the academic sector and NGOs relevant to the basin contributed to the formulation of the different work sections.

Regarding the works of Section IV, Stage 1B, a public meeting summoned by the Provincial Ministry of Infrastructure was carried out on September 27, 2016 in the city of Roque Perez. In the meeting, the participants were informed about the works, their potential impacts and the respective mitigation measures. The concerns and questions of the participants were registered and responded and, when feasible, incorporated in the project. The latter was the case of two proposals for improvement of existing recreational areas and consideration of potential chance finds of physical cultural resources.



After the disclosure of the advanced draft of the project-level ESIA and ESMP, interested people will be able to provide comments by email and the DPOH will organize a complementary set of consultation activities also face-to-face prior to project appraisal. As mentioned under O.P. 4.10 consultations of IPPF will be limited to virtual consultations with the relevant IP organizations, and will be conducted prior to appraisal. More in-depth consultations will be undertaken during implementation as required.

To facilitate continuation of community participation during the project stages, the ESMP foresees communication actions for each phase of the works, including a Communication Program. Also a Grievance Redress Mechanism (GRM) for the works under Component 2 is being developed as one of the ESMP Programs. Said Program will establish the mechanisms to submit and receive responses to grievances, stating the number of days it can take to respond to a complaint and identifying two different levels of conflict resolution before complaints reach the judicial court system. A GRM will also be considered for Component 1 in order to secure pertinent mechanisms are in place.

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