

International Bank for Reconstruction and Development
International Development Association

**PROGRESS REPORT
TO THE BOARD OF EXECUTIVE DIRECTORS
ON THE IMPLEMENTATION OF THE MANAGEMENT ACTION PLAN
IN RESPONSE TO THE
INSPECTION PANEL INVESTIGATION REPORT ON THE**

ARGENTINA

**SANTA FE ROAD INFRASTRUCTURE PROJECT
(Loan No. 7429-AR)**

June 14, 2010

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Abbreviations and Acronyms

DPV	Provincial Road Directorate
ESMP	Environmental and Social Management Plan
ISR	Implementation Status and Results Report
MAP	Management Action Plan
MRR	Management Report and Recommendation
PIU	Project Implementation Unit
PSF	Province of Santa Fe
ROW	Right of way

Introduction

1. The Inspection Panel submitted its Investigation Report No 49110-AR on the Santa Fe Road Infrastructure Project to the Board of Executive Directors on July 2, 2009. On August 13, 2009, Management submitted its Report and Recommendations (MRR), including a detailed Management Action Plan (MAP) developed in response to the Inspection Panel's Investigation Report.
2. On October 20, 2009, the Executive Directors discussed the above reports and the MAP proposed by Management. The Board asked that Management report on the progress in implementing the MAP. This Progress Report is being submitted to the Board in response to that request.
3. Management has taken action on all items of the MAP, and implementation has been substantially completed. The counterpart entity (the Government of the Province of Santa Fe) has followed through on the implementation of the MAP by: (i) exchanging views with the Project team on the results of the study (an ongoing process as of June 2010 that will involve meetings with the consulting firm, the Project Implementation Unit (PIU) and the provincial Secretary of Water Affairs); (ii) implementing the communications and consultations strategy as agreed in the Environmental and Social Management Plan (ESMP); and (iii) fully complying with its responsibility in supervising the construction works. In addition, it has supported the elaboration of a Strategic Environmental Assessment (SEA).

Status of Project Implementation

4. The Project has two key components:
 - *Component 1 – Upgrading National Road 19* (estimated cost, including contingencies, US\$ 167.4 million, of which US\$ 123.9 million will be financed by the Bank Loan). This component will transform 130 kilometers of National Road 19 in the PSF into a four lane *Autovia* to expand the capacity and road safety of this heavily traveled corridor. The component entails building: (i) a two lane carriageway within the right of way (ROW) that will serve East-West traffic, which will become one of the main carriageways of the future freeway; (ii) three four-lane bypasses of the towns of San Jerónimo del Sauce, Sa Pereyra and Frontera (and its twin city San Francisco) within the PSF; (iii) alignment improvements for three sharp curves on the existing two lane highway; (iv) grade separation interchanges at high trafficked intersections – National Roads 34 and Rosario Santa Fe Freeway – and overpasses for railroad crossings; (v) ground-level interchanges at intersections with provincial and rural roads; and (vi) turn lanes and returns at intervals of about 4-6 kilometers to facilitate safe access to properties along the corridor.

- *Component 2 – Institutional Strengthening* (estimated cost US\$ 2.8 million, all Bank-financed). This component will consist of four subcomponents:
 - Sub Component 2.1 – Road Safety;
 - Sub Component 2.2 – Measurement of logistics costs in the PSF;
 - Sub Component 2.3 – Strengthening the strategic planning capacity of the PSF;
 - Sub Component 2.4 – Strengthening the capacity of the Provincial Road Directorate (DPV) to enhance environmental and social management; and
 - Sub Component 2.5 – Design of a capacity building program to incorporate monitoring and evaluation analysis in infrastructure projects.

5. **Key Project dates.** The Santa Fe Road Infrastructure Project was approved by the Board of Directors of the World Bank on February 13, 2007 and the Loan Agreement became effective on August 17, 2007. The closing date is June 30, 2012.

6. **Disbursements.** As of June 2, 2010, disbursements totaled US\$ 64.56 million, equivalent to 50.96 percent of the total (US\$ 126.7 million) loan amount.

7. **Status of the Upgrading of National Road 19.** The execution of the Project is proceeding according to the set time plan. There have been no major delays in the implementation of Project components. Construction works began in May 2008. The progress of the works has complied with the schedule set out in construction contracts. Through June 2010, the progress of works in the five construction sections of Road 19 averaged 53 percent. According to the construction contracts and the works program, the upgrading of National Road 19 is expected to be completed by May 2011.

8. **Supervision missions and Project ratings.** On April 19-23, 2010, the Project team carried out the Mid Term Review Supervision mission. The team visited the whole length of the upgrading of Road 19, including all critical hydrological spots mentioned in the Requests for Inspection. The assessment of the Project team is reflected in the ISRs which give the Project a satisfactory rating overall (both for the likelihood of achieving its development objectives and for implementation progress).

Progress Achieved on Each Activity of the Management Action Plan

9. The following table describes the implementation status of each component of the Management Action Plan.

Table 1. Management Action Plan – Implementation Progress		
Relevant OP/ Issue/Finding	Action	Implementation Progress
Potential environmental risks and impacts in the area of influence. OP/BP4.01		
Project’s potential impacts on flooding risks downstream of Road 19	<p>The Province of Santa Fe (PSF), at the request of the Bank, will conduct a downstream analysis similar to that conducted for the upstream area of Road 19. The study will use the same methodology agreed upon for the studies that simulated the impact of flooding in the areas upstream of Road 19. The results of the study will be presented following the same scheme used for the upstream study. The results of the study will allow a comparison of the <i>with</i> Project situation with the <i>without</i> Project alternative. The study will cover the whole length of the road with particular focus on critical evacuation streams. The study will also include environmental mitigation measures if the results identify negative impacts associated with the Project. This study is expected to be completed within a period of 6 months. Its results will be appropriately documented in supervision reports (e.g., Aide Memoires) and Implementation Supervision Reports (ISRs). The PSF has agreed with Management to carry out the Strategic Environmental Assessment that is an integral part of the institutional strengthening component of the project. The Strategic Environmental Assessment will allow the PSF to elaborate a methodology to identify and measure the major impacts and risks associated with road investments.</p>	<p>A well respected engineering consulting firm was hired to carry out the study proposed in the MAP. The study takes into consideration the shortcomings identified by the Inspection Panel, namely: (i) lack of coherence in the basic criteria used in the different studies for upgrading the three sections of Road 19; and (ii) different modeling approaches used in the hydrological studies for the same three sections. The study shows that, for rainfall events with return periods of 25 and 50 years, and even with the exceptional event of March 2007 (equivalent to return periods of 100 years), the “with Project” situation upstream of Road 19 is better than the “without Project” situation and the situation downstream does not change with the Project nor does it affect the performance upstream. Annex 1 provides a more detailed summary and explanation of the study. A copy of the report, including the simulations prepared by the consulting firm, was submitted to the Inspection Panel on May 21, 2010. The PSF is in the last step of the hiring process of an expert in strategic environmental assessments (SEAs). The expert contract is, as of June 2010, awaiting the signature of the Governor of Santa Fe. The approval and signature of the Governor will constitute an explicit endorsement of the SEA at the highest political level. This SEA will be the first in the history of the PSF. The road network will be the pillar of this SEA, which is planned to be a participatory process. The documents produced as the SEA is developed will be made public by the PSF.</p>
Consultation and communication with Project Affected People. OP 4.12		
Communi- cation on	As part of Project implementation, the ESMP communication program	In the period between the presentation of the MAP (August 2009) and the preparation of this progress report,

Table 1. Management Action Plan – Implementation Progress

Relevant OP/ Issue/Finding	Action	Implementation Progress
<p>flood risks</p>	<p>calls for community meetings during the construction phase. Stakeholder engagement, communication and consultation will remain an integral part of this communication program. Stakeholder involvement will also continue to be an important element in the Bank's discussions with the Government as part of implementation support and supervision. Particular attention will continue to be devoted to presenting, in an easily understandable way, past and future hydrologic and hydraulic studies that assess the impacts of the Project on the area surrounding Road 19.</p>	<p>several community meetings were held in the localities along National Road 19 between Santo Tomé and Frontera. Some of these meetings were organized following a request made by Project Affected People, while others follow the communication plan set in the Project's ESMP. The dates, places and major issues discussed in each community meeting were:</p> <ol style="list-style-type: none"> 1) September 16, 2009: meeting with representatives of Colonia San José Telecommunications Cooperative. Topic: treatment of aerial and underground cables in the Project area. Participants: 8 people. 2) October 14, 2009: meeting with Project Affected People of the localities of Sa Pereira and San Jerónimo del Sauce. Topic: impact of the upgrading of Road 19 on flood risks. Participants: 17 people. 3) February 24, 2010: meeting with Project Affected People from Santo Tomé. Topic: environmental and social impacts of alternative engineering drainage solutions for the upgrading of Road 19. Participants: 80 people. 4) February 18 and March 23, 2010: meeting with farmers in the area of Colonia Cello. Topic: clarification of causes of water logging in the intersection of Provincial Road 20 and Road 19. Participants: 30 people. <p>It should be highlighted that the communication and consultation activities included in the ESMP do not only include issues strictly related to communication on flood risks. Issues related to road safety during construction, location of access to industries and farms, lighting and bus stops are also part of information requests received through various communication mechanisms designed and implemented for this Project. The main project specific communication tools include: community meetings in the Project area, a Project-specific email address, physical mailboxes and community information centers (six along Road 19) and the public dissemination of the Project's ESMP on the PSF's official website (www.santafe.gov.ar). The PIU registers all requests for information and records all the exchanges of information and interaction with the originator of the request until a formal response is provided.</p> <p>In order to provide information on the progress of works and to remind Project Affected People about all communication mechanisms available, the PSF has produced, since November 2008, five information bulletins that were distributed in more than ten localities in the Project area and sent electronically to the main local radios, newspapers, industries, schools and municipal governments (copies of the information bulletins are available in Project files). Several of these</p>

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		bulletins include information on flooding issues.
Project supervision. OP 13.05		
Project supervision until the closing date of the Project	Management is committed to continue providing the necessary resources to conduct enhanced supervision of the Santa Fe Road Infrastructure Project. The enhanced supervision consists of at least three supervision missions per year with the participation of the Washington-based Task Team Leader and several other visits to the field by local environmental and social consultants, as well as direct attention by regional management.	Management is complying with this action. Three supervision missions (in March, July and December) led by the Washington-based Task Team Leader were carried out in calendar year 2009. In 2010 the Project Mid Term Review supervision mission took place in April and supervision missions are planned for August and November. Since January 2009 several field visits by local environmental and social consultants and engineers have been carried out, as follows: Engineering consultant: May, August and October, 2009; February and June, 2010. Environmental and social consultants: August 2009 and February 2010.

Management Recommendations

10. As noted above, Management has taken action on all items of the MAP, and its implementation has been substantially completed. Going forward, the Bank will continue to make sufficient resources available to finance enhanced supervision of the Project.

11. Based on the implementation of the MAP, the positive results of the downstream studies requested by the Inspection Panel, and the submission of this report, Management proposes to take no further action on this matter.

Annex 1:
**Summary of the Study to Assess the Project's Potential Impacts on
Flooding Risks Downstream of Road 19**

Introduction

In its Investigation, the Panel considered that the methodologies used by engineering consulting firms to assess flood risks caused by the Project to upgrade Road 19 were not homogeneous and that the evidence presented in the studies did not allow for the conclusion that the upgrading of Road 19 would not cause harm to the Project Affected People. Management concurred with the Panel that all hydrological and hydraulic studies should be based, from the early stages of Project preparation, on a unique and homogeneous methodology.

In addition, the Panel found that the assessment of potential impacts upstream of Road 19 was appropriate and in compliance with OP 4.01, except in respect of the Project's potential impact on flooding in the areas located downstream of the road to be upgraded under the Project.

With the objective of addressing the Panel's finding of non-compliance regarding the downstream area, the Management Action Plan proposed to conduct a downstream analysis similar to that conducted for the upstream area of Road 19.

The Action Plan proposed to have the downstream analysis / study rely on the same methodology agreed upon with the Panel during its investigation for the studies that simulated the impact of flooding in the upstream areas. The results of the study would be presented using the same format used for the upstream study, in order to facilitate understanding of the results by all interested parties. Thus, the results of the study would allow a comparison of the *with* Project situation with the *without* Project alternative. The study would cover all the critical watersheds along the segments of Road 19 to be upgraded.

The Study

A well known Argentine engineering consulting firm that met to discuss engineering designs with the Inspection Panel during the investigation phase was hired in November 2009 to carry out the complementary study required by the Action Plan. The main objective of the study was to address the shortcomings identified by the Inspection Panel: (i) lack of coherence in the basic criteria used in the different studies for upgrading the three sections of Road 19; and (ii) different modeling approaches used in the hydrological studies for the same three sections.

The supervision mission that visited Santa Fe in mid April 2010, held two meetings in Buenos Aires with the engineers of the consulting firm in charge of the complementary study, one on April 16 to understand the status and contents of the study and another on April 23 after the Project team carried out several field visits as part of the Mid Term Supervision mission. A brief summary of the basis and conclusions of the study follows below.

The study included the analysis of the following watersheds:

- Los Cuatro Sauces located between km 22+800 and 22+830 in Section I of the Project. The study completely revised the analysis of this watershed because it was affected by the lack of homogeneity among the methodologies used to assess flood risks in the watersheds of Sections II and III of the Project and also because of the Panel's requirement to conduct simulations for the possible impacts of the Project on downstream flooding risks.
- Cañada del Sauce (or Canal Santa María) and Arroyo del Sauce at km 38+40 in Section II of the Project. In this case the Panel found that the potential impacts upstream of Road 19 were satisfactorily analyzed and proposed that the methodology and parameters utilized here be used to review the remaining watersheds. Therefore, for these two watersheds the study only analyzed the downstream area and the potential effect of downstream flooding on the upstream flooding profile.
- Arroyo Colastiné at km 48+100 in Section II of the Project. This watershed was initially studied using the Rational Method. The new study carried out to comply with the Action Plan jointly analyzed upstream and downstream flooding.

In the case of Los Cuatro Sauces, the study:

- Applied methodologies based on The Unit Hydrograph Theory to estimate the effective rainfall. These methodologies were already applied in the cases of the Cañada del Sauce (or Canal Santa María) and Arroyo del Sauce (both in Section II of the Project), but not in the case of Los Cuatro Sauces (Section I).
- Confirmed that the Project will not increase the risk of flooding in the area surrounding Road 19 and that the road, as designed, will not create a “dam effect,” because the hydraulic structures under construction will properly evacuate the flood flows generated by the storms with return periods of 25 years (as required by the Argentine National Road Directorate for culverts and small drainage structures) and 50 years (as required by the same institution for small bridges) and even for exceptional rainfall such as that which occurred in March 2007.
- Confirmed that the Project's cross drainage structures are sufficient to evacuate the rainfall and will not be determined by downstream conditions in the three cases of rainfall mentioned in the previous paragraph.
- Carried out the analysis of the Project's flooding impacts in the areas downstream of Road 19, concluding that the situation downstream is the same in the situations “*with project*” and “*without project*” and therefore, it is not affected by the upgrade of Road 19 and the dimensions of its cross drainage structures.

- Performed a downstream hydraulic analysis to define the proper boundary conditions and the effects of the downstream flooding in the upstream flooding.
- Determined the return period for the extreme March 2007 event, using hourly precipitation data and a model similar to the one used in the previous analysis for Section II of the Project. The consultants concluded that the return period for such a flood is a little over one hundred years.

For all watersheds the study:

- Considered precipitation and evapo-transpiration, as well as the capacity of soil-water storage processes, which result in water excess most of the time.
- Took into account the “spatial variability” of an intense rainfall, converting for that purpose the rainfall at a specific point into an average rainfall over an area, by multiplying the rainfall at a specific point by a correction factor.
- Considered a possible climate change effect by multiplying the precipitation values obtained for the 25 and 50 year return periods by a factor greater than one.
- Presented the results of the studies for the upstream and downstream areas following the same format used for the previous upstream studies, showing areas of flooded land in the three cases of rainfall studied, the time necessary to evacuate flood waters, and the flood levels reached, under both the “*with project*” and “*without project*” scenarios.

All these results were achieved:

- Taking into account the land use changes and construction of informal channels built by the landowners to properly define the watershed areas and concentration times.
- Using a multiplying factor to the precipitations of 25 and 50 years of return to take into account a possible climate change effect.

In all cases the resulting values show that: (i) the “*with project*” situation improves upon the “*without project*” situation in terms of flooded areas, evacuation time and levels of water; and (ii) the flooding downstream of the road does not change with the Project nor does it affect the upstream flooding of the land.

In only one location (Arroyo Colastiné) and only in the event of an exceptional recurrence such as the storm of March 2007, the study found a very small “dam effect,” of very limited duration, that could increase the flooded area upstream of Road 19 by about 3 percent compared with the “*without project*” situation, due to the elevation of the new road. A positive aspect of this brief “dam effect” is that flood waters would not flow over the existing carriageway during the storm. Moreover, the small change in the upstream flooding area (3 percent) is within the margin of error of the methodology used

for the study and, therefore, it is uncertain to occur in practice. In addition, it is important to consider that the “dam effect” would only occur in the event of a 100-year flood like the one which occurred in March 2007. Finally, it is worth noting that the small “dam effect” would be of very short duration.

Nonetheless, since this small “dam effect” can be completely eliminated by adding a small culvert (no wider than 5m) at very low cost, the Bank’s mid April mission proposed to the Borrower (the Province of Santa Fe) that this small additional work be included in the Project, to eliminate all risk of any increase in the upstream flooded area of the Arroyo Colastiné. The Province of Santa Fe agreed to study the proposed engineering solution in detail as it fully endorses the Action Plan and is committed to implement all the items included in the Action Plan that fall under its fiduciary and legal responsibility, including the environmental mitigating measures resulting from the studies of the downstream area.

No other mitigation measures are proposed by the complementary study, since it has not identified other negative impacts associated with the Project.

In summary, the complementary study shows that, for rainfall events with return periods of 25 and 50 years, and even with the exceptional event of March 2007, the “*with project*” scenario upstream of Road 19 is better than the “*without project*” scenario. In addition, the situation downstream does not change with the Project nor does it affect the performance upstream.