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CASE STUDY

CASE STUDY SUMMARY:
CLIMATE-RESILIENT TRANSPORTATION IN LAGUNA AZUL, PIURA

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CASE STUDY SUMMARY

Figure 1: Pedestrians on a street in the neighborhood of Laguna Azul, Piura. Photo credit: Municipality of Piura

This report was developed under the Climate Resilient Infrastructure Services (CRIS) program, an initiative of USAID's Climate Change Resilient Development (CCRD) project. It summarizes the results of a case study CRIS conducted with the Municipality of Piura, Peru. The objective was to incorporate climate risk management considerations into the proposed development of a street improvement project in the neighborhood of Laguna Azul in Piura. The case study followed the Ministry of Economy and Finance's (MEF) "General guide for identification, formulation, and social evaluation of public investment projects at the profile level" (2014), which includes updated requirements for climate risk management in public investment projects.

Laguna Azul is a neighborhood in Piura located close to a basin called Laguna Coscomba. The community is very vulnerable to flooding from heavy rainfall and back flow from Laguna Coscomba, particularly during El Niño cycles. In 2013, the municipality received approval to build streets and sidewalks in the neighborhood. Because of the flood risk, which may increase in intensity or frequency due to climate change, the municipality selected this project for evaluation with the CRIS program. By following MEF's guidance and applying CRIS tools and resources, the municipality identified a risk reduction measure that would reduce flood risks from major rainfall events similar to those experienced in the 1997/1998 El Niño event. Other improvements to the design of the project were also identified (see box item below).

The following conclusions can help other municipalities implement MEF's guidance and support national efforts to promote its use in public investment projects:

1. **Meet municipal needs for technical assistance**. The municipality required support in: applying climate information to assess how future risks could change; incorporating engineering and climate data in project design; and in developing hazard scenarios for an economic analysis. Other districts and municipalities may need similar support in these areas.

2. **Facilitate sharing across internal teams.** The CRIS local coordinator facilitated sharing across municipal technical teams in joint plenary sessions, but this level of coordination between the teams would not normally occur in a profile study. To improve practices, technical assistance programs can emphasize collaboration and sharing across internal municipal teams—particularly when incorporating new requirements for climate risk management in public investment projects.

3. **Use tools for streamlined, consistent analyses.** There is a strong demand for tools and guidance that municipalities can use to apply MEF's guidance. To help the Municipality of Piura use the lessons learned from this case study in other public investment projects, the CRIS program has developed a Climate Information Application and Risk Screening Tool (CAPRI).

CLIMATE-RESILIENT DESIGN CHANGES INCORPORATED INTO THE LAGUNA AZUL TRANSPORTATION INFRASTRUCTURE PROJECT

1. The municipality expanded the study area to evaluate stormwater runoff from other neighboring communities that affects flooding and drainage in Laguna Azul.
2. The municipality applied information on current and future climate to conduct a hazard analysis of the study area and the planned project. This helped the municipality identify potential risks to account for in the design, execution, and operation of the project.
3. The municipality modified the problem definition of the profile study to explicitly include flood risks and revised the project approach to account for drainage and flood management.
4. An external consultant included several measures to improve drainage in the design of the project itself, including: changes in grading and the use of flood-resistant materials (e.g., a geomembrane subsurface).
5. The consultant developed designs for a risk reduction measure that can drain stormwater during light precipitation events, and reduce the risks from severe flooding during flooding similar to the last strong El Niño event in 1997/1998.
6. The municipality worked with CRIS to develop three hazard scenarios with different assumptions about the future magnitude and frequency of flood events.
7. The municipality used these scenarios to conduct an economic analysis of the direct costs and cost effectiveness of the project with and without the risk mitigation measure. Municipal economists concluded that the risk reduction measure would improve the cost effectiveness of the project (compared with the project without the risk reduction measure).

The following next steps form a potential strategy for building on the outcomes of this study:

- The municipality will incorporate the climate risk management findings of this report into the "Estudio Definitivo" (Final Study) that will be presented to MEF for evaluation.

- The municipality can apply the approach developed in this case study to other planned public investment projects in the city. They have also arranged for training on MEF's updated guidance.

- The municipality and the Piura Region can continue to collaborate on public investment projects to ensure that their approaches are consistent with each other. Both have now undertaken case study projects with MEF's 2014 guidelines and can share lessons with each other.

- The cities implementing MEF's guidelines can engage outside experts to support the uptake of MEF's guidelines in the public investment process. These consultants and advisors will likely play an important role in supporting municipalities through external technical assistance.

- Finally, other municipalities, districts, practitioners, donor agencies, or national ministries may wish to further test the potential of the CAPRI tool to support the incorporation of climate risk management into public investment projects. Testing and further refinement of the tool will help improve its applicability. It will also help to vet the tool to ensure it complies with MEF's 2014 guidelines and other national policies and guidance.

Figure 2: Economists and engineers in the work team during a field work visit at A.H. Laguna Azul

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