1. Country and Sector Background

The Dominican Republic (DR) is subject to recurrent disaster events due, in part, to its hurricane and tropical storm-prone geographic location. Mountainous areas in the central and western portions of the country are particularly susceptible to flash flooding and landslides. Deforestation and land use patterns have contributed to the country’s vulnerability by increasing rainfall runoff and erosion in affected regions. Although national efforts have sought to reduce vulnerability and improve water resources management through land restoration activities, the process is slow and complicated.

Economically, the Dominican Republic continued to experience a strong growth performance from the banking, macroeconomic and social crises of 2003 and 2004. From 2005 through 2007, the Dominican economy experienced a booming recovery with real GDP growth reaching 9.3 percent in 2005, 10.7 percent in 2006 and 8.5 percent in 2007. Macroeconomic stability improved markedly following the crisis period. Inflation was brought under control, from 51 percent in 2004 to single digits since 2005; it averaged 8.9 percent in 2007. Nonetheless, higher-than-expected inflation has been sustained by high international commodity prices, especially international oil prices and by the lag effects of an increase in food (agricultural) prices largely related to Tropical Storms Olga and Noel, which hit the country at the end of 2007.

Tropical Storms Noel and Olga

On October 28, 2007, Tropical Storm (TS) Noel struck the Dominican Republic, and the heavy rainfall affected much of the country. About 6,000,000 people, or 70 percent of the population, were directly or indirectly affected by Noel. Infrastructure—particularly that related to water resources management, transportation and energy—was heavily damaged, leading to impacts on
key sectors such as agriculture, electricity, drinking water and sanitation. Hardest hit were small agricultural operations and subsistence farmers, as well as rural and peri-urban residents. The Country was still reeling from the effects of Noel when Tropical Storm Olga hit five weeks later on December 10. This storm displaced some 62,000 people and led to further infrastructure damage, particularly in the drinking water and sanitation sector.

**Sector Impacts**

Agriculture and energy, two key economic sectors in the country, were badly affected. Farming and animal husbandry -important sources of livelihoods and nutrition- bore US$185 million in economic losses stemming from the loss of lands and irrigation services. Impacts on energy infrastructures, particularly those related to electrical generation, transmission and distribution, are estimated at US$76 million. In the water and sanitation sectors, at least US$40 million in infrastructure impacts affected service provision to 2.5 million people.

**2. Objectives**

The Project development objectives are to: (i) restore and strengthen priority, irrigation, electricity, water, and sanitation infrastructure damaged by Tropical Storms Olga and Noel or at risk of damage from future storms, and (ii) strengthen the National Institute of Hydraulics’ (INDRHI’s) and the Dominican Corporation of State Electrical Companies’ (CDEEE’s) capacity for future risk management. The Project development objectives associated with the request for Additional Financing remain the same as in the original project.

**3. Rationale for Bank Involvement and Additional Financing**

The Government of the Dominican Republic (GoDR) requested Bank assistance, which resulted in the preparation and approval of the Dominican Republic Emergency Recovery and Disaster Management Project, Project ID: P109932, in the amount of US$80 million. The project became effective in April 2008. As required under Dominican law, the project required Congressional ratification, which was granted in May 2009.

Additional financing (AF) is sought to close the financing gap identified during the mid-term review conducted in November 2010. This gap was identified based on cost revisions that were developed in the engineering design activities conducted during project execution. During the preparation of the ERL, the initial cost estimates for damages to infrastructure were used to identify project financing requirements. These estimates included the costs of engineering designs and associated field investigations.

During project execution, as designs and field investigations progressed, increases in construction costs were identified. These related mostly to: i) initial project costs based on preliminary estimates developed soon after the storm events and cost increases due to revised construction requirements that were identified during the engineering design of works; ii) increases related to an estimated 21 percent accumulated inflation rate since project inception; iii) construction cost increases resulting from additional damages to infrastructure as a result of
recurrent storms that have occurred since project effectiveness; and iv) increases in the cost associated with repair and densification of the hydro-meteorological monitoring network.

4. Description

This Project is designed to provide additional financing in order to complete original project activities in response to the Noel/Olga disaster by (i) restoring and rehabilitating water resources, electricity, water, and sanitation infrastructure damaged by the storms, or at risk of damage from future storms, and, (ii) reducing vulnerability to future disasters INDRHI and the CDEEE.

The Project components and activities associated with the request for Additional Financing remain the same as in the original project ERL. No additional components, activities or works are part of the Additional Financing (AF).

Component 1: Rehabilitation and Risk Management in Water Resources Sector

1. Under this component the project will finance the completion of activities planned under component 1 of the original project. Specifically the rehabilitation of the Borrower’s principal water management systems damaged by tropical storms Noel and Olga and strengthening of the Borrower’s institutional capacity for risk management. Activities include:

   - The reconstruction and rehabilitation of: (i) damaged water control structures, including the rehabilitation of water diversion and conveyance structures; (ii) canal systems; and (iii) water distribution, control, and drainage structures;

   - the restoration of ancillary dam infrastructure, including access roads and monitoring equipment;

   - the carrying out of works to repair the dams of Maguaca, Villarpando, Dique de Barracote, Tavera, Jiguey, Aguacate, Hatillo, Rincon, Sabana, Yegua, Mijo, Sabaneta, Rio Blanco, Arroyon, and Tireito;

   - the removal of flood debris

   - the repair and replacement of damaged flood control structures.

2. The Project will also fund the provision of technical assistance, goods and services to INDRHI to: (a) improve its capacity to model watershed behavior and identify watershed attributes contributing to increased risks associated with the water sector; (b) support the Borrower’s maintenance, preparedness and emergency response capabilities, including the provision of technical assistance to develop the Borrower’s proposed water law bill; (c) repair damaged stations to monitor river flow data and weather observations and install new stations for watershed monitoring and early warning of potential disaster conditions; (d) review and update
the operating procedures of dams; (e) carry out a technical audit of the works under Part 1 of the Project; and (f) carry out the financial audit for Part 1 of the Project.

**Component 2: Rehabilitation and Risk Management in the Electricity Sector**

3. To address the financing gap identified under component 2 of the original ERL, this component focuses on the restoration of priority electricity infrastructure in the Borrower’s territory affected by the tropical storms Noel and Olga and strengthening of the electricity sector’s capacity to respond to natural disasters. Activities to be financed under the project include:

- The rehabilitation of hydroelectric generation facilities operated by EGEHID, including: (a) the rehabilitation of the power generation plants of Aguacate, Nizao-Najayo and Aniana Vargas, Valdesia, Jiguey, Sabana Yegua, Rio Blanco, Los Anones y Las Barias; and (b) the restoration of ancillary dam works, including access roads; and (c) carrying out of works to repair the dams of Las Barias and Valdesia;

- The rehabilitation of at least 152 km of transmission lines operated by ETED, including in the following sectors: (a) Azua-Sabana Yegua; (b) Cruce Cabral-Las Damas; (c) Sabana Yegua-San Juan; (d) Cruce Cabral-Vicente Noble; and (e) Haina-Galeria Infiltracion CAASD Manoguayabo;

- The rehabilitation of electricity distribution facilities carried out by EDENORTE and EDESUR; and the revision and updating of the technical specifications and quality control methods for the acquisition of materials and equipment for power transmission and distribution facilities; (b) the updating of the contingency plans in case of severe meteorological occurrences; (c) the strengthening of the CDEEE’s procurement capacity; (d) the carrying out of a technical audit of the works under Part 2 of the Project; and (e) the carrying out of the financial audit for Part 2 of the Project.

5. **Financing**

<table>
<thead>
<tr>
<th>Source:</th>
<th>($m.)</th>
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</tr>
<tr>
<td>International Bank for Reconstruction and Development (IBRD)</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
</tr>
</tbody>
</table>

6. **Implementation**

The additional loan will continue to use the existing project management structure, which has proved to be very effective during the implementation of the ongoing project. The project will be implemented by two sector agencies: Component 1 will be implemented by INDRHI;
Component 2 will be implemented by CDEEE. Project institutional arrangements reflect the Central Government’s decision to delegate responsibility to sectors for the management of related works.

7. Sustainability

The restoration of priority infrastructure damaged by Tropical Storms Noel and Olga is a necessary condition for maintaining economic growth, because agricultural production critically depends on the availability of water for irrigation, and the entire economy depends on reliable power supply. The additional financing will ensure that project objectives are met by guaranteeing access to basic services in electricity, drinking water and sanitation, which suffered following the storms.

8. Lessons Learned from Past Operations in the Country/Sector

The Bank has accumulated substantial regional and global experience in supporting post-disaster recovery. In the Dominican Republic, the Bank has experience from the emergency recovery assistance provided after Hurricane Georges in 1998. Experience from this operation, as well as from the IEG’s 2006 evaluation of the Bank’s natural disasters assistance, provides important lessons that have been taken into account in the design of the proposed operation.

9. Safeguard Policies (including public consultation)

In accordance with Bank environmental safeguards requirements, the original Project was classified as Category B, and the policy on Environmental Assessment (OP 4.01) triggered. Since the Additional Financing does not involve any new project components or activities, this Project is also classified as Category “B” (partial assessment) and OP 4.01 is triggered.

As per the Project Operational Manual, CDEEE and INDRHI are managing the environmental and social compliance for their respective works. Contracts for all project-supported works include specific environmental compliance clauses designed to deal with issues related to typical construction activities. Associated with the original ERL project, the government prepared an Environmental Assessment (EA) that examined Project activities and potential environmental and social impacts.

An Environmental Management Framework was included in the original ERL project and is still applicable and being implemented. The client has prepared a revised Environmental and Social Management Plan (ESMP) based on an environmental review conducted during AF preparation and disclosed in accordance to WB policies. This plan requires the inclusion of environmental management clauses in Project civil works contracts. Specific Environmental Assessments has been developed for component 2 transmission line rehabilitation works and environmental permits have been requested to environmental authorities.

During the execution of the original ERL project, CDEEE identified transmission line locations that were determined to be unacceptably vulnerable to potential disaster related damages. Based on this assessment, CDEEE elected to relocate these lines to more secure locations in the vicinity
of the original alignments. Because these new alignments required the purchase of right-of-way access, the project was restructured in November 2010 to include Bank Safeguard OP/BP 4.12, Involuntary Resettlement. An Abbreviated Resettlement Action Plan has been developed and disclosed in accordance with Bank policies in July 2010 and remains in effect.

To comply with the requirements of OP/BP 4.37, a Bank specialist in dam safety has conducted an initial safety review of all dams associated with the project prior to the execution of - or disbursement against - any related works. This initial screening by the Bank specialist has identified those sites which would be subject to the requirements of the OP/BP 4.37 policy. After those sites were identified, and taking into account the evaluation report of the Bank specialist in dam safety, the Borrower through INDRHI has contracted an independent specialist to conduct a full inspection and review of procedures and produced a written report of findings and recommendations, which was found acceptable by the Bank.

In addition to the requirements provided in OP/BP 4.37, the project will include an institutional strengthening element directly related to the operation of dams. Under this task, a consultant will be engaged to review and revise dam safety operating procedures. The purpose of the review is to update dam operations manuals taking into account the availability of improved data from the meteorological early warning network, newly calculated water balances, and changes in land use and rainfall/runoff characteristics.

10. List of Factual Technical Documents


5. Evolución del Impacto de la Tormenta Noel en República Dominicana. ECLAC. 2008

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