

Country Name	Project for Restoration of the Democracia Bridge			
Republic of Honduras				
I. Project Outline				
Background	Honduras is a country which severely suffers from hurricanes and also not frequent but large-scale earthquakes. After being hit by the Hurricane Mitch in 1998, the new Democracia Bridge (also called locally La Amistad Bridge) was constructed parallel to the Old Democracia Bridge by the Project for Construction of Ilima and Democracia Bridges (2000-2003). In 2009 the new Democracia Bridge was damaged by a large earthquake. The survey conducted by JICA in 2010 detected that the earthquake-proof equipment was damaged and confirmed the necessity for rehabilitation/reinforcement and prevention of damage extension for large-scale earthquakes in the future.			
Objectives of the Project	To develop the disaster-resilient social and economic infrastructure, by rehabilitating the Democracia Bridge on the important route of load transport which was damaged by the earthquake, thereby contributing to smooth international and domestic logistics.			
Contents of the Project	<ol style="list-style-type: none"> 1. Project Site: Municipalities of El Progreso and San Manuel of Yoro Department 2. Japanese side: Rehabilitation and strengthening of the bridge piers and abutment change of expansion joints, rehabilitation of the access of road, etc. 3. Honduran Side: Removal of obstacles, ground leveling, provision of landfills for solid waste and gravel, relocation of light poles and electrical cables, etc. 			
Project Period	E/N Date	October 23, 2013	Completion Date	February 26, 2015
	G/A Date	October 23, 2013		
Project Cost	E/N Grant Limit: 561 million yen		Actual Grant Amount: 559 million yen	
Executing Agency	Secretary of Infrastructure and Public Services (INSEP) (Restructured from the Secretary of Public Works, Transport and Housing in 2014)			
Contracted Agencies	Main Contractors: Hazama Ando Corporation Main Consultant: Central Consultant Inc.			

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

- At the ex-ante evaluation, the project objective was set as disaster-resilient social and economic infrastructure. It was verified with one of the qualitative effects, avoidance/mitigation of traffic shut-off caused by damages from earthquakes. The indicator for the expected quantitative effect (increase in the traffic velocity) was used for verification of smooth logistics.
- At the ex-ante evaluation, the other expected qualitative effect was set as “activation of the local economy in the area nearby the bridge.” However, this is an indirect impact to be expected after realization of smooth traffic and logistics. Therefore, at the ex-post evaluation, it was verified as an impact.

1 Relevance

<Consistency with the Development Policy of Honduras at the Time of Ex-Ante and Ex-Post Evaluation>

The project was consistent with Honduras' development policies on energy/transport and disaster prevention/preparedness as set forth in the “National Strategies for Climate Changes” as a sector plan of the “National Plan 2010-2022” and the “Development Plan 2014-2018.”

<Consistency with the Development Needs of Honduras at the Time of Ex-Ante and Ex-Post Evaluation >

The new Democracia Bridge was damaged by the large earthquake in 2009. The bridge is located at an important logistics point, on the route from the northern coastal region to Port Cortes, the most important port in the country and also to Tegucigalpa, the capital city. Therefore, the project was consistent with Honduras' needs for transport and logistics via the new Democracia Bridge at the times of both the ex-ante and ex-post evaluation.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project which aimed at rehabilitating a disaster-resilient bridge was consistent with Japan's ODA policy for Honduras as agreed in the “Country Assistance Policy for Honduras” (2012) (which included regional development and disaster prevention and mitigation).

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Effectiveness>

The project objective was achieved, as the disaster-resilient social and economic infrastructure was developed by rehabilitating the 2009 earthquake-damaged new Democracia Bridge which is located on an important route of road transport. The velocity for transit during off-peak hours increased to 60-65km/h in 2018, which is more than the target value of 60km/h but has not caused any safety problem¹. Once the parallel bridge (old Democracia Bridge) is re-built, further improved vehicle flow will be expected, according to INSEP.

As qualitative effects, transport and logistics have not been shut off since the new Democracia Bridge was rehabilitated. An earthquake of M4.3 occurred in the northern region of Honduras in February 2018, but there was no damage to the Bridge or traffic shut-off. Cables for collapse prevention (Prestressed Concrete² (PC) Cables) were used for the bridge construction for the first time in the country.

<Impact>

¹ The Transit Law in Honduras sets no specific speed limit and it is determined by local authorities for some roads. At the ex-post evaluation, it could not be confirmed if any speed limit has been set for the Democracia Bridge, but according to the Municipality of El Progreso, it has not caused any safety problem.

² Prestressed concrete is a form of concrete used which is "pre-stressed" by being placed under compression. It is resistant to tensile forces compared to reinforced concrete.

According to the mayor of El Progreso and the President of the local Chamber of Commerce, smoother logistics via the new Democracia Bridge by increased transit velocity has contributed to activation of the local economy since it is located at a crucial point of export for agricultural products. No negative impact including that from the environmental and social aspects has been reported until the time of the ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Quantitative Effects

Indicator	Baseline 2012	Target 2018 3 year after completion	Actual 2015 Completion year	Actual 2016 1 year after completion	Actual 2017 2 year after completion	Actual 2018 3 year after completion
Increase of velocity for transit during off-peak hours (km/h)	20	60	n.a.	n.a.	n.a.	60-65

Source: Direct measurement at the ex-post evaluation survey (measurement from the end of the bridge to the other end and vice versa at 8:00, 11:00, 13:00 and 15:00 in two days).

3 Efficiency

Both the project period and cost were within the plan (ratio against the plan: 71% and 100%, respectively). During the project period, an alternative bridge-like structure was installed for smooth traffic and construction works. Therefore, the efficiency of the project is high.

4 Sustainability

<Institutional Aspect>

INSEP is the entity in charge of what concerns with formulation, coordination, execution and evaluation of policies related with the national road system including bridges. In this Secretary, a coordinating Engineer and three bridge-specialist Engineers are assigned to the General Administration for National Roads. The number of staff is sufficient for supervising all related work. Maintenance of the bridge is responsibility of the Strategic Investment of Honduras³ (INVESTH) which is executed by a concession contract. There is one coordinating engineer and a bridge-specialist engineer assigned as supervising staff, which make sure maintenance is performed according to the concession contract. The municipality of El Progreso also takes part in the bridge monitoring and minor repairing as needed. Maintenance works have been outsourced to a private company under the concession contract for the last four years.

<Technical Aspect>

The private company in charge of maintenance works at the new Democracia Bridge has sufficient skills, according to the engineer of INVESTH as stipulated in the concession contract. Also, INVESTH has sufficient skills for supervision of rehabilitation works, as it has experiences in managing large projects.

<Financial Aspect>

The budget assigned to maintenance works along the 122Km of the roads specified in the concession contract including the new Democracia Bridge amounts to \$600,000 per month as confirmed by INVESTH. Since some repair expenses are borne also by the Municipality of El Progreso, the budget is sufficient for maintenance.

<Current Status of Operation and Maintenance>

All parts of the new Democracia Bridge are in a good condition except a small damage in the plastic insulation around the PC cable and seven potholes in the pavement. These do not compromise the bridge functionality. The potholes are already in the repair plan. For bridge maintenance, the in-charge company conducts a) removal of sediment of the bridge and side ditch and b) weeding in the road shoulder and slope twice per year, c) repaint in the marking of the traffic safety once per year, d) repair of cracks and potholes on the bridge surface and access road every five years, and e) repair of guardrails when necessary. Maintenance works are reported by the Concessioner to INVESTH on a monthly basis. INVESTH plans replacement of the pavement and exchange of the expansion joint after 20 and 40 years, respectively. All repair materials can be acquired locally or imported without difficulty, though it takes time to import materials.

<Evaluation Result>

Therefore, the sustainability of the project effect is high.

5 Summary of the Evaluation

The project objectives have been achieved; the new Democracia Bridge has enabled smooth transport and logistics after being rehabilitated from damages caused by a big earthquake in 2009. Regarding sustainability, while INSEP is responsible of policies related to the national road system including bridges, maintenance is supervised by INVESTH and executed by a concessioner. INVESTH has sufficient skilled staff and budget allocation for supervision, and the new Democracia Bridge has been maintained in a good condition in accordance with the concession contract.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Recommendations to Implementing Agency:

- The system with PC cables was applied for construction of the new Democracia Bridge for the first time in the country, and after rehabilitation there has been no damage and traffic shut-off due to natural events including the earthquake in the northern region in 2018. It is recommended for INSEP to use this system for future similar bridge construction.

Lessons Learned for JICA:

- The project was completed earlier than planned. While the project was being executed, an alternative bridge-like structure was installed on the sides of the bridge as part of the project, like other similar projects, which served as a temporary traffic pass way. This structure avoided traffic to be halted completely and enabled smooth construction works. In bridge construction projects, it is effective to have this kind of system in order to not only complete the project in time but also ensure local traffic and logistics flow during the project period. In order to

³ INVESTH is a unit which manages national development projects and programs, attached to the Secretary of General Coordination of the Government.

prove effectiveness of such a system, it would be suggested to assess and show how much traffic and logistics are sustained during the construction work compared to before the project.



Commercial traffic going through the bridge



Led lamps above and river flow below the bridge