



# Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 19-Sep-2019 | Report No: PIDC27250

**BASIC INFORMATION****A. Basic Project Data**

Country Bhutan	Project ID P171012	Parent Project ID (if any)	Project Name Bhutan Green Transport Project (P171012)
Region SOUTH ASIA	Estimated Appraisal Date Oct 30, 2020	Estimated Board Date May 31, 2021	Practice Area (Lead) Transport
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Finance. Government of Royal Bhutan	Implementing Agency Thimphu Thomde	

**Proposed Development Objective(s)**

The Development Objective of the Project is to improve access to opportunities for the residents of Thimphu City, and provide reliable, safe, and green urban mobility options to them along the North-South Axis of Thimphu City, as well as, the City Center.

**PROJECT FINANCING DATA (US\$, Millions)****SUMMARY**

<b>Total Project Cost</b>	29.69
<b>Total Financing</b>	29.69
<b>of which IBRD/IDA</b>	5.00
<b>Financing Gap</b>	0.00

**DETAILS****World Bank Group Financing**

International Development Association (IDA)	5.00
IDA Credit	5.00

**Non-World Bank Group Financing**

Trust Funds	24.69
Green Climate Fund	23.53



Korea WB Partnership Facility

1.17

Environmental and Social Risk Classification  
Substantial

Concept Review Decision

Track I-The review did authorize the preparation to continue



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Other Decision (as needed)

## B. Introduction and Context

### Country Context

**Bhutan is a small, landlocked country, nestled deep in the eastern Himalayas between India and China.** Within a distance of just 100-150 km, land rises from about 150 meters above the sea level in the South to over 7,000 meters in the North. The population of about 735,000 is scattered across steep mountain slopes and valleys, including many in remote and far-flung hamlets. This makes Bhutan one of the most sparsely populated countries in the world, ranked 182 out of 215 countries. Nearly half the land is protected area to help preserve biodiversity. With forest coverage exceeding 70 percent, Bhutan is the only carbon negative country in the world, i.e., the country absorbs more greenhouse gas emission than it produces. Bhutan's unique development philosophy – Gross National Happiness (GNH) – guides its development plans, under a holistic, responsible and inclusive approach to sustainable development. Bhutan's political transition from an absolute monarchy to a democratic, constitutional monarchy in 2008 was successful. Bhutanese enjoy low corruption and peace: the country ranks 25 out of 180 countries in the 2018 Corruption Perception Index and 19 out of 163 countries in the 2018 Global Peace Index.

**Bhutan's geography is ideal for hydropower development and hence electric mobility due to the electrical energy surplus.** Abundant water resources, -among the top five in the world by per capita water availability-, and the rugged mountains create ideal conditions for hydropower generation, a clean and renewable source of energy. The topography and extreme altitude variations, while ideal for hydropower generation, limit connectivity and thus access to services, markets and jobs especially in remote areas, and increase vulnerability to disasters and climate change. Sparse population settlement patterns and geography make it extremely difficult and costly to expand service delivery in remote areas, raising questions about how to ensure further improvements in services in a sustainable way. Poverty varies widely across districts and is concentrated in rural, remote areas where access to services and jobs is low. The Himalayan mountains are also at substantial risk of climate change, and more extreme weather variations lead to fluctuations in hydropower, the main driver of growth, and affect agricultural production, the main source of livelihoods. Bhutan is situated in one of the most seismically active global zones and is thus prone to earthquakes and other natural disasters such as landslides, floods and outbursts of glacial lakes.

### Sectoral and Institutional Context

**Despite a relatively small national population, Bhutan's urban areas are undergoing a significant transition.** Between 1990 and 2010, the number of Bhutanese living in urban areas nearly tripled. Subsequently, the urban population has been increasing over time from 196,111 persons (30.9 percent) in 2005 to 274,967 persons (37.8 percent) according to 2017 Population & Housing Census of Bhutan. Presently, there are four major urban centers in Bhutan, namely, Thimphu, Phuentsholing, Gelephu and Samdrup Jongkhar (S/Jongkhar). The capital city, Thimphu with 127,864 population is the



largest urban center in Bhutan and accounts for 17percent of Bhutan’s overall population or 41percent of Bhutan’s total urban population.

**Bhutan has also experienced rapid growth in private vehicles over the last decade.** Over the last decade, the number of vehicles has been increasing at roughly 9-10 percent per annum. As of June 2018, there are over 96,307 registered vehicles in Bhutan. Roughly 1 percent of these are public passenger buses. Taxis and personalized vehicles are currently meeting most of the travel needs for Bhutan’s population. The key drivers for the increase in motor vehicles are economic growth resulting in better financial positions of households, improvement of road network (within the country), and inadequate levels of public transport. Within urban areas 16 percent of the population uses public transport (bus or taxi) for commuting every day.

**The current modal split of urban transport in Thimphu reflects a constrained supply of public bus services.** In 2015, a survey of 1,000-household was conducted in Thimphu to understand the resident’s transport preferences and travel behaviors. Roughly 30 percent of non-bus users reported that long and irregular waiting times for buses was the primary reason for their choice of alternative modes. A further 30 percent of non-users reported that they did not use buses because the route was too indirect, or the stop was too far from their origin or destination. In contrast, approximately 77percent of regular taxi users who responded to the Bank’s household survey on travel behaviors cited that the primary reason that they use taxis is because they are “quick and convenient.” It is important to note that taxi fares are roughly 2-3 times average bus fares (depending on distance). Persons with impaired mobility can often pay much more than this as well when they cannot share rides or require pickup from their homes. This creates an affordability issue for lower income households. Roughly 46 percent of respondents to the Bank’s survey who do not use taxis cited affordability as a key concern. In contrast, 76 percent of regular city bus users cited the affordability of bus fares as a primary reason for their choice of mode.

**Within Thimphu most development is centered around a prominent North-South road corridor (Babesa to Dechencholing).** The current urban public transport network reflects this with the primary bus corridor running along Barbesa Expressway (Southern part of the red line in the figure presented in annex 1). This road was built without any associated footpaths or facilities for bus stops but now forms the backbone of Thimphu’s road network. In recent years, new property developments have occurred on the northern and southern outskirts of the city which has created additional demand for North-South trips. Within the city, the road network features five parallel streets; Dechhen Lam, Chhogyal Lam, Norzin Lam, Doebum Lam, and Rabten Lam. Within the city center, many of streets are becoming congested. In particular, Norzin Lam is Thimphu's main artery within the city center and is lined with local craft shops and stalls, as well as, larger shopping centers.

**The public bus transport system needs considerable improvement.** Public transport and para-transit services in Thimphu are varied, and of variable quality, and include the following: (i) urban public buses provided by City Bus Services; (ii) bus services offered by individual schools; (ii) employer-specific buses (government and private); and (iii) taxis that operate both individual passenger services and shared ride services as market conditions warrant. RGoB’s efforts to provide a public bus transport system began with the development of a City Bus Service in 1999 with a fleet of two buses. This fleet has now grown to 52 buses (in Thimphu and Phuentsholing). The bus service in Thimphu presently operate on 12 routes (and on a single route in Phuentsholing). The average age of the bus fleet at 7+ years and the fuel efficiency of these buses at 4 km/ liter. The public sector operator for the bus service is ‘City Bus Service’ (an arm of Bhutan Postal Corporation, a state-owned enterprise). The annual ridership of bus transport service in Thimphu and Phuentsholing was 940,000 and 114,795 in 2015 respectively. There is also a fleet of six buses operated by private bus operators which ply on select routes in Thimphu. The number of buses per 10,000 population in Thimphu is around 4. For lower income households with fewer travel options, the absence of a reliable, affordable and reasonable quality public transport option (like a priority bus service) constrains their access to economic opportunity and social services.



**The RGoB has set out its policy for urban transport in a guiding document known as “Bhutan Transport 2040 Integrated Strategic Vision”.** This policy aims to create vibrant, functional, and livable “green” cities. It states that the “urban transport strategy should focus on providing attractive public transport services and facilities for pedestrians, so that walking becomes the dominant mode in the central area and for short trips.” The strategy also seeks to control the impact of private cars through careful management of vehicle numbers and use. More specifically, for urban transport, the strategy identifies six activities and the proposed project will support RGoB with undertaking two of these six activities. These two activities are: (a) developing public transport (including identifying measures to boost ridership based on several options, both for the short- and long term); and (b) improving facilities for pedestrians (including a safe and secure network of routes and priorities within the central area). Furthermore, in the 12th Five Year Plan, RGoB plans to focus on (amongst other things) maximizing the “benefits of our existing infrastructure facilities and also sustaining it”. In this context maximizing (and equitably distributing) the benefits from the road connectivity within Thimphu is important to ensure the livability of Thimphu.

**The RGoB has already acted to implement with this policy by trying and stem rising dependence on private conventional vehicles and fossil fuel.** The RGoB has adopted Vehicle Emissions Roadmap Bhutan in 2017 to maintain a pristine environment with clean air and with minimum emissions from the transport sector. In addition, Bhutan has taken initial steps towards promoting low carbon vehicles by reducing taxes on hybrid and electric cars. Given Bhutan’s natural advantage in hydroelectric power, the country has a unique advantage in embracing e-mobility. However, as with other green technologies, the high cost of EVs compared to conventional vehicles is one of the key challenges for successful uptake. The RGoB has launched an ambitious initiative to promote the use of EVs to address both environmental and fossil fuel dependency. This initiative is in its infancy at present.

**Responsibility for the Transport sector in Thimphu is fragmented.** While the overall responsibility of policy and strategy formulation for the Transport Sector lies with Ministry of Information and Communication, several institutions play a role in infrastructure creation, service delivery and in regulating the sector. In urban transport, service planning is done jointly by the Thimphu City Corporation (Thromde) and Road Safety and Transport Authority. Civil works on the roads fall under the jurisdiction of Ministry of Works and Human Settlement. And operations of public buses are undertaken by Bhutan Post.

#### Relationship to CPF

**One of the key focus areas of the Country Partnership Strategy (CPS) for FY 2015-19, for Bhutan supporting green development (results area 3) with the aim of contributing to Bhutan’s goal of achieving green and inclusive growth.** Bhutan’s current Economic Development Policy incorporates several aspects of a green growth agenda, including making Bhutan carbon neutral. One of the challenges that Bhutan is facing rapid urbanization due to lack of sustainable and green transportation options. In this regard, the CPC indicates that the WBG will support green transportation in Thimphu, encompassing electric vehicles, public transport and pedestrian transport. During this time, IFC provided hands-on technical support to develop the Thimphu Car Park project, the country’s first PPP project in the transport sector. Trade and Transport Facilitation and Transport Access TAs have been delivered. However, the envisioned TF program on Green Urban Transport has not materialized during the CPS period. This current project is a culmination of the efforts to support the RGoB in developing green mobility solutions.

### C. Proposed Development Objective(s)

**The Development Objective** of the Project is to improve access to opportunities for the residents of Thimphu City, and provide reliable, safe, and green urban mobility options to them along the North-South Axis of Thimphu City, as well as, the City Center.



#### Key Results (From PCN)

**In the long run, if implemented, the project will increase livability of Thimphu city from the transportation perspective.** This will be achieved by developing a Priority Bus Service along one of the key transportation corridors in Thimphu which connects the various neighborhoods of the city and by decongesting the city center (through the pedestrianization of a main city boulevard).

**The proposed outcome indicators to track the progress in achieving the development objective are:**

- **Reliability:** Variability in wait time at bus stops for the priority bus service
- **Accessibility:** Percentage jobs reachable by public transportation within a 45-minute one-way commute in the project's area of influence
- **Safety:** Number of road traffic crashes in project's area of influence
- **Green:** Net GHG emissions from transport sector around the project's area of influence

#### D. Concept Description

##### Background

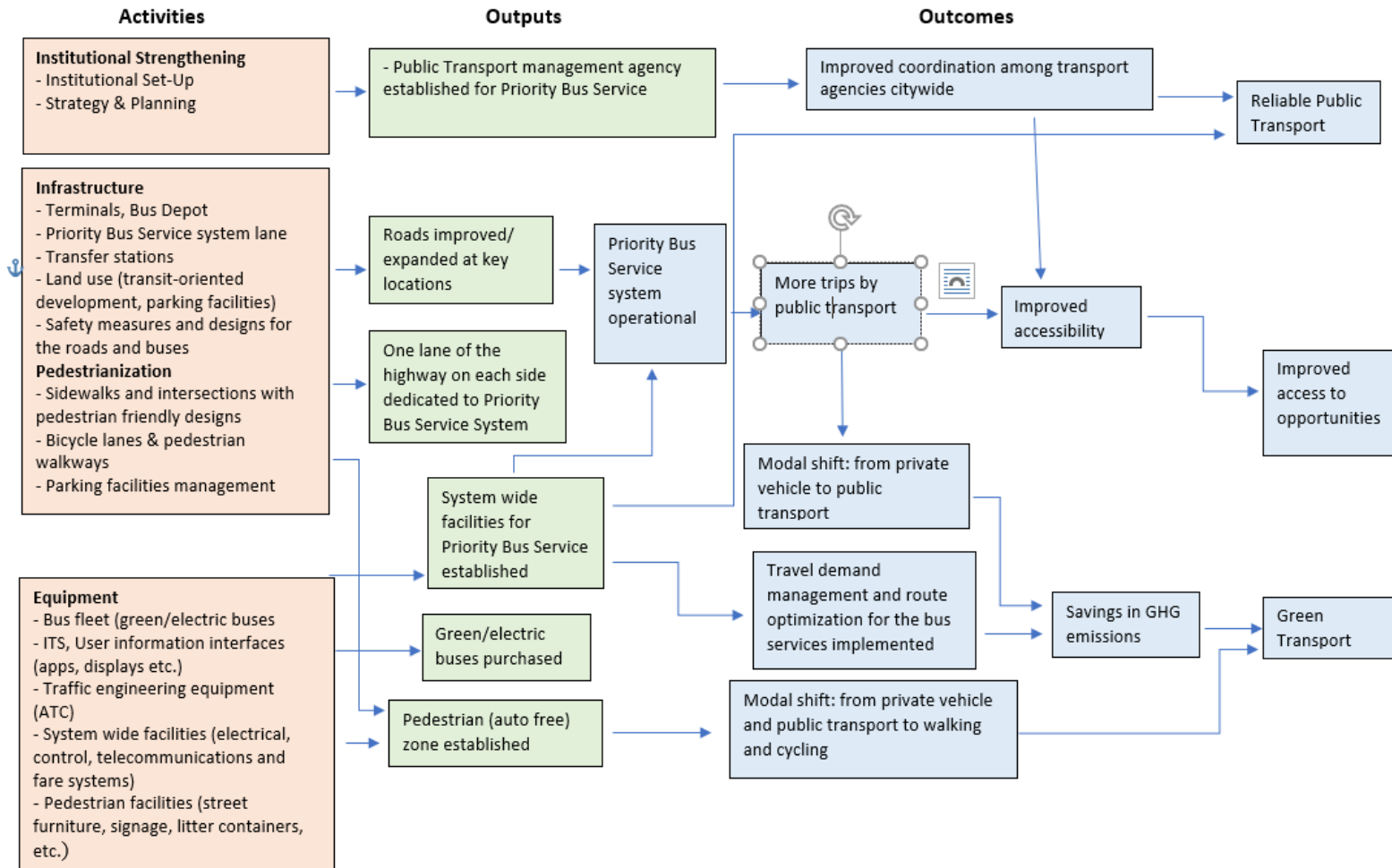
**The World Bank is working to promote sustainable mobility around the world by focusing on four priority goals.** These goals are (i) Improving access of all to economic and social opportunities through equitable mobility solutions; (ii) Increasing the efficiency of mobility solutions; (iii) Improving the safety of mobility; and (iv) Responding to the climate imperative by reducing the carbon footprint of the sector (mitigation) and enhancing climate resilience (adaptation).

**RGoB has determined the location of tangible investments in public transportation and pedestrianization in Thimphu, using support from the World Bank and in line with two priority activities identified in the "Bhutan Transport 2040 Integrated Strategic Vision" (described earlier).** With support from the World Bank through technical assistance, RGoB has identified a 16 km road corridor along Thimphu's north-south axis (from Babesa to Dechencholing) for the development of a high-quality bus transport service and a 1.3km road section (called Norzin Lam) for pedestrianization. As previously mentioned, the current bus service operates on the southern part of the proposed bus alignment. Given the expansion of Thimphu towards to North and in Southern outskirts, the alignment of the proposed bus service is well suited for the city's needs. Similarly, as explained before, Norzin Lam is the heart of downtown Thimphu. The proposed project will support RGoB with developing these investments.

**The overall theory of change, or results chain, project is shown in Figure 1 (below).** The long-term goal is to increase the livability of Thimphu from the transport perspective. As explained in the theory of change, this will be achieved using a three-prong approach. First, by the development of a 16km high-quality urban transport corridor in Thimphu from Babesa to Dechencholing. This selected corridor traverses the length of Thimphu and is critical for connectivity within the city. Second, by the decongestion of the center of Thimphu City by the pedestrianization of Norzin Lam (1.3 km), a major boulevard in downtown Thimphu. Third, by building capacity within the country to manage public transportation infrastructure and services. Together this three-prong approach is expected to improve the flow of traffic within the projects area of influence, reduce GHG emissions within the projects area of influence, and increase the number of jobs reachable by public transportation within the projects area of influence.



**Figure 1: Theory of Change**



**Problem Statement:** Increasing use of motorized and private modes of transport in Thimphu, the capital city of Bhutan, is leading to congestion and air pollution.





**Components**

**The project is expected to have three components:**

**Component 1—Priority bus service infrastructure, fleet, and systems:** This component will finance the development of the 16 km priority bus service corridor along Thimphu’s north-south axis (Babesa to Dechencholing). The characteristics of the service (grade separated, priority lane, signal prioritization etc.) will be determined during project preparation. Provisionally, the interventions are expected to include road infrastructure (including cycling and pedestrian pathways), vehicles, and an Intelligent Transport Systems (ITS). For the vehicle fleet, different bus technologies will be assessed to select an environmentally friendly technology suitable for the context of Thimphu. The ITS is expected to include, Automatic Vehicle Location System, Passenger Information System, and Automated Fare Collection. (Provisional Cost US\$ 26.8 million);

**Component 2—Pedestrianization of Norzin Lam:** This component will finance the pedestrianization of Thimphu’s main 1.3 km boulevard known as Norzin Lam. This will allow priority for pedestrian access along Thimphu’s main business district and is expected to decongest the city center. Norzin Lam is envisaged as exclusively for pedestrian and non-motorized traffic during peak hours with vehicle traffic to support businesses allowed only during defined morning or late evening hours (with exceptions made for emergency vehicles, disability access, public service vehicles, and possibly buses). There are two parking garages close to Norzin Lam, as assessment of whether these would suffice as an alternative parking option for Norzin Lam will be evaluated during project preparation and suitable additional alternative parking options identified as needed. (Provisional Cost US\$ 2.3 million); and

**Component 3—Capacity Development:** This component will finance goods purchase, consultancies, and trainings for institutional strengthening for the operation of the Priority Bus Service. The technical assistance provided through this component may include administrative and financial management aspects of the Priority Bus Service, study of alternative enforcement measures, training to operators and drivers, and better user information systems. This component will also finance a communication campaign to promote the Priority Bus Service and modern public transport in Thimphu. (Provisional Cost US\$ 0.9 million).

**Costs:**

**The estimated total cost of project preparation is \$2.075 million.** Of the project activities component two will be financed by the government. Of the remaining amount (\$1.9 million), financing of \$0.52 million has been secured from GCF. The remaining financing amount of \$1.38 is expected to be secured from KWPF.

**Prima facie the estimated total cost of the project is estimated to be US\$ 29.6 million.** Preliminary estimates of costs are presented below. The exact total cost will be confirmed during project preparation (prior to appraisal). The project is expected to receive preparation and implementation funds from GCF of \$23.5 million (0.5 million for preparation has been secured), 1.2 million from KWPF (for preparation). The remainder of the cost (US \$5 million) will be leveraged from IDA (or other donors).

**Table 1: Project Costs**

Components	Total Cost
<b>Component 1: Priority bus service infrastructure, fleet, and systems</b>	<b>\$26,541,311</b>



Bus infrastructure	\$17,691,311
Non-motorized transport works	\$3,500,000
Rolling stock and maintenance systems	\$1,600,000
Euro 6 buses for Bus Service corridor & parts	\$3,750,000
<b>Component 2: Pedestrianization of Norzin Lam</b>	<b>\$2,250,000</b>
<b>Component 3: TA &amp; institutional development</b>	<b>\$900,000</b>
Land Acquisition	-----
<b>Total:</b>	<b>\$29,691,311</b>

**Climate Change**

**The project will improve the existing situation at the proposed bus corridor and in downtown Thimphu by tackling excessive congestion, global emissions, noise and air pollution, by enabling an efficient public transport.** The introduction of newer and cleaner (electric) buses and proper bus management system will alleviate congestion, encourage modal shift from private cars and taxis to public transportation, thus lowering emissions from transportation within Thimphu city. Demand forecasting will be used for GHG accounting during project preparation.

**Human Capital Formation**

**The project will build the first priority bus service in Bhutan.** As such this is expected to have a significant impact on human capital development. First, the project will be designed in a manner which provides better access to jobs, schools and hospitals for the urban poor once project is implemented. Second, the project will be developing designs for a robust bus management system within Thimphu, thus augmenting the human capital of the country in the public transportation provision space. Lastly, the team will explore ways in which students from local schools and colleges can be engaged during project implementation through field visits and internships.

**Gender, Disability and GBV Issues**

**The project preparation activities will develop a gender and disability inclusive design of mass transit network in Thimphu.** The mass transit system is expected to provide safe and affordable city bus service and pedestrian access to the women, children and persons with disabilities (PWD). Although Bhutan has greatly reduced gaps in gender equality, it was ranked 117th as a ‘medium human development’ country on UN Gender Inequality Index 2017. There is also a lack of public awareness on the rights and needs of PWDs in Bhutan. It is escalated by inaccessible infrastructure and facilities. During project preparation gender and disability assessments will be performed to identify gender and disability gaps, develop actions to close these gaps, and indicators to measure the progress on closing the identified gaps.



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Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

#### Summary of Screening of Environmental and Social Risks and Impacts

The project is expected to bring more economical development in the area with the ease of the accessibility. The cumulative impact of the project may be higher than the project itself, however, the project aims to offset impacts through promoting the use of energy efficient and low carbon technologies and equipment. The likely other risks and impacts are health and safety, landslides and erosion from terrace cutting and earth excavation, siltation of rivers, vegetation loss from forest clearance, risks of ground vibrations, land acquisition and physical displacement, permanent or temporary loss of livelihoods, labour influx, and gender, disability and GBV issues. Borrower's capacity could potentially impact the investment, but this will be supported through capacity building component, more explicitly for establishment of an Environmental and Social Cell (ESC) within the Thromde.

**Note** To view the Environmental and Social Risks and Impacts, please refer to the Concept Stage ESRS Document.

#### CONTACT POINT

##### World Bank

Richard Martin Humphreys  
Lead Transport Economist

##### Borrower/Client/Recipient

Ministry of Finance. Government of Royal Bhutan  
Lekzang Dorji  
Director General  
lekzangd@mof.gov.bt

##### Implementing Agencies

Thimphu Thromde  
Karma Namgyel  
Executive Secretary  
knamgyel@thimphucity.gov.bt



**FOR MORE INFORMATION CONTACT**

The World Bank  
1818 H Street, NW  
Washington, D.C. 20433  
Telephone: (202) 473-1000  
Web: <http://www.worldbank.org/projects>

**APPROVAL**

Task Team Leader(s):	Richard Martin Humphreys
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**Approved By**

Environmental and Social Standards Advisor:		
Practice Manager/Manager:		
Country Director:		

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