

**PROJECT INFORMATION DOCUMENT (PID)  
IDENTIFICATION/CONCEPT STAGE**

Report No.: PIDC28140

<b>Project Name</b>	International Road Assessment Program for Bloomberg Initiative for Global Road Safety
<b>Region</b>	OTHER
<b>Country</b>	World
<b>Sector(s)</b>	Urban Transport (50%), Rural and Inter-Urban Roads and Highways (50%)
<b>Theme(s)</b>	Rural services and infrastructure (10%), Injuries and non-communicable diseases (60%), City-wide Infrastructure and Service Delivery (30%)
<b>Lending Instrument</b>	Lending Instrument
<b>Project ID</b>	P156251
<b>Borrower Name</b>	International Road Assessment Program (iRAP)
<b>Implementing Agency</b>	International Road Assessment Program
<b>Environment Category</b>	C - Not Required
<b>Date PID Prepared</b>	14-Sep-2015
<b>Estimated Date of Approval</b>	30-Sep-2015
<b>Initiation Note Review Decision</b>	The review did authorize the preparation to continue

## I. Introduction and Context

### Country Context

1.3 million people are killed and 50 million injured annually in road crashes worldwide. These figures place road traffic injury well ahead of malaria and tuberculosis as contributors to the global burden of disease. While representing just 48% of the world's registered vehicles, low and middle income countries (LMICs) account for 90% of road deaths globally. Road traffic fatality rates in LMICs (on average 21.5 per 100,000 population) are more than double the rates in high-income countries (10.3 per 100,000). The estimated economic loss from road crashes ranges from 3-6 % of GDP per year. Road traffic injuries are estimated to create a \$1.85 trillion burden on the global economy each year. Most at risk are young adults, and vulnerable road users (cyclists, motorcyclists, and pedestrians). Road crashes are already the number one killer of young people (aged between 15 and 29) in all regions, and the eighth overall killer worldwide. Road traffic injury disproportionately affects the young and the poor. Families often lose their breadwinners or have to look after the disabled and pay for expensive medical treatment including loss of steady income. Many families are plunged into poverty as a result of the lack of social safety nets in their countries. According to the Overseas Development Institute, anywhere from 12-70 million people are kept in poverty each year due to road traffic injuries and fatalities. Road safety continues to be an urgent yet underfunded mandate, and more needs to be done at global, regional, and country level to improve outcomes and scale up the impact of holistic interventions.

The challenge of road injury is truly multi-faceted, and in this context it is important to realize the role of safe infrastructure to prevent or mitigate the severity of serious and fatal crashes. In most countries, and particularly in developing countries, crashes are not uniformly distributed on the network but are concentrated on certain sections of high-risk roads which tend to have higher speed limits, inadequate facilities for vulnerable road users and general poor traffic safety management. The World Report on Traffic Injury Prevention (2004) highlights poor engineering as one of the main contributors to traffic crash risk because it determines how road users perceive their environment in a safe system manner to reduce the injury impact even in serious crashes.

Literature shows that typically 15% to 20% of the entire road network of a country or a state can be considered as high-risk contributing up to 80%-90% of the overall road deaths. In this context, road engineering improvements that focus on the high-risk sections can have enormous benefit in not only reducing the burden of road deaths but also proving more cost-effective and having the highest return on investment compared to other road safety interventions.

In Low and Middle Income Countries (LMICs), lack of safe infrastructure in combination with high motorization rates and high speed travel, have largely contributed to the burden of road deaths. Non-compliance with proper road safety audits, outdated standards, or inappropriate design considerations which do not match with the functional requirements of the road, are all contributory factors. Another important risk factor is the lack of attention to safety facilities for vulnerable road users. For example, an earlier survey undertaken by the International Road Assessment Program (iRAP) reported that more than 90% of the national and state highways assessed in different states of India had no facilities for pedestrian protection. Similarly, while motorized two-wheelers can contribute to up to 90% of the modal share in certain LMICs (e.g., Vietnam), very few countries among them have focused on developing segregated infrastructure for motorcycles. Along the same lines, mixed-modal traffic is not addressed in the design of road network, although their contribution to the death toll can be significant. In summary, infrastructure safety management which includes safe and forgiving road engineering is an essential intervention for substantial reduction of the global death numbers.

### **Sectoral and Institutional Context**

World Bank is committed to helping client countries achieve the Decade of Action's goals with the support of the Global Road Safety Facility (GRSF) and within its transport lending portfolio. Effective road safety measures are necessary in all road transport projects, and the World Bank's policy and strategy has evolved over the years to more successfully incorporate well planned, designed, and implemented road safety interventions in its operations. In order to effectively address road safety challenges in its client countries, the Bank now has better organized strategies and efficient planning methods around concepts such as the five pillars of road safety and the safe system approach.

GRSF has worked diligently on improving road infrastructure safety in World Bank client countries, and has done much of this work in collaboration with the International Road Assessment Program (iRAP). IRAP surveys financed by the GRSF support existing or new World Bank projects or other development partner projects. These assessments inform the design process and the safety engineering features for the project roads, leveraging additional funding for safety investment and guiding the Road Agencies involved in implementation. GRSF's work with iRAP has had successes in improving road infrastructure safety in client countries. In total, over

35,000km of iRAP assessments have been funded by GRSF in 13 client countries. About 1800km of roads (30% of the 6,200 km network) surveyed in India have been designed based on iRAP countermeasure recommendations, and this is projected to prevent 65,000 fatalities and serious injuries over a span of 20 years. IRAP workshops and related trainings held in many of these client countries have also helped improve the management capacity of the road agencies and to successfully assess, develop, and implement solutions around road infrastructure safety.

As part of Bloomberg Philanthropies Road Safety in 10 Countries 5 year (2010-2014) Program, \$125 million have been committed to the global road safety agenda in partnership with the World Bank. Under this program, GRSF supported the work of iRAP and funded the survey of more than 20,000 km of high risk highways in Russia, China, India, Egypt and Brazil. The survey results and recommendations highlighted the risk potential of these roads for each category of road users including the most vulnerable ones (pedestrians, bicyclists and motorized two wheel riders). The main lesson learned was that conducting the assessments of high-risk road has tremendous value but it is only effective after the recommended countermeasures have been mainstreamed into the design and construction process of the road agencies. While the iRAP inspections provide valuable technical framework for objective evaluation of road-user risk, the experience under the previous Bloomberg road safety grant showed that success of such programs largely rests on in-country capacity and commitment to follow up. It is essential that the government has technical expertise and resources to implement the recommendations, and also mandates to make such safety assessments an integral feature for all road infrastructure development. The ChinaRAP program, established with funding support through the GRSF and in collaboration with the China Research Institute of Highways, for instance has demonstrated the positive role of the government leadership in owning and scaling up infrastructure safety management. The China Road Assessment Program (ChinaRAP), which Star Rates roads for crash risk and develops safety countermeasure plans, has been used in 14 city and highway projects across China, helping to shape development bank projects worth more than CNY 9 billion (USD 1.5 billion) including World Bank financed Yunnan Honghe Prefecture Urban Transport Project, ADB financed Shaanxi Mountains Road Safety Demonstration Project. Results from the iRAP surveys have helped shaping up the final designs for road construction incorporating safety solutions. A total of 3,100 km of surveyed network in India and China have been designed based on iRAP recommendations.

Following the previous grant program (2010-2014), the Bloomberg Philanthropies' BIGRS (2015-2019) is a \$125 million partnership program focused on reduction of road deaths and serious injuries in 10 selected cities and five countries in the developing world. Eight recipient global organizations are partnering to collaborate in this program- WHO, WRI EMBARQ, Global New Car Assessment Program (GNCAP), Global Road Safety Partnership (GRSP), Johns Hopkins University (JHU), National Association of City Transport Officials (NACTO), Union North America, and the World Bank. Ten cities were selected through a competitive process. These are: Mumbai, Fortaleza, Sao Paulo, Bogota, Addis, Accra, Shanghai, Bandung, Ho Chi Minh City and Bangkok. Under the program cities will receive funding support for three full staff embedded in the city agencies, comprehensive technical assistance from the collaborating organizations, training and capacity building for enforcement agency, media and social awareness campaigns. In addition, five countries were selected (India, China, Thailand, Philippines, and Tanzania) to receive support for national-level activities including legislative and policy implementation activities.

As part of this initiative, World Bank will partner with iRAP for the survey and assessment of high risk road infrastructure in each of the cities and additionally support activities related to design

implementation, audit and related training. World Bank will work closely with WRI EMBARQ and NACTO under the “Safe Transport and Mobility” subgroup of the program. WRI EMBARQ focusses on global research on sustainable urban transport, urban design, pedestrianization, mass transit, and sustainability planning. In this partnership, WRI EMBARQ will focus on public transit safety including BRT systems, road safety audits and safe access and mobility. NACTO (National Association for City Transport Officials) facilitates the exchange of transportation ideas, insights and best practices on safe transport and mobility among large cities. As a partner to the Bloomberg Initiative, NACTO will focus on producing city-specific guidelines for safe design and urban planning. In this partnership, World Bank will complement the effort of the partners by focusing on the safe infrastructure and engineering aspects

### **Relationship to CAS/CPS/CPF**

The Bloomberg Initiative’s overarching objectives of reducing lives lost and avoiding severe injuries as a result of road crashes aligns with the Bank’s twin goals of eliminating extreme poverty and boosting shared prosperity, supports the Bank’s Transport 2008- 2012 business strategy ‘Safe, Clean and Affordable, Transport for Development’ and is in alignment with GRSF’s Strategic Plan. The Bank’s Strategy acknowledged the global crisis of death and injury caused by road traffic crashes and proposed to place a greater emphasis on road safety by preparing clearly defined road safety components within projects, designing stand-alone projects, and working cross-practice with the Health GP in particular.

At the country level, road safety is considered as an integral part of the transport engagement dialogue with the government stakeholders. For India, the Country Partnership Strategy 2013-2017 recognizes the challenge of road safety in light of rapidly growing motorization and expansion of the highway system, and identifies it as an important factor for achieving the outcome of improving transport connectivity and urban transport services. The World Bank engagement strategy on road safety signed with the Government of China which focusses on the accelerated transfer of knowledge and capacity building is another good example. Similarly, for the Tanzania CAS 2012-2015, road safety is reflected as a major milestone with the establishment of the National Road Safety Agency in 2012. Earlier Bloomberg funding was instrumental in operationalizing the road safety strategy as part of multiple Bank funded urban road safety projects. In summary, partner countries involved in the Bloomberg Program, the country level engagement with the Bank recognizes the importance of road safety either in the context of urban transport development or providing safer inter-urban connectivity which aligns well with the broader goal of the project.

## **II. Project Development Objective(s)**

### **Proposed Development Objective(s)**

To build capacity for road infrastructure safety management in selected countries and cities under the Bloomberg Initiative for Global Road Safety through the assessment and inspection of high risk roads.

### **Key Results**

The key outcome of the project is to influence the design and consideration for safer road infrastructure through the assessment of high risk road and building capacity for government agencies.

This will involve the following outputs during CY2015-CY2016:

1. Identification and assessment of high-risk roads in eight project cities (Accra, Addis Ababa, Bandung, Bangkok, Bogota, Fortaleza, Ho Chi Minh City, Sao Paulo, Mumbai, Shanghai)
2. Survey and Evaluation of High-Risk Road Network in Project Countries (India, China, Philippines and Thailand)
3. Provide training support and build enhanced road safety management capacity for government officials in the participating cities/countries in the areas such as star rating and coding of surveyed road network, implementation of iRAP solutions, and safe infrastructure design guidance.

### **III. Preliminary Description**

#### **Concept Description**

This project will focus on inspecting high risk roads, making recommendations for safe and economically feasible design solutions and building technical capacity to manage and improve road safety in client countries. This effort requires a systemic approach to share best practices on infrastructure safety management and design solutions that have demonstrated the ability to reduce fatalities and serious injuries in the event of a crash. The International Road Assessment Program (iRAP) is a diagnostic tool to survey high risk roads for different categories of roads users and subsequently provides recommendations to guide the detailed design of infrastructure related safety interventions. Using video images and road attribute characterizations, a baseline risk assessment is developed using iRAP's star-rating methodology which can be applied to the different road users - vehicle occupants, motorcyclists, bicyclists, and pedestrians. The risk posed by the physical attributes, supplemented by the information on traffic speeds and volume, is translated into a star rating system which can be applied to each 100 m section of the road. The results from the survey further provides recommended guidelines for the designers on appropriate solution to mitigate the risk for each section along with cost and Benefit-to-Cost ratio information for each solution. The results can thus be used for overall identification of high risk sections in the network, solutions that can be implemented specific to a road user group and assist in developing an investment to maximize the impact on lives saved.

As part of this project, the focus on infrastructure safety will address the following issues:

1. Priorities for urban and inter-urban roads: While the priorities for inter-urban roads are speed management, segregation of motorized two wheelers, and reducing the risk of vehicle to vehicle collisions and run off crashes, urban priorities are more focused on vulnerable road users such as pedestrians and bicyclists. This project will aim at identifying solutions which can be applied for the specific context and applicable risk factors.
2. Meeting the functional requirements of the road network: Often roads may function under conditions different from the original design parameters. For instance, highways designed for cars may be used by a significant share of non-motorized traffic which requires that design solutions are adapted accordingly. Design solutions derived through iRAP recommendations not only aim to comply with highway codes and existing national guidelines but also address the functional requirements of the road and specially target all categories of road users.
3. Providing safe facilities accessible for vulnerable road user groups: As a significant portion of road fatalities include vulnerable roads users (more than 50%), a core aspect of this project will be to develop solutions for the non-motorized road users. This project will help in sharing knowledge and solutions for the vulnerable group which has been proven elsewhere as effective measures.

4. Benchmarking of infrastructure safety and target setting. The project will develop capacity for the road and transport agencies to benchmark their road infrastructure assets in terms of safety ratings and develop cost effective investment plans to improve the overall safety of the assessed network.

The partnership is innovative and effective in terms of leveraging government spending on proven road safety interventions as a result of initiatives undertaken through the grant fund.

The activities focused on road infrastructure safety and capacity buildings will include:

#### Part 1. Identification and Assessment of High-Risk Roads in Project Cities

a. Development of a work plan and identification of the road network to be assessed in the following Project cities:

- i. Accra, Ghana
- ii. Addis Ababa, Ethiopia
- iii. Bandung, Indonesia
- iv. Bangkok, Thailand
- v. Bogota, Colombia
- vi. Fortaleza, Brazil
- vii. Ho Chi Minh, Vietnam
- viii. Mumbai, India
- ix. São Paulo, Brazil
- x. Shanghai, China

b. Carrying out of baseline iRAP assessments of the road networks and of assessments of road designs, and training of road agencies on infrastructure safety management in the following priority Project cities:

- i. Ho Chi Minh, Vietnam
- ii. Mumbai, India
- iii. Addis Ababa, Ethiopia
- iv. São Paulo, Brazil
- v. Shanghai, China
- vi. Accra, Ghana
- vii. Fortaleza, Brazil
- viii. Bangkok, Thailand

#### Part 2. Survey and Evaluation of High-Risk Road Network in Project Countries

a. China

i. Provision of technical support and strategic advice to the Research Institute of Highway on iRAP methods and assessment.

- ii. Carrying out of baseline and design assessments of the Wuhan ITDP (Anlu), Xiangshan, Tianjin, Anhui, and Xiaogan road projects supported by the World Bank.
  - iii. Training of government officials in identifying high risk roads and designing and building safe roads.
- b. Philippines
- i. Provision of technical and training support to Department of Public Works and Highways staff to undertake design and post-construction Star Rating assessments of road safety demonstration corridors.
  - ii. Provision of technical and strategic training and support to Philippine partners as they prepare and undertake development bank-financed, government-financed and private sector projects.
- c. India
- i. Carrying out of Star Rating and Safer Roads Investment Plan analyses and reporting for World Bank project roads in Uttar Pradesh and Tamil Nadu.
  - ii. Carrying out of Star Rating and Safer Roads Investment plan analyses and reporting for up to 2,000 kilometers of World Bank project roads.
  - iii. Provision of training and technical support to the implementation of existing iRAP results in Karnataka, Gujarat, Assam, Kerala, Rajasthan, Uttar Pradesh, and Tamil Nadu.
- d. Thailand
- i. Identification, together with the Thailand government and development partners, of corridors that are soon to be upgraded.
  - ii. Development of an iRAP Thailand project plan for 2017-2019 that includes the identification of a local technical lead agency and plans for an initial assessment of up to 3,000 kilometers of high-risk roads as a demonstration assessment.

#### IV. Safeguard Policies that Might Apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01		x	
Natural Habitats OP/BP 4.04		x	
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11		x	
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12		x	
Safety of Dams OP/BP 4.37		x	
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

#### V. Financing (in USD Million)

Total Project Cost:	1.6	Total Bank Financing:	0
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Financing Gap:	0	
<b>Financing Source</b>		<b>Amount</b>
Global Road Safety Program		1.6

## VI. Contact point

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