Guidelines for Mainstreaming Road Safety in Regional Trade Road Corridors

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SSATP
Africa Transport Policy Program

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Contents

Acronyms and abbreviations

AEBS	Advanced Emergency Braking System
ARTIN	African Regional Transport Infrastructure Network
DRL	daytime running light
EC	European Commission
ESC	Electronic Stability Control
ETSC	European Transport Safety Council
EU	European Union
EuroRAP	European Road Assessment Programme
GDP	gross domestic product
GRSF	Global Road Safety Facility
HGV	heavy goods vehicle
IATSS	International Association of Traffic and Safety Sciences
iRAP	International Road Assessment Programme
IRTAD	International Road Traffic Accident Data
LMICs	low- and middle-income countries
MDB	multilateral development bank
NGO	nongovernmental organization
OECD	Organisation for Economic Co-Operation and Development
PIN	Road Safety Performance Index
RTRC	regional trade road corridor
SSATP	Sub-Saharan Africa Transport Program
TEN-T	Trans-European Transport Network
TEN-T	Trans-European Transport Network
ToR	terms of reference
UNECA	United Nations Economic Commission for Africa
UNRSC	United Nations Road Safety Collaboration
WHO	World Health Organization

Foreword

The global crisis of road traffic injury is escalating in low-income and middle-income countries to devastating effect, with road traffic crashes a leading cause of death. The World Health Organization (WHO) estimates that 1.24 million people were killed on the world's roads in 2010, and that between 20-50 million more suffer non-fatal injuries from road traffic collisions each year. Among young people aged 15-44 years, road traffic crashes are the second leading cause of death after HIV/AIDS.

The scale of the impact of road traffic crashes on human life has raised road safety higher on the international development agenda, leading to the declaration by the United Nations General Assembly of the Decade of Action for Road Safety 2011-2020. The Global Plan for the Decade of Action sets an ambitious target to stabilize and reduce the forecast figure of road traffic fatalities by 2020. Such targets have also been set at regional levels. For example, in 2006 Ministers of Transport from the Asia and the Pacific region adopted a target to cut deaths by 600 000 by 2015. The African Road Safety Action Plan 2011-2020 proposes to reduce deaths by 50% by 2020. In a 2012 statement to the Rio+20 United Nations Conference on Sustainable Development, the multilateral development banks issued a statement in which they committed to mobilize more resources for road safety in developing countries in an effort to assist them in achieving the targets they have set.

As part of the global effort, WHO has taken a coordinating role on road safety across the United Nations system and set up the United Nations Road Safety Collaboration as a consultative mechanism to address global road safety issues and implement the recommendations of the *World report on road traffic injury prevention*. The *Global status report on road safety 2013* recently launched by WHO serves as a baseline for monitoring progress during the Decade of Action.

The majority of road traffic deaths take place on just 10 per cent of the road network, which largely comprise the world's busiest regional trade corridors with high levels of traffic volumes and speeds, an unmanaged mix of motorized and non-motorized users, and mixed speed road environments. These road corridors are of significant developmental importance because they promote trade, support

regional economic growth and enhance regional integration. However, they represent a major road safety challenge due to the volume and nature of long-distance transport operations, a challenge compounded by the presence of non-motorized modes, livestock or animal crossing areas, and roadside human settlements. The result is a road traffic injury rate that, in the case of the Abidjan-Lagos corridor, for example, varies between 20 and 30 per 100 000 population, compared to less than four per 100 000 people in countries like the Netherlands, Sweden and the United Kingdom, which have the best road safety performance.

Very often the improvements implemented under most trade and transport corridor projects in developing countries are compromised by increases in road traffic crash risks and casualties. The removal of trade barriers under such projects aims to contribute to trade growth and consequently to increased truck traffic volumes, which in turn leads to the increased road traffic crash risks. The physical infrastructure enhancements along such corridors can also escalate the risks due to higher speeds and higher vehicle volumes as drivers respond to the improved road surface and thus the higher design speed. Therefore, road safety interventions should be incorporated and mainstreamed in all regional trade corridor improvement projects to maximize the effectiveness of investments made by the governments, the multilateral development banks, and other development agencies.

The guidelines presented here are an important contribution to addressing the challenge of road safety management in regional trade corridors. Developed jointly by the SSATP and the World Bank, they are intended to serve as a guide for mainstreaming road safety in regional trade corridor investment programs in developing countries. The guidelines present a roadmap and set of tools with templates for terms of reference to assist in the identification, preparation and implementation of effective road safety projects in regional trade corridors, based on the lessons and global best practice experience. The publication outlines a systematic and logical process for directly addressing priority road safety needs on regional corridors in a streamlined and iterative manner, that will be relevant not only within Africa, but also to other developing regions of the world.

These guidelines complement current tools for assessing, addressing, and managing road safety interventions at country level (for example, the *Guidelines to Road Safety Management Capacity Reviews and Safe System Projects* developed by the World Bank Global Road Safety Facility). They provide specific guidance on how to integrate and mainstream road safety interventions in donor financed transport

corridor projects. The recommendations and tools set out here should assist countries and road safety professionals everywhere in making that happen.

This guideline is both timely and relevant for advancing the road safety agenda within the development institutions, and represents another example of partnership towards achieving the target of the Global Plan for the Decade of Action.

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Executive summary

These guidelines, launched jointly by the World Bank and SSATP, are directed at the identification, preparation, and implementation of road safety projects in regional trade road corridors (RTRCs). They are based on international best practices. The rationale for the development of these guidelines and their key provisions for mainstreaming road safety in RTRCs are summarized below.

Global Context for RTRC Road Safety Management

The Escalating Global Crisis of Road Traffic Injury

Unprecedented high levels and rates of motorization in low- and middle-income countries (LMICs) are leading to rapidly escalating road traffic injuries, often resulting in premature death and disability. These injuries occur predominantly to vulnerable road users and economically active males. The socioeconomic costs of these injuries are estimated at between 1 and 7 percent of the gross domestic product (GDP) of LMICs.

Road Safety Management: An Urgent Development Priority

The scale of actual and projected serious health losses, the associated socioeconomic costs, and other adverse impacts have made road traffic injury and its management an urgent international development priority. In response to this unprecedented road safety challenge, international organizations are urging LMICs to move straight to best practice approaches to avoid repeating the costly evolutionary path of developed countries in terms of lives lost and injuries sustained. The UN Decade of Action for Road Safety 2011-2020 has set a highly ambitious global target of saving 5 million lives, avoiding 50 million serious injuries, and reducing the socioeconomic costs of over US$3 trillion by 2020 (UNRSC 2011b).[1] A related Global Plan encourages LMICs to implement effective "Safe System" approaches (UNRSC 2011a).

[1] All dollar amounts are U.S. dollars unless otherwise indicated.

Targeting RTRCs for Road Safety Investments

Road safety investments in RTRCs and interurban roads—the busiest roads—present the best opportunities for intervention and achieving road safety results. These corridors have high strategic priority, attract large investments, and are particularly amenable to targeted treatments. Typically, about 50 percent of deaths take place on just 10 percent of the road network. That portion is characterized by high traffic volumes and speeds and often an unmanaged mix of motorized traffic, non-motorized users and mixed-speed road environments. Better regional outcomes are now being targeted for RTRCs worldwide, supported by increasingly active regional economic commissions.

The potential return from best practice road safety investments targeting RTRCs is acknowledged to be substantial. According to the international Road Assessment Programme (iRAP), if 10 percent of the world's busiest roads were targeted for affordable treatments using a small portion of infrastructure budgets, 1.7 million deaths and serious injuries could be prevented each year, generating crash cost savings of at least $270 billion a year. By targeting these corridors, national and regional entities have an opportunity to make rapid progress in strengthening road safety management capacity and to quickly improve results. The African Union has set a regional goal of achieving the world's best road safety practice on the African Regional Transport Infrastructure Network (ARTIN) by 2030[2]. Reflecting aspirations in the UN's Global Plan, the Africa Road Safety Plan and supporting policy framework recommend that 10 percent of road infrastructure investment and 5 percent of road maintenance expenditures by member states be allocated to road safety.

RTRC Guidelines

The objective of this publication is to provide best practice guidelines for mainstreaming road safety in RTRC investment programs in LMICs. The approach taken (1) highlights global best practice road safety management in regional trade corridors; (2) summarizes the current road safety management capacity in RTRCs in LMICs; (3) identifies critical success factors; (4) outlines the generic compo-

[2] PIDA, NEPAD, African Union (2011). Programme for Infrastructure Development, Interconnecting, integrating and transforming a continent.

nents of best practice road safety investment projects; (5) provides a roadmap for identifying, preparing, and implementing best practice road safety projects in RTRCs; and (6) sets out a range of terms of reference and other tools to assist their project preparation.

Complementing the Existing World Bank Road Safety Management Guidance

The World Bank's recent shift to "Safe System" road safety projects represents a significant change from previous approaches. Current road safety investments aim to anchor country capacity-building efforts in systematic, measurable, and accountable investment programs. These programs simultaneously accelerate the transfer of road safety knowledge, strengthen the capacity of governmental partners and stakeholders, and rapidly produce results in targeted high-risk corridors and areas to provide benchmarks and dimensions for the next stage of investment. The new guidance complements the existing country guidance, directly addresses RTRC road safety priorities (taking into account the additional complexity of regional approaches), and provides a tailored and pragmatic approach.

Identifying Best Practice for Road Safety Management in RTRCs

The road safety management of the European Union's Trans-European Transport Network (TEN-T) is a best practice model against which developing regional networks in LMICs can be assessed and encouraged to strive for. Successful TEN-T road safety performance has been achieved over many years, and it reflects effective integration of best practice national road safety management systems and institutionally mature regional frameworks for economic and social integration. The arrangements are complex, but demonstrate the convergence of regional and national management frameworks, influenced by the best global performers, in strategic corridors. A focus on clear, ambitious results is supported by well-developed institutional management capacity and well-defined, evidence-based intervention.

Benchmarking Road Safety Management Capacity in RTRCs in LMICs and Regions

Benchmarked against international best practice, the current road safety management capacity in LMICs and regions, as well as in the donor and financier community, is a formidable barrier to progress in road safety in RTRCs. Weak delivery of institutional management functions and weak intervention are evident and are reflected in the poor road safety results achieved to date. These weaknesses need to be addressed if road safety is to be mainstreamed within regional and country assistance strategies, and receive more than the tiny fraction of transport sector

spending it currently attracts. Particularly evident in the intervention sets adopted in LMICs is the general absence of modern best practice approaches to safety engineering. These approaches involve (1) establishing clear urban and rural road hierarchies or classifications that match function to speed limit and layout and design as well as separate oncoming traffic on high-volume, high-speed roads to prevent head-on collisions; (2) providing crash-protective roadsides where possible to address run-off road collisions; (3) mandating safe speeds at intersections to reduce fatal and serious side collisions; and (4) ensuring safe speeds on roads and streets with dangerous mixed uses where effective grade separation of motor vehicles and vulnerable road users may be difficult.

Addressing Critical Success Factors

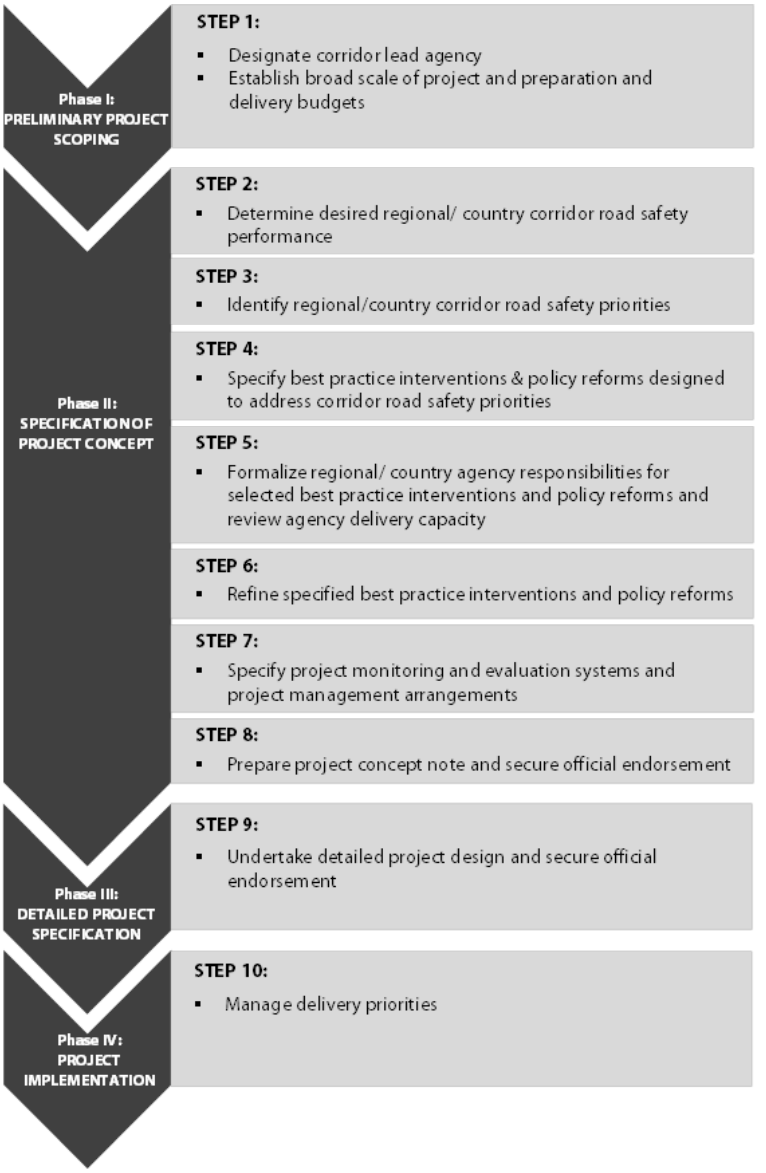
Considerable challenges must be met to achieve sustainable improvements in safety performance. Meeting those challenges requires taking into account the critical factors in bringing road safety outcomes under control in RTRCs. The factors addressed in these guidelines are building road safety management capacity through institutional reform; accelerating knowledge transfer through "learning by doing" projects; sustainably scaling up targeted regional and country investment; and sustainably increasing international cooperation and development aid support. The underlying theme is how to accelerate the process of shifting from a weak to a strong institutional management capacity to govern the evolution of improved road safety results. Where there are weaknesses in the key institutional arrangements at regional and national levels (especially at the lead agency and coordination levels), the corridor project must be designed to address these weaknesses and start the process of building sustainable road safety management capacity, primarily within the corridor but also beyond to the adjoining road network.

Specifying the Generic Components of a RTRC Road Safety Project

These guidelines outline a series of interrelated, mutually reinforcing road safety project components covering corridor intervention priorities, corridor road safety policy reforms, corridor monitoring and evaluation systems, and corridor project management arrangements. The aim is to create a project that encourages agencies to work together constructively to deliver and evaluate a set of well-targeted, best practice multisectoral interventions in RTRCs, to conduct policy reviews, and accelerate the transfer of knowledge on road safety. Projects must be of sufficient scale to address the identified critical success factors and achieve the global and regional aspirations for mainstreaming road safety. Large-scale stand-alone pro-

jects addressing multiple interventions will require budgets of at least $50 million (especially where there are no existing budgets), increasing to $300 million.

Key Phases of the RTRC Road Safety Project Roadmap



RTRC Project Roadmap

The roadmap specifies a systematic and logical process for creating RTRC road safety projects. It is derived from the current World Bank's Global Road Safety Facility (GRSF) guidelines for reviews of country capacity and project preparation for the establishment phase of a longer-term road safety investment strategy. The process, which is highly streamlined and iterative, directly addresses RTRC priority road safety needs. As the roadmap shows, it begins with some preliminary project scoping, which includes defining the RTRC of interest, designating a lead agency, and reaching agreement on the broad scale of road safety investment envisaged and availability of the related project preparation budgets. Specification of the project concept follows, in sufficient detail to enable agreement on proceeding to the more detailed preparation and refinement of project components and finalization of budgets. Finally, the process addresses the key priorities for the project implementation phase.

1. Introduction

Low- and middle-income countries (LMICs) account for 90 percent of fatalities in road crashes. Annually, some 1.3 million people die in road crashes, and between 20 and 50 million are injured, many of whom suffer a permanent disability (WHO 2009). The socioeconomic costs of these injuries are estimated at between 1 and 7 percent of the GDP in LMICs (Peden et al. 2004; Mathers and Loncar 2005; McInerny 2012) Like the actual and projected rates of motorization in these countries, the accompanying annual increase in road traffic injuries is unprecedented, involving premature death and disability, as noted, in catastrophic numbers, predominantly among vulnerable road users and economically active males (Bliss 2011b). Without new initiatives, more than 50 million deaths and 500 million serious injuries on the world's roads can be anticipated with some certainty by 2050 (Bhalla et al. 2008). Nearly 60 percent of the preventable loss will occur in the World Bank's East Asia and Pacific and South Asia regions alone and a further 18 percent in Sub-Saharan Africa (Bliss 2011a).

Road Safety Management: An Urgent Development Priority

The extent and cost of actual and projected serious health losses have turned road safety into an urgent international development priority (Peden et al. 2004; Bliss and Breen 2009; Global Road Safety Facility 2012). Following sustained international calls to action, most notably in the widely supported *World Report on Road Traffic Injury Prevention* (Peden et al. 2004—also see Commission for Global Road Safety 2006, 2008, 2011; OECD 2008), the UN Decade of Action for Road Safety 2011–2020 was announced in 2010 (United Nations 2010). A related Global Plan encourages these countries to implement effective "Safe System" approaches and targets savings of 5 million lives, avoidance of 50 million serious injuries, and reduced socioeconomic costs of over US$3 trillion by 2020 (UNRSC 2011a; Guria 2009). In support of these efforts, good practice guidelines and tools have been issued by the World Bank's Global Road Safety Facility (GRSF) and other organizations (Bliss and Breen 2009; iRAP 2007), and international professional net-

works have been established, supported, or engaged.[3] The multilateral development banks (MDBs) are committed to scaling up investment in essential road safety management capacity and support for mainstreaming road safety into infrastructure development in LMICs (World Bank 2009; World Bank and Inter-American Development Bank 2011).

Targeting Regional Trade Road Corridors (RTRCs)

Road safety investments in regional trade road corridors[4] and the interurban network (the busiest roads) are the best opportunities for achieving improved road safety. In view of their economic importance, these corridors have high strategic priority and attract large investment. They have high traffic volumes and high crash densities, exacerbated by the heavy volumes and characteristics of long-distance commercial and passenger transport operations. They are particularly amenable to targeted treatments because typically about 50 percent of deaths take place on just 10 percent of the network where traffic volumes and speeds are high and where there is often an unmanaged mix of motorized traffic and non-motorized users and mixed-speed road environments (iRAP 2012b). Even newly built or rehabilitated roads present risks when important safety considerations are omitted in designs or left out in construction and maintenance phases as and when funds run out (Global Road Safety Facility 2012). These outcomes have adverse impacts on many aspects of corridor investment aimed at improving regional integration, fostering economic development, improving public health and child welfare, and reducing social inequalities (Breen 2012a). However, these impacts are not inevitable and can be managed (Breen 2012b; UNRSC 2011b; Global Road Safety Facility, Bliss, and Breen 2013).

[3] Examples are Road POL, the global traffic policing network; the International Road Assessment Programme (iRAP); and the International Road Traffic Accident Data network (IRTAD).

[4] International corridors are defined and referred to throughout as regional trade road corridors (RTRCs), which have both international trade functions and national functions and connect one or more adjoining countries.

Regional Aspirations to Implement World's Best Practice

Better regional outcomes are now being targeted for RTRCs worldwide, supported by increasingly active regional economic commissions. In Africa, where problems in such corridors are particularly acute (Breen 2012b), the African Union has set a regional goal of achieving the world's best road safety practice on the African Regional Transport Infrastructure Network (ARTIN) by 2030 (PIDA, NEPAD, and African Union 2011). Reflecting aspirations in the UN's Global Plan (UNRSC 2011a), the Africa Road Safety Plan and supporting policy framework recommend that 10 percent of road infrastructure investment and 5 percent of road maintenance expenditures by member states be allocated to road safety (UNECA 2012).

Potential for Substantial Returns on Investments in RTRCs

The potential return for best practice road safety investments in RTRCs is substantial. According to the International Road Assessment Programme (iRAP), if 10 percent of the world's busiest roads received affordable treatments using a small portion of the infrastructure budget, 1.7 million deaths and serious injuries could be prevented each year, generating crash cost savings of at least $270 billion a year (iRAP 2012b). RTRCs thus are an excellent starting point for participating nations to make significant progress in strengthening their road safety management capacity and rapidly improving their results.

Objective and Approach

The objective of this publication is to provide best practice guidelines for mainstreaming road safety in RTRC investment programs in LMICs. These guidelines complement the existing road safety management guidelines issued by the World Bank (Bliss and Breen 2009; Global Road Safety Facility, Bliss, and Breen 2013) and provide a tailored approach to RTRC road safety priorities. The following approach is taken:

- Highlight best practice road safety management in European trade corridors with reference to the regional Trans-European Transport Network (TEN-T) network of the European Union (chapter 2).
- Summarize the current capacity in road safety management in RTRCs in LMICs (chapter 3).
- Identify critical success factors (chapter 4).

- Outline the generic components of best practice road safety investment projects (chapter 5).
- Provide a roadmap for identifying, preparing, and implementing best practice road safety projects in RTRCs (chapter 6).
- Set out a range of terms of reference and other tools to assist RTRC project preparation and implementation.

2. Best practice road safety management in European trade corridors

The Trans-European Transport Network is a cross-modal network comprising road, rail, air, and water transport networks. It runs about 98,500 kilometers in length. Some 70 percent of its length is made up of motorways and high-quality roads (70,200 kilometers) that carry 75 percent of total TEN-T road traffic (European Commission COM 2009). TEN-T plays a key role in supporting long-distance freight and passenger traffic operations. That role extends to integrating the main urban and economic centers with other transport modes and linking landlocked and peripheral regions to the central regions of the European Union (EU). Although it makes up only 2 percent of the total road network of the 27 EU member states, the network includes some of the busiest international trade routes in the region.

Because of its best practice results, the TEN-T road network is a benchmark for systematic corridor safety management (Breen 2012b). It demonstrates the results-focused government leadership and accountable institutional management (box-2.1) that underpins a range of effective system-wide interventions (boxes 2.2-2.5)—all aimed at achieving ambitious, measurable regional and national long-term "Safe System" goals and interim targets.

Regional Institutional Management Arrangements

The EU, which plays a strong regional leadership role in road safety, shares responsibilities for the EU and TEN-T network road safety with its member states. Regionally and nationally, substantial capacity has built up over many years for the accountable delivery of regional and national goals and targets (see box 2.1).

Box 2.1 Regional Governance Arrangements in EU and for TEN-T Road Network

Governmental Leadership and Accountability for Goals and Targets

- The EU aspires to lead the world in road safety and promotes mobility that is efficient, safe, secure, and environmentally friendly**.** The "Safe System" goal has been adopted to virtually eliminate road deaths by 2050, and a target of a 50 percent reduction in deaths by 2020 has been set. A new target for a reduction in serious injuries is being developed. EU countries adopt long-term goals and interim final and intermediate outcome targets.
- The TEN-T model illustrates trilateral governance with EU regional leadership, supported by national leadership, and plans for corridor platforms to aid TEN-T project management.
- The EU owns the TEN-T road network policy, with project implementation support from the European Commission (EC) TEN-T agency supervised by different EC directorates and an observer from the European Investment Bank. Road safety policy is led by the EC's TEN-T and road safety units. TEN-T network safety management is carried out by member states, supported by an EU directive. The TEN-T network enables transport services and operations that are safe and secure, with high-quality standards for passenger and freight transport.

Coordination

- The EC coordinates road safety across directorates and member states, and joins with the business sector and civil society in seeking to meet EU and TEN-T network safety goals. An EC high-level group brings together national road safety lead agencies; the EU Council brings together lead ministers; and the committees of the European Parliament deal with road safety issues. Nationally funded, staffed safety coordination is typically established, bringing together key government agencies sitting within the lead agency. At the corridor project level, new corridor platforms will be coordinated by a European coordinator.

Legislation and Harmonization

- The legislative role underpinning TEN-T standards is shared by the European Commission and member states. The comprehensive legislative framework for the TEN-T system comprises harmonized EU rules in areas such as the safety of commercial and passenger transport operations, including driver and vehicle standards, together with largely convergent national rules for road speed limits, blood alcohol limits, and other key safety rules based on effective practice. EU single market legislation aims to remove trade barriers as well as offer a high level of consumer protection.

Funding and Resource Allocation

- The EU funds road safety initiatives through regional development and other investment programs, twinning programs, research and development, benchmarking activities and review, and by supporting effective nongovernmental organization (NGO) activity. Resource allocation tools are used to prioritize interventions.
- Both the EU and member states provide financial support for TEN-T. EU implementation is through several financial instruments: the TEN-T Programme, the Cohesion Fund, the European Regional Development Fund, and the European Investment Bank's loans and credit guarantees. EU cofinancing of infrastructure has to conform to the new infrastructure road safety management directive.

Promotion

- The EU and its member states promote societal shared responsibility for road safety through the long-term "Safe System" vision and quantitative targets and through best practice approaches to intervention. They lead by example and create a national demand for road safety in procurement and in-house travel policies.
- Member states and other TEN-T partners are required to consider the promotion of road safety.

Monitoring and Evaluation

- Monitoring and evaluation are carried out by the EC's road safety unit, the EC's CARE data group, and the Road Safety Performance Index (PIN) program of the European Transport Safety Council (ETSC). A legal duty exists to collect fatal and serious injury data and crash costs for the TEN-T network. Its safety performance is evaluated by the EC's road safety unit. The European Road Assessment Programme's (EuroRAP's) risk mapping and Star Rating assessment against "Safe System" principles have been carried out for 50 percent of the network, and new rules facilitate general monitoring of final outcomes. Road safety management capacity review has been conducted nationally. Benchmarking is required for safety and other objectives to inform corridor investment plans.

Research and Development and Knowledge Transfer

- The EU's framework research programs cover EU and TEN-T road safety. Best practice guidelines and knowledge transfer are developed and conducted through the European Road Safety Observatory and by regional professional networks—for example, policing (TISPOL), data (CARE), engineering (EuroRAP, the European Union Road Federation-ERF, the Forum of European National Highway Research Laboratories-FEHRL), research (the Forum of European Road Safety Institutes-FERSI). Member states are encouraged to apply best TEN-T practices to their networks.

Regional Intervention Strategies

The EU and its member states have adopted a system-wide approach to road safety to reduce exposure to the risk of death and serious injury, prevent death and serious injury, and mitigate the severity of injury when a crash occurs and to reduce the consequences of injury. The best practice "Safe System" approach recommended to all countries by the OECD (2008) is being adopted in Europe and pursued vigorously by Europe's best performers. Regional and national interventions address the safety of all users and cover the following:

- Planning, design, operation, and use of the road network (box 2.2).
- Entry and exit of drivers and vehicles (boxes 2.3–2.4).
- Recovery and rehabilitation of crash victims (box 2.5).

Box 2.2 Regional Planning, Design, Operation, and Use of Road Infrastructure

- The EU's priority is to address high-risk rural and urban roads and encourage the mainstreaming of proactive safety management nationally and in the TEN-T network (EC 2011).
- The safety of the TEN-T network has been assessed by EuroRAP against a "Safe System" assessment model for 50 percent of the network. Of Sweden's TEN-T sections, 85 percent has been assessed as low risk, whereas in Poland only 4 percent of its TEN-T network has been assessed as low risk (EuroRAP 2011).
- Key EU directives set out various requirements for road safety engineering of the TEN-T network. Directive 2008/96/EC on road infrastructure safety management requires the establishment and implementation of procedures relating to road safety impact assessments, road safety audits, the management of road network safety, and safety inspections and assessments by the member states.[5] Any TEN-T infrastructure funding is conditional on such guidelines being applied, and an extension of such a condition to external aid funding is being explored. Other TEN-T directives cover cross-border enforcement (Directive 2011/82/EC, Facilitating the cross-border exchange of information on road safety related traffic offences) and tunnel safety (Directive 2004/54/EC, Safety requirements for tunnels with a length of over 500 meters in the TEN-T road network). TEN-T guidelines also require rest areas approximately every 50 kilometers on motorways for commercial drivers.
- Road classifications and speed limits are decided nationally, although there is broad convergence. The maximum speed limit for motorways is mostly 120 kilometers per hour or below (lower vehicle speed limits for trucks and buses are in place). Speed limits for rural road are mostly 80 or 90 kilometers per hour, and for urban roads 50 kilometers per hour, with widespread use of 30 kilometers per hour in residential areas. The "Safe System" approach is being adopted, with an emphasis on better matching of road function, speed limit, road layout, and design in road classifications. Sweden has paid systematic attention to the safety engineering of all road types, even where traffic flows on its long haul routes are low (EuroRAP 2011). Trials of the 2+1 road standard for single carriageways[6] indicate a safety level as good as or better than that achieved on motorways. Safety upgrading of key single carriageways is planned.

[5] "Road safety impact assessment" is a strategic comparative analysis of the impact of a new road or a substantial modification to the existing network on the safety performance of the road network. "Road safety audit" is an independent, detailed systematic and technical safety check relating to the design characteristics of a road infrastructure project and covering all stages from planning to early operation. "Road safety inspection" is an assessment of the existing network. And "network safety ranking," which is a key part of network safety, is a method for identifying, analyzing, and classifying parts of the existing road network according to their potential for safety development and crash cost savings.

[6] A 2 + 1 road consists of two lanes in one direction and one lane in the other, alternating every few kilometers and separated by a steel cable barrier.

- Regional recommendations exist for maximum blood alcohol limits (0.05 grams per liter for drivers in general) and enforcement priorities. Cross-border frameworks are in place for traffic policing initiatives, and the enforcement of key road safety rules is aided by the regional road policing network, TISPOL.

Source: Breen 2012b.

Box 2.3 Regional Freight and Passenger Transport Regulation: Vehicle Standards

A substantial body of EU legislative standards and compliance regimes for private, passenger, and freight transport supports road safety on the TEN-T network and EU roads in general. The safety of heavy goods vehicles and passenger transport is highly regulated because of their high mass and overinvolvement in fatal crashes. Work-related road safety action by employers is encouraged. EU Whole Vehicle Type Approval includes a wide range of requirements and the growing adoption of intelligent transport applications:

- *Weights and dimensions.* The weights and dimensions of EU heavy-duty vehicles are set to avoid damage to roads, bridges, and other infrastructure, and for road safety. The maximum weight for trucks is 40 tons, or 44 tons when carrying a container for combined transport operations. The rules also allow member states to authorize on their own territory and under certain conditions longer and heavier vehicles.
- *Speed* limiters. In-vehicle speed limitation (up to 90 kilometers per hour) is required for all new EU commercial vehicles—for heavy goods vehicles (HGV) of 3,500 kilograms and more and for buses of 10,000 kilograms or more. Some countries apply lower HGV and bus speed limits for different road types (Denmark, Ireland, the United Kingdom).
- *Electronic Stability Control and Advanced Emergency Braking*. Mandatory fitment of Electronic Stability Control (ESC) and Advanced Emergency Braking (AEBS) is being phased in on large vehicles, and both systems hold large potential for casualty savings.
- *Retro-reflective markings*. Many severe truck crashes involve their poor conspicuity at night. The sides and rear of EU commercial vehicles are becoming more conspicuous through the use of retro-reflective markings.
- *Alcolock systems*. These systems, intended to prevent vehicle operators with excess blood alcohol levels from driving, require the driver to blow into an in-vehicle breathalyzer before starting the ignition. In Sweden, all trucks of 3.5 tons and over, contracted by the Swedish Transport Administration for more than 100 hours per year, have to be fitted with alcohol interlocks. Alcolocks are used widely in member states for high-risk offender drunk driver programs, fleet programs, school bus trips, and public procurement of transport.
- *Vehicle conspicuity*. Dedicated daytime running lights (DRLs) are vehicle headlights that switch on automatically when the engine is started. DRLs (already in use in most EU countries) are mandatory in the EU for all new cars, light commercial vehicles, and trucks and buses.

- *Blind spot mirrors.* Large vehicles have a blind spot when they turn, and cyclists are particularly vulnerable to it. All EU trucks of over 3.5 tons have to be fitted with upgraded wide-angle rear-view mirrors.
- *Underrun protection.* The EU mandates the fitment of underrun protection for the front, rear, and sides of trucks to prevent a vehicle from running under a truck in the event of a crash.

Sources: European Commission 2012; Breen 2012.

Box 2.4 Regional Freight & Passenger Transport Regulation: Driving and Operational Standards

- *Drivers' hours.* Driving fatigue is a factor in 20 percent of commercial vehicle crashes in the EU and a special *problem* because of the long distances traveled and the irregular shift patterns imposed on drivers that affect sleep. EU rules cover professional driving time in cross-border transport where part or the entire journey is in the EU, They provide for daily driving periods, daily and weekly rest periods, and an average maximum weekly work period.
- *Tachographs.* Every EU truck, bus and coach must be fitted with and use a tachograph to record driving times and rest periods on each journey. Monitoring and controls are carried out by spot checks of digital *tachograph* records at the roadside or at the premises of vehicle operators. New systems include satellite positioning and road communication systems that allow managers and operators to connect to onboard computers for safety monitoring purposes.
- *Driver training.* An EU directive imposes 35 hours of periodic driver training every five years, training is devoted to safe and eco-friendly driving, vehicle loading, and passenger comfort.
- *Seat belt use.* The use of safety belts where fitted is required in all forward-facing front and exposed rear seats in new HGVs, as well as in coaches and minibuses.
- *Management of dangerous goods.* Moving dangerous goods such as chemicals or flammable materials by road is governed by a series of EU directives.
- *Cross-border enforcement of key safety rules.* A legislative framework for the cross-border exchange of information for key offenses facilitates the exchange of national data to aid rule enforcement.
- *Cross-border licensing.* Rules for the transport of goods or passengers between member states require operators to fulfill key criteria, which are subject to regular national checks. A community *license* is obtained nationally for cross-border transport throughout the EU and is carried by the driver. Drivers from non-EU countries must carry an attestation of legal employment by a licensed EU road haulage operator.

Sources: European Commission 2012; Breen 2012.

Box 2.5 Recovery and Rehabilitation of Road Victims from the Road Network

- Effective post-crash care reduces the consequences of injury. This care consists of efficient emergency *notification*, fast transport of qualified medical personnel, correct diagnosis at the scene, stabilization of the patient, prompt transport to point of treatment, quality emergency room and trauma care, and rehabilitation services (Sasser et al. 2005; Mock et al. 2004).
- Although the standards for recovery and trauma care are generally high in most EU countries, a new EU *strategy* will identify further improvements. Research indicates that in the EU reducing the time between crash occurrence and the arrival of emergency medical service from 25 to 15 minutes could reduce deaths by one-third (Sánchez-Mangas et al. 2010).

Regional Road Safety Results

Even though it is made up of some of the EU's busiest corridors, the TEN-T network contributes a relatively small proportion, estimated at 5 percent, of total EU road traffic deaths. At the country level, the average death rate for EU (27) countries is six deaths per 100,000 inhabitants. The rates in the best road safety performing countries are 10 times lower than those experienced on high-risk, high-volume sections of RTRCs and at the national level in LMICs.

The successful road safety performance of the EU's TEN-T network has been achieved over many years. It reflects the effective integration of best practice national road safety management systems and institutionally mature regional frameworks for economic and social integration. The arrangements are complex, but they demonstrate the convergence of regional and national management frameworks, influenced by the best global performers, in strategic corridors.

A focus on clear, ambitious results is supported by well-developed institutional management capacity and well-defined, evidence-based interventions. The TEN-T road safety management system is a best practice model against which developing regional networks in LMICs can be assessed and encouraged to strive for.

3. Road safety management capacity in RTRCs in low-and middle-income countries

The principal road safety problems in RTRCs in low- and middle-income countries occur across the entire road safety management system, although the information available on these problems is generally sparse (Breen 2012a, 2012b). Such problems occur in the *institutional management arrangements*, in the scope and quality of the *intervention* set, and in the road safety *results* achieved. They are summarized in this chapter.

Institutional Road Safety Management of RTRCs

Reviews of road safety management capacity and other studies indicate that current institutional management arrangements and activities at the regional, national, and corridor levels are in general fragmented or insufficiently focused on targeting key road safety problems:[7]

- *Governmental leadership and focus on results.* Although attention is now being paid to these issues, there is a lack of governmental leadership and capacity for road safety across key agencies at the regional, national, and corridor levels. This weakness is accompanied by the absence of a strong, shared focus on results in RTRCs and, of fundamental importance, a related safety performance management framework to understand the scale of the problems and to target and monitor corridor road safety results. For example, after issuance of the Accra Declaration (African Union 2007), 18 sub-Saharan countries set up national road safety lead institutions, as recommended. However, it was subsequently reported that these institutions were mainly coordinating agencies not empowered to take initiatives, ensure funding, or provide the intersectoral leadership associated with good practice (Plessis-Fraissard et al. 2009). Accountable leadership and related coordination capacity are generally not present at the

[7] See the unpublished road safety management capacity reviews for the period 2006–12 carried out for the Global Road Safety Facility at the World Bank.

regional or national level to ensure that the road safety visions and targets expressed at a high level in regional forums and for infrastructural development can be translated into meaningful, targeted, evidence-based interventions within sub-regional economic communities and along RTRCs.

- *Coordination.* In many LMICs, national road safety councils have been established as coordinating bodies (and often with NGO status) but without a lead governmental road safety agency to support them. Attempts to establish regional and corridor coordination on RTRCs are in their infancy and are generally unfunded. Without adequate funding, technical resources, and an authoritative governmental lead agency in support, coordination bodies have little chance of success.
- *Legislation.* Reviews of road safety management capacity indicate that LMICs are beginning to update their legislative frameworks to address intervention needs, but they face challenges in presenting frameworks that meet the road safety task effectively and in coordinating on a regional basis harmonized road safety rules across borders. Of key importance to road safety in RTRCs, commercial freight and passenger operations are under-regulated, and there are gaps in legislation in important areas (WHO 2009; Breen 2012a; TRANSAID 2012). Formal clarification of the roles and responsibilities of the key agencies is largely nonexistent, particularly for the lead agency and coordinating body.
- *Funding.* Reviews of road safety management capacity and other information in all regions also indicate that road safety funding has been generally insufficient and often poorly targeted in LMICs both at the country and at RTRC levels by the previous donor assistance. LMIC agencies and donors broadly acknowledge that the absence of appropriately funded capacity is severely impeding progress in road safety and deserves to be prioritized.
- *Promotion.* Typically, promotional efforts are too narrowly and sporadically directed to user groups instead of setting out and championing across key agencies, business, and community sectors the shared responsibility for improving safety on RTRCs for the long term and the interim.
- *Monitoring & evaluation.* In directing investment in RTRCs, there is an overreliance on poor-quality information. Surveys of the following are not usually available: volumes of various kinds of road user traffic, levels

of deaths and serious injuries, crash costs, safety quality of road infrastructure and vehicles (though iRAP survey use is increasing rapidly), average speeds, drinking and driving, levels of crash helmet, seat belt, and child restraint use, overloading levels of heavy and passenger transport vehicles, vehicle conspicuity, and emergency medical system response. Improved road safety data collection, data quality, databases and surveys, data sharing, and crash investigation are needed (TRANSAID 2012). Reviews of the road safety management capacity of RTRCs are not generally undertaken, and there is a lack of benchmarking and effective engagement of the research sector. Where capacity reviews are carried out, insufficient attention is generally paid to the existing GRSF country guidance (Breen 2012b).

- *Research and development and knowledge transfer.* Research and development and knowledge transfer of effective intervention or efficient institutional delivery are largely absent, although regional initiatives are emerging with a focus on RTRC road safety.

Road Safety Interventions in RTRCs

Problems in the intervention set are related to the insufficient scope and quality of interventions in road safety strategies and projects and to the lack of attention paid to the evidence base and to addressing the needs and vulnerabilities of all users:

- *Planning the design, operation, and use of the road network.* Road assessments indicate that road infrastructure problems are systemic and that not enough attention is being paid to safety engineering measures, even where vulnerable road user volumes are high. These measures include access control, footpaths, safety barriers, paved shoulders, safe intersection design, and speed management (Breen 2012b; iRAP 2012b). Corridor projects typically apply treatments to subjectively assessed specific black spot sites (where crash injury data are unavailable or unreliable) rather than proactively along high-volume sections (Breen 2012b).
- *Entry and exit of vehicles and users.* The safety of heavy goods vehicle and road passenger transport operations are identified concerns, but intervention approaches rely heavily on education and training approaches that may be easier to carry out but are less effective than addressing issues of the safety quality of vehicles, driver licensing, and driving standards, including those regulating overloading, impairment by fatigue, and excess

speed in long-distance operations. In road traffic generally, compliance with key road safety rules such as excess speed, excess alcohol, and crash helmet or seat belt use is reported to be problematic, though not routinely measured (Breen 2012a; WHO 2009).

- *Recovery and rehabilitation of road victims from the road network.* The emerging provision of emergency medical assistance and trauma care is not universal, and swift access to a source of emergency medical care to reduce the consequences of injury is generally not available.

Road Safety Results for RTRCs

The death rates from crashes on the high-risk, high-volume sections of RTRCs in LMICs can reach levels that are 10 times as high as those achieved in the countries that lead in road safety. Most deaths and serious injuries on RTRCs in LMICs involve the most vulnerable road users, as well as the most economically active males, although there are continental differences in the road user split. At both the country and corridor levels, pedestrians and motorcyclists have the highest rates of injury in Asia; injured pedestrians and passengers in mass transportation are the main issue in Africa (e.g., they account for 90 percent of road deaths in Uganda); and in Latin America and the Caribbean injuries to pedestrians are the greatest problem. The safety problems in RTRCs are particularly acute in Africa's regional trade corridors, where country death rates are double the average rates for Latin America and Southeast Asia. Over half of African countries have death rates estimated at 30 per 100,000 populations or more. This rate is double the average rate for Latin America and Southeast Asia.

Conclusion

Benchmarked against the European best practice outlined earlier, the current road safety management capacity in low- and middle-income regions and countries presents a formidable barrier to progress in road safety in RTRCs. Weak delivery of institutional management functions and weak intervention are evident, and those factors are reflected in the poor road safety results achieved.

Even where remedial activity has begun, many challenges in the realm of road safety management capacity remain in LMICs (WHO 2009). These challenges are also evident in the donor and financier community. They need to be addressed if road safety is to be mainstreamed within regional and country assistance strategies and

receive more than the tiny fraction of the sector spending that it currently attracts (Bliss and Breen 2009; Tonkonojenkov 2011). It is time to take into account the factors identified as critical to success (and described in the next chapter) if sustainable improvements in RTRC road safety performance are to be achieved.

4. Critical success factors

The factors identified as critical to achieving the UN Decade of Action goal are particularly relevant to achieving success in RTRCs in low- and middle-income countries (Bliss and Breen 2012). The underlying theme of these factors, outlined in this chapter, is how to accelerate the shift from a weak to strong institutional management capacity to govern the production of improved road safety results.

Building Road Safety Management Capacity through Institutional Reform

Insufficient attention has been paid to date to the institutional benchmarks for good performance set by high-income countries for both country and RTRC activities. In efforts to address the strategic policy challenges faced by LMICs, this omission is critical, and little sustained success is likely without correcting it. Based on capacity assessments, particular attention must be paid to strengthening the appropriate combination of regional, national, and corridor leadership required to provide effective program and project management on RTRCs and related interagency coordination functions. Mentoring by recognized road safety specialists with successful strategic management experience at the country and international levels will be needed. Without this leadership and expert mentoring, even the best strategies and plans will remain on paper, unimplemented.

Accelerating Knowledge Transfer to Corridor Partners and Stakeholders

International organizations are urging LMICs to adopt effective best practice approaches to road safety to avoid the costly evolutionary path taken by high-income countries as they developed their knowledge of road safety management. Regional aspirations and statements in LMICs endorse this need. The "Safe System" is recognized as the international best practice in managing for results (Bliss and Breen 2009; OECD 2008; UNRSC 2011b; ISO 2012). It builds on the best previous approaches and promotes innovation and the adoption of technologies that are based on well-established safety principles. The rationale followed by international organizations in recommending the "Safe System" to LMICs is that it directly addresses human vulnerabilities and the needs of the vulnerable as well as other road users. It encourages the incorporation of safety in the design of road networks rather than its consideration as an afterthought and the expense that will entail in

the future. Furthermore, the "Safe System" aligns well with a range of other societal objectives and the Millennium Development Goals and facilitates the broad engagement needed with other sectors to achieve road safety results. However, efforts to build management capacity and accelerate the transfer of knowledge need to be grounded in practice through a "learning by doing" process, backed with sufficient targeted investment to overcome the barriers presented by weaknesses at the global, regional, and country levels.

Scaling Up Corridor Investment in Road Safety

Large investments are being made in infrastructural improvements in RTRCs via regional trade facilitation programs and other projects, but few resources are being directed at road safety. Investment in corridor road safety management capacity must be scaled up substantially if global, regional, and national aspirations and targets are to be met. This effort will require a phrased approach related to the learning and absorptive capacity of the agencies concerned. The successful implementation of regional, country, and corridor investment strategies will hinge on designing projects and programs that simultaneously accelerate the transfer of road safety knowledge to LMICs, strengthen the capacity of the participating partners and stakeholders, and rapidly produce results in the corridor and surrounding areas that provide benchmarks to apply to the next stage of investment.

International Cooperation and Development Aid for RTRC Road Safety

Regions and countries with poor road safety performance cannot expect to achieve overnight the organizational structures and processes involved in effective practice. Meeting the UN Decade of Action goals will require capacity building at the global, regional, country, and corridor levels in order to create the resources and tools necessary to refocus and harmonize road safety activities, with an emphasis on managing for results. This process must be on a scale that will reduce significantly and sustainably road deaths and injuries in LMICs. The leading-edge investment approach and related tools now being used and developed further by the World Bank, as well as the new partnerships being formed by the multilateral development banks, provide the timely global focus needed for success on this front. Large-scale road safety investments mainstreamed in corridor infrastructure investments will provide a means of addressing these needs.

5. Generic components of RTRC road safety projects

This chapter presents a summary of the generic components of road safety projects. These components would be used to establish sustainable investments in RTRCs that, with careful planning, can simultaneously accelerate the transfer of road safety knowledge to participants in corridor projects, strengthen the capacity of participating partners and stakeholders, and rapidly produce results that provide benchmark measures. Detailed guidance on effective intervention is beyond the scope of these guidelines, although appendix B is a bibliography of selected strategic documents. These documents reflect the alignment of the main international development and health organizations in understanding the priority problems and systematic evidence-based approaches needed in LMICs. The generic components of RTRC road safety projects, which are summarized in table 5.1 along with their indicative costs, are the following:

- *Corridor intervention priorities.* This component covers several options for system-wide, multisectoral interventions in targeted corridors and is essential to achieving quick results.
- *Corridor road safety policy reforms.* This component can contribute to the continual improvement of the RTRC road safety policy framework based on agreed priority reviews which have identified weaknesses that benchmark existing policy and initiatives against international best practice.
- *Corridor monitoring and evaluation systems.* This component sets out the safety performance framework for the corridor and will contribute to institutional strengthening at the regional, national, and corridor levels.
- *Corridor project management arrangements.* This component establishes the key project leadership and coordination arrangements for the corridor, which may evolve into permanent organizational delivery bodies where *corridor* leadership and coordination structures are not yet established. The creation or enhancement of shared multisectoral leadership and management processes is the most vital and valuable activity to be addressed in the project.

Successful implementation of the road safety components will hinge on achieving a high level of integration between the project components. Each is interrelated and mutually reinforcing, and the links between them will require clear specification in the detailed project design process. The aim is to create a project that encourages agencies to work together constructively to deliver and evaluate a set of well-targeted, best practice, multisectoral interventions in RTRCs; conduct policy reviews; and accelerate the transfer of road safety knowledge.

Projects must be of sufficient scale to address the identified critical success factors outlined in chapter 4 and to achieve the global and regional aspirations for mainstreaming road safety. Large-scale stand-alone projects that address multiple interventions will generally require budgets of at least $50 million (especially where there are no existing budgets), increasing to $300 million. The indicative budgets for project components, based on global and regional stated aspirations and good practice, are outlined in table 5.1. Examples of road safety performance measures for RTRC projects are shown in table 5.2.

Table 5.1 Generic Components of RTRC Road Safety Projects

1. Corridor intervention priorities

Core elements	*Indicative budget*
Systematic infrastructure safety improvements These improvements will address head-on, run-off-road, intersection, pedestrian and cyclist crashes. Systematic International Road Assessment Programme (iRAP) safety inspection of corridors/corridor sections will identify priorities for cost-effective "Safe System" engineering investment for these key crash types. When crash data are limited, the traditional black spot elimination approaches to infrastructure safety improvements in high-risk corridors are ill-advised because it is difficult to assess their effectiveness in safety terms.	10% of total infrastructure budget[a]
General deterrence–based road safety enforcement programs Enhanced traffic enforcement campaigns can be designed and implemented in corridors to develop more effective deterrence–based measures to achieve improved compliance with vehicle and road user standards and rules. These measures will address speeding, drunk and drugged driving, not wearing safety belts and helmets, driver fatigue, and unsafe commercial vehicles (especially lighting and overloading). This component may present an opportunity to pilot a specially trained and equipped corridor highway patrol.	Road policing activity: 20% of total corridor region policing budget[b]
Publicity and awareness campaigns Social marketing campaigns will improve traffic safety awareness and support general deterrence–based safety enforcement programs in the corridor. These campaigns will target all relevant parties and use all appropriate media, taking into account local literacy levels and language needs. Media will include local television, radio, newspapers, billboards, and posters. Opportunities can be found to use local cultural events and outlets to disseminate key messages.	Publicity and awareness campaigns: minimum of 5% of road policing budget
Community development & corporate social responsibility programs Enhanced work-based, school-based, and community-based education programs will be designed and implemented in the corridors and surrounding areas. These will be integrated with the traffic enforcement and social marketing campaigns. The new ISO 39001 road traffic safety management system standard provides an opportunity for large commercial organizations along the corridor or regularly using the corridor to undertake pilot projects.	

Improved post-crash response and emergency medical services	
Enhanced post-crash safety services can be designed and implemented in the corridors and surrounding areas to improve the survivability of road crash victims and their longer-term recovery prospects. These services are likely to include: ■ First responder training programs for those (other than local health workers) most likely to attend crash scenes (e.g., taxi drivers, local business people, and traffic police) ■ Emergency response systems ■ Establishment of trauma registries ■ Computerized road traffic injury monitoring systems in health facilities. Guidelines produced by the World Health Organization (WHO)[d] can be used to assist in the preparation and implementation of these services	$2 million plus

a. The Global Plan of the UN Decade of Action for Road Safety 2011–2020, together with regional statements (e.g., by the United Nations Economic Commission for Africa, UNECA), call for road infrastructure safety to make up at least 10 percent of the total road infrastructure budget.

b. Good practice traffic safety policing, which when combined with social marketing delivers high benefits to costs (e.g., see Bliss et al. 1998), would make up about 20 percent of the total police budget for the corridor, and, following mainstreamed road safety infrastructure treatments ,would be expected to make up two-thirds of the remaining project component costs.

c. ISO (2012).

d. Mock et al. (2004); Sasser et al. (2005).

2. Corridor road safety policy reforms

Core elements	*Indicative budget*
Heavy commercial vehicles	
The safety of heavy commercial vehicle (freight and passenger transport) is a major concern on RTRCs in LMICs. Key risk factors are speeding, overloading, and lack of conspicuity. A systematic policy review by independent experts of international best practice heavy vehicle safety regimes would assess the medium- to longer-term policy options for the corridor and the countries through which it passes. Links can also be made to interventions in project corridors that may, for example, provide opportunities for the provision of portable weigh stations.	$1–2 million
Heavy commercial vehicle drivers	
Heavy commercial vehicle driver standards are a major concern of RTRC agencies in view of the unsafe behavior of users stemming from weak licensing standards, weak enforcement of key safety rules, and the absence of self-explanatory road environments. A systematic policy review conducted by independent experts of international best practice heavy commercial vehicle driving standards would assess the medium- to longer-term policy options for regional harmonization	

Infrastructure safety performance standards

The current standards for junction design and management of the transition from high- to low-speed environments expect vulnerable road users to compete successfully against higher-speed, higher-mass vehicles. But the consequences are dire. Only the "Safe System" approach recommended by the World Bank and other international development organizations promotes design and operational solutions that have the potential to reduce inherent dangers in the road transport system. A systematic review of existing legislation governing the design, operation, and management of road infrastructure will assess the priority given to road user safety and the related highway agency roles, responsibilities, and accountability for safety performance. Special attention will be paid to the requirements for setting speed limits and to safe road designs to enhance their protective qualities for vulnerable road users, the related use of safety audit and safety rating tools, and work zone safety. It is expected that there would be interface between this activity and the infrastructure activity highlighted in corridor component 1.

3. Corridor Monitoring and Evaluation Systems

Core elements	*Indicative budget*
Performance targets A safety performance management framework must be established for corridor projects to allow the setting, monitoring, and evaluation of goals and targets for the long and the interim term. These goals and targets should take the form of final outcomes,[e] intermediate outcomes,[f] and outputs.[g] It is important that performance targets are ambitious, and that the project aims to determine what can be achieved with the systematic application of good practice measures as part of learning by doing function.	$3–4 million
Performance measures and periodic surveys Every effort should be made to obtain reliable baseline estimates of both the current and ongoing performances in the targeted corridors and areas. This will require combining the available police and health sector data and iRAP surveys and carrying out periodic surveys of means speeds, drinking and driving, crash helmet use, and so forth (see table 6.2 for examples).	

Reporting arrangements

Related to the project management and monitoring and evaluation requirements is the need to reach early agreement on the project performance reporting requirements. Consensus is needed across the project partnership on the process, content, and timing of project reporting arrangements.

e. Final outcomes can be expressed as a long-term vision of the future safety of the road traffic system (e.g., as in the concept "Vision Zero" developed by Sweden and adopted by the EU to virtually eliminate deaths in road traffic by 2050 and "Sustainable Safety" approach adopted by the Netherlands to prevent road traffic crashes and injuries) and as more short- to medium-term targets expressed in terms of social costs, fatalities, and serious injuries presented in absolute terms and also in terms of rates per capita, vehicles, and distance traveled.

f. Intermediate outcomes are linked to improvements in the final outcomes. Typical measures include average traffic speeds, the proportion of drunk drivers in fatal and serious injury crashes, safety belt–wearing rates, helmet-wearing rates, the physical condition or safety rating of the road network, and the standard or safety rating of the vehicle fleet.

g. Outputs represent physical deliverables that result in improvements in intermediate and final outcomes. Typical measures include kilometers of engineering safety improvements, number of police enforcement operations required to reduce average traffic speeds, and number of vehicle safety inspections. Alternatively, they can correspond to milestones showing a specific task has been completed.

4. Corridor Project Management Arrangements

Core elements	*Indicative budget*
Designated lead agency arrangements An essential element will be to create a regional government lead agency role and body for the project that enables it to deliver effectively on its institutional management functions and build and strengthen its leadership and partnership in the process. The project management arrangements should model the vital lead agency contribution to directing and sustaining the production of improved road safety results and be designed to maximize the potential for the lead agency to rapidly assert itself in this role and build its capacity accordingly. This process will be informed by road safety management capacity review findings, which will help to identify specific and appropriate leadership arrangements for the corridor.	$2 million
Coordination structures and working procedures Regional coordination arrangements must be established. Coordination structures should engage project participants on at least three decision-making and consultative levels: agency leaders, senior agency managers, and external partners and stakeholders. Basic management arrangements should include at a minimum a high-level steering group comprising agency heads, a senior managers working group, and an extended senior manager consultative group that includes wider business sector and community representation. These groups would be supported by expertise and resources provided via the lead agency and associated technical assistance, informed by capacity review findings.	

Project promotion

Promotion of project goals and achievements is essential and should be managed by the lead agency, working through the steering group that should take responsibility for the RTRC road safety brand and core safety messages.

Table 5.2 Examples of Road Safety Performance Measures for RTRC Projects

Category	*Examples of possible measures*
Risk exposure	Traffic volumes by vehicle and road user type
Final safety outcomes	Deaths and injuries recorded by police Hospital data for road deaths and injuries recorded by health authorities Other sources of death and injury registration
Intermediate safety outcomes	Average vehicle speeds by road type, summer and winter Front and rear seat safety belt–wearing rates, driver and passengers Child restraint wearing rates Motorcycle helmet wearing rates, driver and pillion Excess alcohol levels Drug impairment levels Skid resistance of road surfaces Road infrastructure crash safety ratings (iRAP risk and protection scores) Vehicle compliance with testing standards Vehicle crash safety ratings Target audience recall and assessed relevance of publicity campaign messages Community attitudes toward road safety Average emergency medical services response times
Intervention outputs	Number of safety engineering treatments per section of road network Hours of police enforcement targeting high risk behavior Number of police infringement notices issued Media frequency and reach of publicity campaigns supporting police Hours of school-based educational activities Volume of driver licensing and testing activities Volume of vehicles tested Number of emergency medical services responses to road network crashes

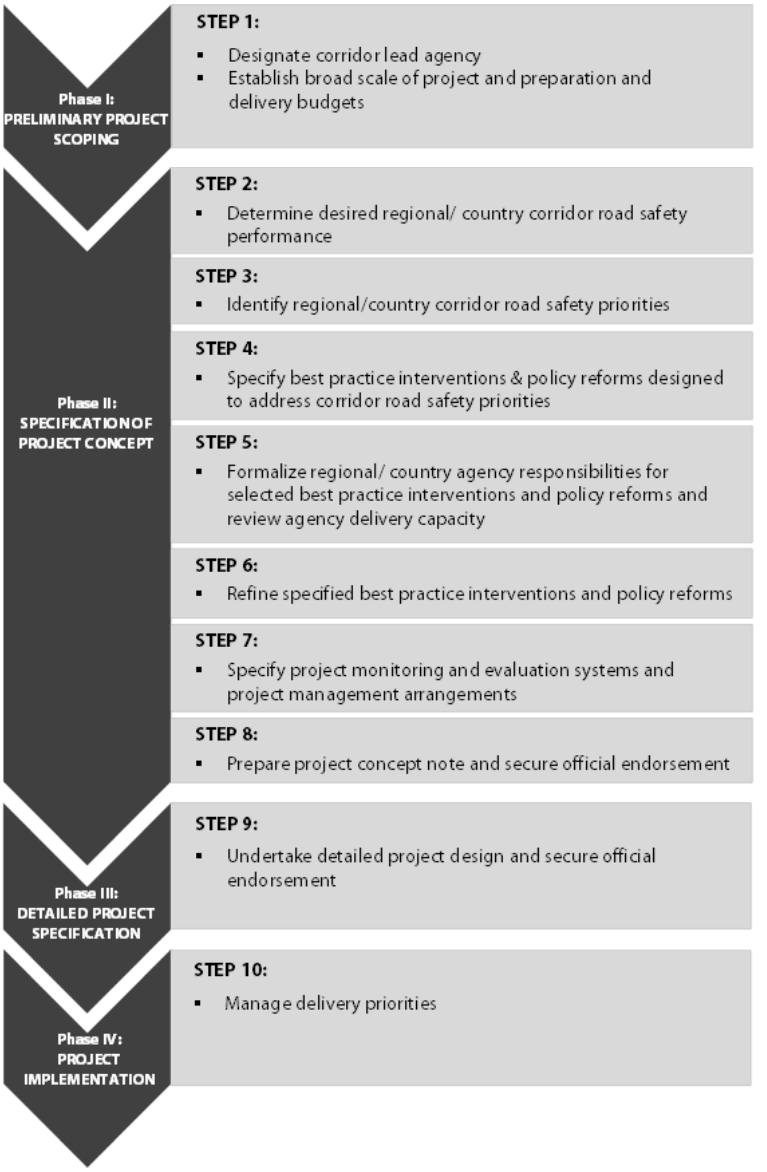
6. RTRC road safety project roadmap

The roadmap depicted in figure 6.1 specifies a systematic and logical process for the creation of RTRC road safety projects. It is derived from the current World Bank Global Road Safety Facility guidelines for country capacity reviews and project preparation for the establishment phase of a longer-term road safety investment strategy (Bliss and Breen 2009; Global Road Safety Facility, Bliss and Breen 2013).

The process is highly streamlined and iterative. It starts by defining the RTRC of interest, designating a project RTRC lead agency, and reaching agreement on the broad scale of road safety investment envisaged and the availability of related project preparation budgets. It then engages in preparation of a project concept note with sufficient detail to enable agreement on proceeding to the more detailed preparation and refinement of project components and finalization of budgets. Finally, it addresses key priorities for the project implementation phase.

In line with the current guidelines issued by the World Bank, the process is pragmatic and addresses institutional capacity barriers to improved road safety performance, emphasizes managing for results, and highlights the pivotal role of the lead agency in ensuring effective and efficient program delivery. Although streamlined, it does not shirk from addressing institutional delivery capacity issues; rather, it seeks to overcome them directly through the systematic delivery of project components that have been identified and designed to strengthen capacity while improving results. The essence of the process is that it progresses from identifying targeted road safety results in the project RTRC, to specifying an integrated set of interventions to achieve them, and finally to assessing institutional delivery capacity to make this happen. This ensures that the project delivery agencies have the appropriate resources and are managed accordingly.

Figure 6.1 Key Phases of the RTRC Road Safety Project Roadmap



The process is efficient and effective because it builds on a clear commitment to a road safety project of sufficient scale and intensity to address road safety priorities successfully in the defined RTRC. Consequently, this commitment must be con-

firmed from the outset. It also requires the active engagement of all key partners through every phase and step to ensure that mutually acceptable actions and arrangements are agreed on and that all project components are well integrated and their delivery is managed as a whole.

Although different regions and countries will present unique challenges and opportunities, the process is sufficiently generalized to be of universal value. Its iterative nature anticipates the likelihood of weak road safety management capacity in the RTRC of interest and that the available road safety performance data will usually be limited. Where these expectations are exceeded, the process will be easier to implement. It is designed to build up systematically a clear picture of RTRC road safety priorities to facilitate the creation of a project that targets identified risks and strengthens the capacity of the designated lead agency and other responsible delivery agencies to address them.

Key phases, steps, and issues to be addressed in the identification, preparation, and implementation of RTRC road safety projects are set out in the following sections and are summarized in Figure 6.1 and Table 6.1.

PHASE I: PRELIMINARY PROJECT SCOPING

Step 1: **Designate corridor lead agency and establish broad scale of project and preparation and delivery budgets.**

Tasks

1.1 Define the boundaries of the project RTRC and the broader institutional and investment context for the delivery of the proposed road safety project.

RTRCs will cross a number of member countries, and a decision will have to be made on whether the project includes all or several of them, or just a single country. Where the road safety project is to be a component of a broader RTRC infrastructure investment project and funded from this source, this decision will determine the regional footprint on the RTRC road safety project.

Project options may range from single country investment and management in the corridor, in accordance with RTRC road safety goals, to multi-country investment and management, with variations in between.

The first step should be to determine the scope for involvement of all potential regional and country agency partners and begin the process of defining the institutional framework for the RTRC road safety project.

A priority will be to identify the lead safety agency for the project and, where there is no formal agency, to consider all potential lead agency arrangements and recommend a preferred option.

1.2 *Designate lead agency responsibility for the road safety project and assess its delivery capacity*.

This will be broadly determined by the agreed-on bounds of the RTRC road safety project and the borrowing agency/agencies. Lead agency status in terms of overall RTRC management may be well developed, but it is likely to be less so in terms of managing road safety performance. This weakness will need to be addressed in the project RTRC. Whatever the institutional situation in the project RTRC, it is crucial to designate a lead agency responsible for the delivery of the RTRC road safety project results, because this designation provides an official counterpart with whom to work and ensures the appropriate regional and country ownership of the project from the outset.

The result of the project preparation process may lead to the need to redesignate the lead agency role or make small adjustments, but it is important to seek an early and clear decision on the project leadership and specify its institutional status and lines of authority with other agency partners.

No preferred structural models for the lead agency management of RTRC road safety performance can be identified from experience to date, but key management functions can be identified and current lead agency capacity assessed. Depending on the regional and country circumstances encountered, these leadership management functions might be delegated to an existing regional corridor authority, an appropriate national agency well placed to handle the task, or a new regional or national body especially created for the purpose.

Whatever lead agency form is adopted, priorities for strengthening the lead agency's capacity should be included in the RTRC road safety project components addressing monitoring and evaluation systems and project management arrangements and concerning multiagency coordination and overall corridor safety promotion (see phase II, step 7). These project components are a practical platform for addressing and strengthening the vital lead agency contribution to directing and sustaining improved RTRC road safety performance.

See sample terms of reference to cover step 1, tasks 1.1 and 1.2 in ***Template Nº 1***.

1.3 Agree on the overall scale of project investment proposed.

The generic RTRC road safety project components outlined in chapter 6 and their associated indicative budgets provide a basis to establish the broad scale of the investment envisaged in the identified corridor.

This investment budget estimate will be refined during the ongoing project identification and preparation process, but it is important that it reflect a consensus commitment that is sufficiently realistic to cover all envisaged components and allow their effective delivery.

See sample terms of reference to cover step 1, tasks 1.3 in ***Template Nº 1***.

1.4 Secure sufficient project preparation funds.

This is a crucial issue because RTRC project identification and preparation costs are likely to exceed the project funds typically available for this purpose. Significant budgets will be required to cover steps 2–6 of phase II, and funding sources such as the Global Road Safety Facility or bilateral donors will have to be approached for funding support. In some circumstances, retroactive financing by

the client may be possible. Indicative budgets and associated terms of reference for essential identification and preparation tasks are provided in the following sections.

The timing of crucial identification and preparation activities must also be determined. For example, given adequate funding, it would be preferable to carry out an iRAP survey of the identified project RTRC during task 3.2 of phase II. It would produce recommendations and indicative costs for infrastructure safety improvements in time for their inclusion in steps 6 and 7 of phase II.

To reduce the costs of project identification and preparation and sustain momentum and commitment by moving as quickly as possible from approval of the project concept to project delivery, certain intensive and high-cost preparation activities should be completed during the first year of project implementation, using project funds earmarked for this purpose.

Activities undertaken during the first year of project implementation might include the preparation of detailed designs and safeguard clearances for infrastructure safety improvements, a detailed design for road policing operations and the related publicity and awareness campaigns, and procurement of all associated equipment and services. In these circumstances, being able to progress directly from detailed preparation to delivery enhances agency ownership and its commitment to targeted results, especially in terms of retaining the country and consulting staff engaged.

PHASE II: SPECIFICATION OF PROJECT CONCEPT

Step 2: Determine desired regional/country corridor road safety performance.

Tasks

2.1 Review current performance goals for the project RTRC at regional and country levels.

This should be undertaken in close consultation with the designated RTRC road safety project lead agency and core partners. Performance goals may already be defined within specific RTRC management frameworks, or more implicitly or explicitly within adopted global, regional, or national road safety strategy goals and targets.

2.2 Reach regional and country consensus on desired road safety performance in the project RTRC.

It is important that a high-level official dialogue be held on this issue until clear agreement is reached on the desired road safety results. Such talks will underpin the ongoing identification, preparation, and implementation process. At this stage of the process, only a broad level of performance ambition can be expected, expressed as long-term goals, but efforts should be made to quantify progress.

Targeted results may be stated in terms of achieving best practice levels of performance as expressed by measures of final outcomes (e.g., fatality and serious injury rates per unit of travel and kilometer of corridor) and of intermediate outcomes (e.g. corridor infrastructure and vehicle safety ratings, vehicle speeds, safety belt– and helmet-wearing rates, crash incidence of drunk drivers).

Targets may also set specific goals for at-risk groups within the corridor such as children, pedestrians, cyclists, motorcyclists, and public transport users. Intermediate outcome measures are of vital

importance because in the absence of reliable fatality and serious injury data they are a reliable measure of road safety performance. Therefore, strong reliance should be placed on these measures for monitoring and evaluation purposes.

The absence of reliable and comparable road safety performance data in low- and middle-income countries is a key factor in determining the best way to proceed. A pragmatic "intermediate outcomes" approach would be to reach regional agreement on a desirable safety rating for the corridor concerned (e.g., a minimum of four-star), and then review requirements on a country-by-country basis. The corridor would then be systematically engineered to the prescribed rating in accordance with *regionally* determined standards and rules and related compliance regimes. However, budgets and political, topographical, and environmental constraints could dictate different *country* intervention mixes (e.g., safety facilities, speed limits, alcohol limits). In this context, a prescribed safety rating would set the desired safety performance standard (and in principle safety results), and interventions would be developed accordingly.

Monitoring and evaluation systems covering the project and specified control corridors will be designed to collect the data needed to track and analyze the results achieved (see phase II, step 7).

These performance goals will be further refined during the remainder of phase II and in phase III.

See sample terms of reference to cover step 2, tasks 2.1 and 2.2 in ***Template Nº 2.***

Step 3: Identify regional/country corridor road safety priorities.

Tasks

3.1 Review available country and regional fatal and serious injury data and related information for the project RTRC and reach a consensus on safety priorities.

Police, transport, and health sector agency sources should be used for this purpose. Data should be analyzed to identify and prioritize crash vehicle types (e.g., trucks, buses, private cars, motorcycles, cycles, farm vehicles), crash victims (e.g., drivers, passengers, pedestrians, children), contributing factors to crashes (e.g., speed, alcohol, fatigue, distracted driving, not wearing safety belts and helmets, dangerous road features, vehicle defects), spatial concentrations of fatalities and injuries, and country differences in fatality and injury patterns.

Research centers and NGOs researching and addressing road traffic injuries and related impacts in the project should also be identified and consulted in order to seek access to any relevant survey data they may have collected. In this context, the capacity of these groups to provide the RTRC road safety project with formal monitoring and evaluation services should also be assessed.

It is likely that the available information will provide an incomplete picture of traffic fatalities and serious injuries in the project RTRC. Thus a consensus view on the overall corridor crash burden and safety priorities should be sought from all parties supplying data.

The data collected and analyzed during this phase should be comprehensively collated to provide a first baseline picture of safety performance in the project RTRC.

See template of terms of reference covering step 3, task 3.1 in ***Template Nº 2****.*

3.2 Survey and assess infrastructure safety in project RTRC.

An iRAP survey should be commissioned to produce systematic safety ratings for all sections of the project RTRC and to identify systematic infrastructure safety investment options for upgrading corridor safety to an agreed-on performance standard.

*See template of terms of reference covering step 3, task 3.2 in **Template Nº 3**.*

Step 4: Specify best practice interventions and policy reforms designed to address corridor road safety priorities.

Tasks

4.1 Review and select best practice interventions with high potential to address identified project RTRC road safety priorities and specify broad investment options.

This task should be conducted within the agreed-on project investment budget (see step 1, task 1.3) and provide indicative estimates of anticipated safety benefits. For interventions targeting key safety behaviors such as speeding, drinking and driving, and not wearing safety belts and helmets, benchmarking against results obtained in best practice jurisdictions will be sufficient, and estimates of infrastructure safety improvements and related costs and benefits will be provided by the iRAP survey findings.

4.2 Review and select best practice road safety policies with high potential to address identified project RTRC road safety priorities and specify broad reform options.

Account should be taken of the broader regional and national policy contexts in which the RTRC operates and the policy issues that have the most impact on the nature of the regional trade traffic to be managed. The safety of heavy goods and public transport vehicles will be a high priority.

The generic RTRC road safety project components specified in table 5.1 provide guidelines for the most promising best practice interventions and policy reforms.

Step 5: Formalize regional/country agency responsibilities for selected best practice interventions and policy reforms and review delivery capacity.

Tasks

5.1 Confirm regional/country agency responsibilities for selected best practice interventions and policy reforms and their commitment to delivering them under the RTRC road safety project.

At this stage, the process of engaging regional and country agency project partners that began in phase I, step 1, will become more focused, and senior agency officials should be consulted to formally confirm the proposed lead agency relationships and agencies' organizational participation in the proposed project.

5.2 Review regional/country agency capacity to deliver selected best practice *interventions and policy reforms.*

Account should be taken of the existing capacity of the partner agencies and the additional resources required to ensure effective and efficient project delivery. This process will require a systematic review and benchmarking of their safety operations, and the appropriate expertise will be required to conduct the assessments.

Step 6: Refine specified best practice interventions and policy reforms.

Tasks

6.1 Finalize best practice interventions to address identified project RTRC road safety priorities and specify intervention outputs and required budgets.

This task will require a final revision of the specification prepared in step 4, task 4.1. It will provide details of the proposed outputs for each year of the RTRC road safety project and the related budget estimates for capital works, capital equipment, publicity and public awareness campaigns, and technical assistance services.

6.2 Finalize best practice road safety policies to address identified project RTRC road safety priorities and specify policy outputs and required budgets.

This task will require a final revision of the specification prepared in step 4, task 4.2. It will provide details of the proposed outputs for each year of the RTRC road safety project and the related budget estimates for technical assistance services.

The generic RTRC road safety project components specified in table 5.1 provide guidelines for the most promising best practice interventions and policy reforms.

Step 7: Specify project monitoring and evaluation systems and project management arrangements.

Tasks

7.1 Identify performance measures, measurement periods, and baseline measures for each intervention component in the project RTRC and control corridors, and outline related measurement equipment and data management requirements.

Project monitoring and evaluation should be the responsibility of the designated lead agency.

Account should be taken of any existing arrangements for project RTRC performance data management and the associated observatory functions and structures, with a view toward integrating safety performance monitoring and evaluation where relevant and feasible. Further survey and data needs will have to be identified.

Account should also be taken of the emerging technological opportunities to install automated measurement systems in the project RTRC. Such systems would systematically collect data related to vehicle traffic, vehicle types, and vehicle speeds.

7.2 Identify performance measures and measurement periods for each policy review component of the RTRC road safety project.

These measures will be output-based.

7.3 Confirm project management functions.

Project management should be the responsibility of the designated lead agency.

Core project management functions include coordination of RTRC road safety project delivery and promotion of its goals and achievements.

Coordination functions should engage project participants on three decision-making and consultative levels: agency leaders, senior agency managers, and external partners and stakeholders.

Coordination structures should include:

- A high-level steering group composed of the heads of all participating RTRC road safety project agencies
- A working group composed of senior managers from all participating RTRC road safety project agencies
- A consultative group that includes all members of the working group plus representatives of the wider business sector and community.

These coordination structures should be supported by expertise and resources provided via the lead agency and associated project technical assistance. Ideally, the lead agency would chair the steering group and working group and take responsibility for ensuring the conduct of regular, productive meetings.

The steering group should meet about four times a year to track progress on the project as reported by the working group, make related decisions, and provide guidance and direction if necessary.

The working group should meet on a more regular basis to guide the day-to-day management of project delivery and the preparation of progress reports to the steering group. The consultative group should meet as required to address the project issues that require business sector and community input.

Promotion of project goals and achievements should be managed by the lead agency, working through the steering group, which should take responsibility for the RTRC road safety brand and core road safety messages.

The generic RTRC road safety project components specified in table 5.1 highlight the central role played by the project monitoring and evaluation systems and project management arrangements.

See template of terms of reference covering steps 4-7 in ***Template Nº 4****.*

Step 8: Prepare project concept note and secure official endorsement.

Tasks

8.1 Summarize findings of steps 1–7 in the form of a project concept note and obtain steering group approval.

Findings should be presented in accordance with official requirements and cover project goals and performance targets, project road safety intervention and policy review components, monitoring and evaluation systems, project management arrangements, and project preparation and delivery budgets.

8.2 Reach agreement to move to phase III.

Agreement should be obtained in accordance with official procedures.

PHASE III: DETAILED PROJECT SPECIFICATION

Step 9: Undertake detailed project design and secure official endorsement.

Tasks

9.1 Specify project objectives.

Core project development objectives should address the rapid strengthening of the project RTRC lead agency and participating agencies and stakeholders; the accelerated transfer of road safety knowledge to all project participants; and the achievement of quick, proven results in the project RTRC and the adoption of benchmark performance measures to build the business case for ongoing corridor safety investment following completion of the RTRC road safety project.

9.2 Prepare detailed RTRC road safety project component specifications.

These specifications will build on the generic RTRC component descriptions and specifications provided in the project concept note. They will cover corridor intervention priorities, corridor road safety policy reforms, corridor monitoring and evaluation systems, and corridor project management arrangements.

Baseline surveys of identified performance measures should be undertaken in the project RTRC and related control corridors, if project preparation funding is available.

Particular attention should be paid to the technical assistance requirements for each RTRC road safety project component.

*See template of terms of reference covering step 9, tasks 9.1 & 9.2 in **Template Nº 4**.*

***Templates 5-15** provide sample terms of reference for the procurement of technical assistance, adapted from current World Bank guidelines (Global Road Safety Facility, Bliss, and Breen 2013). They are generically presented to address technical assistance objectives, core tasks and related outputs, scheduling, and professional skills and experience required, and can be used to tailor a more precise specification in accordance with project needs.*

Local staff should be mentored and trained to help accelerate knowledge transfer and engender institutional capacity strengthening. Monitoring and evaluation systems and the specification of

ongoing initiatives designed to ensure the sustainability of successful measures taken should receive emphasis as well. A key requirement is that technical assistance teams provide expert services that integrate the delivery of project components, improve their efficiency and effectiveness, and transfer sustainable knowledge and skills to participating RTRC agencies and the national consulting industry.

9.3 Finalize RTRC road safety project budget.

Overall, the funding requested should be in line with best practice benchmarks and commensurate with the desired RTRC road safety results.

9.4 Obtain approval for project implementation.

This approval should be obtained in accordance with official procedures.

PHASE IV: PROJECT IMPLEMENTATION

Step 10: Manage delivery priorities.

Tasks

10.1 Establish and sustain project management procedures.

Annual meeting schedules and related reporting requirements for the corridor steering group, working group, and consultative group should be prepared and agreed to by all parties.

See template of terms of reference covering step 10, task 10.1in ***Template Nº 14****.*

10.2 Establish and sustain monitoring and evaluation processes.

Baseline surveys of identified performance measures should be undertaken immediately in the project RTRC and related control corridors, if project preparation funding was not available to undertake this step during the detailed project specification phase.

See template of terms of reference covering step 10, task 10.2 in ***Template Nº 15****.*

10.3 Finalize detailed project design and related procurement requirements.

As recommended in step 1, task 1.4, certain intensive and high-cost preparation activities should be scheduled for completion during the first year of project implementation, utilizing project funds earmarked for this purpose (e.g., the preparation of detailed designs and safeguard clearances for infrastructure safety improvements, a detailed design for road policing operations and the related publicity and awareness campaigns, and procurement of all associated equipment and services).

10.4 Provide ongoing direction to project technical assistance components.

Emphasis should be placed on providing a more process-oriented style of technical assistance in which external experts work alongside local staff in mentoring roles to help accelerate knowledge transfer and build institutional capacity on a sustainable basis.

See template of terms of reference covering step 10, tasks 10.3 &10.4 in ***Templates No 5-13****.*

Table 6.1 Roadmap for the RTRC Road Safety Project Phases with Guiding Materials.

PHASE I: PRELIMINARY PROJECT SCOPING

STEP 1: **Designate corridor lead agency and establish broad scale of project and preparation and delivery budgets.**

Tasks		Guiding materials
1.1	Define the boundaries of the project RTRC and the broader institutional and investment context for the delivery of the proposed road safety project.	*ToR Template Nº1*
1.2	Designate lead agency responsibility for the proposed road safety project and assess its delivery capacity.	*Official procedures* *ToR Template Nº1*
1.3	Agree on the overall scale of project investment proposed.	*Official procedures* *ToR Template Nº1*
1.4	Secure sufficient project preparation funds.	*Official procedures*

PHASE II: SPECIFICATION OF PROJECT CONCEPT

STEP 2 Determine desired regional/country corridor road safety performance.

Tasks		Guiding materials
2.1	Review current road safety performance goals for the project RTRC at the regional and country levels.	*ToR Template Nº2*
2.2	Reach regional and country consensus on desired road safety performance in the project RTRC.	*ToR Template Nº2*

STEP 3 Identify regional/country corridor road safety priorities.

Tasks		Guiding materials
3.1	Review available country and regional fatal and serious injury data and related information for the project RTRC and reach a consensus on safety priorities.	*ToR Template Nº2*
3.2	Survey and assess infrastructure safety in project RTRC.	*ToR Template Nº3*

STEP 4 Specify best practice interventions and policy reforms designed to address corridor road safety priorities.

Tasks		Guiding materials
4.1	Review and select best practice interventions with high potential to address identified project RTRC road safety priorities and specify broad investment options.	*ToR Template Nº4*
4.2	Review and select best practice road safety policies with high potential to address identified project RTRC road safety priorities and specify broad reform options.	*Table 5.1* *ToR Template Nº4*

STEP 5 Formalize regional/country agency responsibilities for selected best practice interventions and policy reforms and review agency delivery capacity.

Tasks		Guiding materials
5.1	Confirm regional/country agency responsibilities for selected best practice interventions and policy reforms and their commitment to delivering them under the RTRC road safety project.	*ToR Template Nº4*
5.2	Review regional/country agency capacity to deliver selected best practice interventions and policy reforms.	*ToR Template Nº4*

STEP 6 Refine specified best practice interventions and policy reforms.

Tasks		Guiding materials
6.1	Finalize best practice interventions to address identified project RTRC road safety priorities and specify intervention outputs and required budgets.	*Table 5.1* *ToR Template N°4*
6.2	Finalize best practice road safety policies to address identified project RTRC road safety priorities and specify policy outputs and required budgets.	*Table 5.1* *ToR Template N°4*

STEP 7 Specify project monitoring and evaluation systems and project management arrangements.

Tasks		Guiding materials
7.1	Identify performance measures, measurement periods, and baseline measures for each intervention component in the project RTRC and control corridors, and outline related measurement equipment and data management requirements.	*Table 5.1* *ToR Template N°4*
7.2	Identify performance measures and measurement periods for each policy review component of the RTRC road safety project.	*Table 5.1* *ToR Template N°4*
7.3	Confirm project management functions.	*Table 5.1* *ToR Template N°4*

STEP 8 Prepare project concept note and secure official endorsement.

Tasks		Guiding materials
8.1	Summarize findings of steps 1–7 in the form of a project concept note and obtain steering group approval.	*Official procedures*
8.2	Reach agreement to move to phase III.	*Official procedures*

PHASE III: DETAILED PROJECT SPECIFICATION

STEP 9 Undertake detailed project design and secure official endorsement.

Tasks		Guiding materials
9.1	Specify project objectives.	*ToR Template N°4*
9.2	Prepare detailed RTRC road safety project component specifications.	*ToR Template N°4* *ToR Templates N° 5-15*
9.3	Finalize RTRC road safety project budget	
9.4	Obtain approval for project implementation	*Official procedures*

PHASE IV: PROJECT IMPLEMENTATION

STEP 10 Manage delivery priorities.

Tasks		Guiding materials
10.1	Establish and sustain project management procedures.	*ToR Template N°14*
10.2	Establish and sustain monitoring and evaluation processes.	*ToR Template N°15*
10.3	Finalize detailed project design and related procurement requirements.	*ToR Templates N°5-13*
10.4	Provide on-going direction to project technical assistance components.	*ToR Templates N°5-13*

Templates for terms of reference

Technical assistance for project scoping and specification of concept

Terms of reference Nº1: Assessment of designated lead agency capacity

PHASE I: PRELIMINARY PROJECT SCOPING **[STEP 1, TASK 1.1, 1.2& 1.3]**

LEAD AGENCY RESPONSIBILITY & CAPACITY FOR THE RTCR PROJECT

Background

Provide description of proposed project.

Objectives

The objectives of the required consulting services are as follows:

- Define the boundaries of the RTRC road safety project and the broader institutional and investment context in which it will be delivered.
- Designate lead agency responsibility for the RTRC road safety project and assess lead agency delivery capacity.
- Make recommendations on the overall scale of the RTRC road safety project investment proposed.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Identify the specific sections of the RTRC that will be included in the proposed road safety project, the potential participating agencies and stakeholders, and the planned corridor road infrastructure investments.*

1.1 Description of RTRC covering key parameters (distance, road characteristics, traffic volume by user type and projected growth, roadside populations, and so forth)

1.2 Assessment of institutional arrangements for RTRC road safety management at the regional, country, and local levels and related responsibilities (infrastructure provision and operation, road policing, emergency services, and so forth)

1.3 Identification of all potential RTRC road safety partner agencies and stakeholders

1.4 Collation of planned RTRC infrastructure investments and potential for provision of improved road safety services

1.5 Specification of RTRC road safety project sections.

2 *Identify, recommend, and designate lead agency responsibility for the proposed RTRC road safety project and assess lead agency delivery capacity.*

2.1 Identification and assessment of lead agency options for proposed RTRC road safety project and recommendation of preferred option

2.2 Designation of lead agency for the RTRC road safety project

2.3 Assessment of designated lead agency delivery capacity, with emphasis on RTRC road safety project coordination and promotion.

Method

Attachment 1 contains guidelines and checklists for the assessment of institutional arrangements for RTRC road safety management at the regional, country, and local levels and the related responsibilities (output 1.2), identification of all potential RTRC road safety partner agencies and stakeholders (output 1.3), and designated lead agency delivery capacity (output 2.3).

Scheduling of tasks

To be developed in accordance with project identification and preparation schedule.

Professional skills and experience required

Road safety management specialist

Internationally recognized road safety management specialist with more than 10 years of leadership experience in the development and implementation of national and regional road safety strategies. Experience in the conduct of road safety management reviews and demonstrated success in working with lead agencies and associated safety-related agencies at the departmental head and ministerial levels are essential.

Attachment 1: Guidelines and Checklists for Review of Lead Agency Capacity

Checklists 1 and 12 of the core World Bank capacity review guidelines provide useful reference material for addressing the assessment of institutional arrangements for RTRC road safety management at the regional, country, and local levels, as well as the related responsibilities (output 1.2), including identification of all potential RTRC road safety partner agencies and stakeholders (output 1.3) and assessment of the delivery capacity of the designated lead agency (output 2.3)—see Bliss and Breen (2009).

These checklists have been adjusted for the RTRC road safety management capacity review and are attached here as checklists 1 and 2.

Checklist findings must be interpreted using the judgments of expert safety management. If the answers to questions are mainly "no" or "pending," capacity is clearly weak. When a high number of "pending" or "partial" answers are encountered, capacity is again weak, but signs of capacity strengthening are evident and should be acknowledged and encouraged. It is only when there is a predominance of "yes" answers that capacity can be viewed as strong. It is important to seek a consensus on the assessment made for any particular element of the road safety management system being appraised.

Step 1: Assessment of RTRC road safety management capacity at the system level

Here the aim is to assess the availability and quality of safety performance data to inform a results-based approach to project RTRC activities; to identify the responsible road safety agencies and stakeholders at the regional, national, and RTRC levels; and to ascertain whether there is ownership of the road safety problem and the agency commitment and leadership needed to achieve improved road safety results. Checklist 1 is a basic assessment tool for this purpose.

Lead agency status in terms of overall RTRC management may be well developed, but it is likely to be less so in terms of managing road safety performance. Where no formal lead agency arrangements exist, it will be necessary to review institutional options and seek official agreement on a designated lead agency responsible for the delivery of the RTRC road safety project results. For the purposes of the project, it will also be necessary to specify its institutional status and lines of authority with other agency partners.

Depending on the regional and country circumstances encountered, these leadership management functions might be delegated to an existing regional corridor authority, an appropriate national agency well placed to handle the task, or a new regional or national body especially created for the purpose.

Step 2: Assessment of designated lead agency delivery capacity

Checklist 1 establishes whether a lead agency has been formally established to direct the RTRC road safety management efforts. It also assesses whether its role has been defined in legislation or policy documents and annual performance agreements to achieve the desired focus on results. To the extent that answers to these questions are in the affirmative, it can be concluded that the region/country/corridor agencies concerned are taking the issue seriously and building a sound platform for sustainable action. However, in developing regions it is unlikely that this is the case, and a

key objective of the RTRC road safety project will be to commence the process of building lead agency capacity for this purpose.

Checklist 2 is a useful tool for quickly screening the capacity of the designated lead agency and defining its goals in terms of delivering best practice management functions in the longer term. However, the immediate priority will be on strengthening the designated lead agency's contribution to RTRC road safety coordination structures and working procedures, road safety promotion, and monitoring and evaluation systems. Thus the capacity assessment must focus on these vital functions in order to take stock of the current situation in the project RTRC and to assist the design of related project components (see Template Nº 4: Terms of reference for specification of project components).

Checklist 1: Assessment of RTRC Road Safety Management Capacity at the System Level

Question	Yes	Partial	Pending	No
Are estimates of the social costs of crashes available for the RTRC?				
Are data on road deaths and injuries readily available for the RTRC?				
Have the risks faced by road users on the RTRC been identified?				
❑ Drivers?				
❑ Passengers?				
❑ Motorcyclists?				
❑ Pedestrians?				
❑ Cyclists?				
❑ Children?				
❑ Others?				
Has a vision for improved road safety in the longer term been officially set?				
❑ Regional?				
❑ National?				
❑ RTRC?				
Have regional, national, or RTRC targets been set for improved road safety?				
❑ Social cost targets?				
❑ Final outcome targets?				
❑ Intermediate outcome targets?				
❑ Intervention output targets?				
❑ At-risk group targets?				
❑ Industry targets?				
❑ Other targets?				
Have all agencies responsible for improved road safety performance on the RTRC been identified, and are they formally held to account for performance achieved to achieve the desired focus on results?				
❑ Highways?				
❑ Police?				
❑ Transport?				
❑ Planning?				
❑ Justice?				
❑ Health?				
❑ Education?				
❑ Others?				
Have industry, community, and business responsibilities for improved roads safety on the RTRC been clearly defined to achieve the desired focus on results?				
Are regular performance reviews conducted to assess progress and make improvements to achieve the desired focus on results?				
Has a lead agency been formally established for the RTRC to direct the regional and national road safety effort to achieve the desired focus on results?				
Is the lead agency's role for the RTRC defined in legislation or policy documents and annual performance agreements to achieve the desired focus on results?				

Checklist 2: Assessment of Designated Lead Agency Delivery Capacity

Question	Yes	Partial	Pending	No
Does the designated lead agency effectively contribute to the *results focus* management function? ❑ Appraising current road safety performance through high-level strategic review? ❑ Adopting a far-reaching road safety vision for the longer term? ❑ Analyzing what could be achieved in medium term? ❑ Setting quantitative targets by mutual consent across the road safety partnership? ❑ Establishing mechanisms to ensure partnership accountability for results?				
Does the designated lead agency effectively contribute to the *coordination* management function? ❑ Horizontal coordination across government? ❑ Vertical coordination between regional, national, local, and corridor levels of government? ❑ Specific delivery partnerships between government, nongovernment, community, and business at the regional, national, local, and corridor levels? ❑ Parliamentary relations?				
Does the designated lead agency effectively contribute to the *legislation* management function? ❑ Reviewing the scope of the legislative framework? ❑ Developing legislation needed for the road safety strategy? ❑ Consolidating legislation? ❑ Securing legislative resources for road safety?				
Does the designated lead agency effectively contribute to the *funding and resource allocation* management function? ❑ Ensuring sustainable funding sources? ❑ Establishing procedures to guide the allocation of resources across road safety programs?				
Does the designated lead agency effectively contribute to the *promotion* management function? ❑ Promotion of a far-reaching road safety vision or goal? ❑ Championing and promotion at a high level? ❑ Multisectoral promotion of effective interventions and shared responsibility? ❑ Leading by example with in-house road safety policies? ❑ Developing and supporting safety rating programs and the publication of their results? ❑ Carrying out advertising? ❑ Encouraging promotion at the community level?				

Does the designated lead agency effectively contribute to the *monitoring and evaluation* management function? ❑ Establishing and supporting data systems to set and monitor final and intermediate outcome and output targets? ❑ Transparent review of the road safety strategy and its performance? ❑ Making any necessary adjustments to achieve the desired results? Does the designated lead agency effectively contribute to the *research and development and knowledge transfer* management function? ❑ Developing capacity for multidisciplinary research and knowledge transfer? ❑ Creating a road safety research strategy and annual program? ❑ Securing sources of sustainable funding for road safety research? ❑ Training and professional exchange? ❑ Establishing good practice guidelines? ❑ Setting up demonstration projects?				

Terms of reference Nº2: Review of corridor road safety priorities

PHASE II: SPECIFICATION OF PROJECT CONCEPT [STEP 2, TASKS 2.1& 2.2; STEP 3, TASK 3.1]

RTRC ROAD SAFETY GOALS AND PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Determine the desired regional and country road safety performance in the project.
- Identify regional and country road safety priorities in the project.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Determine desired project RTRC road safety performance.*

1.1 Identification of current road safety performance goals for the project RTRC at the regional and country levels.

1.2 Establishment of regional and country consensus on desired road safety performance in the project RTRC over the coming decade.

2 *Identify project RTRC road safety priorities.*

2.1 Assessment of country and regional fatal and serious injury data prioritized by crash vehicle type, crash victims, factors contributing to crashes, spatial concentrations and country differences in fatality and injury patterns, and any other relevant safety performance data.

2.2 Establishment of regional and country consensus on project RTRC road safety priorities on the basis of available evidence.

Scheduling of tasks

To be developed in accordance with project identification and preparation schedule.

Professional skills and experience required

Road safety management specialist

Internationally recognized road safety management specialist with more than 10 years of leadership experience in the development and implementation of national and regional road safety strategies. Demonstrated success in working with lead agencies and associated safety-related agencies at the departmental head and ministerial levels is essential.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience in conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of road safety interventions and outcomes is essential. Experience in road safety analyses in developing and transition countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference N°3: iRAP survey of corridor

PHASE II: SPECIFICATION OF PROJECT CONCEPT **[STEP 3, TASK 3.2]**

SURVEY, ASSESSMENT, AND DEVELOPMENT OF INVESTMENT PLAN FOR RTRC INFRASTRUCTURE SAFETY

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Survey approximately …. kilometers of RTRC project network and code the video data according to the *International Road Assessment Programme (iRAP) methodology*.[8]
- Collect crash data and traffic flow and speed data for the surveyed RTRC project network following the iRAP methodology.[9]
- Produce an iRAP input file that includes all road attributes and collected data.
- Develop a Star Rating for the surveyed RTRC project network following the iRAP methodology.
- Develop a Safer Roads Investment Plan for the surveyed RTRC project network following the iRAP methodology.

Schedule of roads to be surveyed

The Table below details the roads to be surveyed (with the exact chainage and length to be finalized before the survey).

[8] Refer to iRAP's 305 (*Star Rating Coding Manual)* and 309 (*iRAP Star Rating V2.2 Quality Assurance Guide)* documents. All iRAP publications mentioned here included in the list of references at the end of this publication.

[9] Refer to iRAP's 304 document, *Supporting Data* (Microsoft Excel).

Details on Roads to Be Surveyed

Link name	Link ID	Country	District	Length (km)
A–B	x	x	x	x
C–D	x	x	x	x
Etc.	x	x	x	x

Outputs

The outputs of the required technical assistance services are as follows:

- *Road survey*. The contractor shall perform an iRAP survey of the roads defined in the schedule using high-resolution, vehicle-mounted cameras and GPS data reference.
- *iRAP survey coding*. The contractor shall convert the survey data into coding as required in iRAP 305 and 309 specifications.
- *Background data collection*. The contractor shall gather background data on road use, road accidents and casualties, traffic flow, speed, and other factors as required in iRAP 304 specifications.

Reference documents

In preparing a proposal, contractors are advised to refer to materials which can be found at the following links:

1. RAP-SR-2.1 Star Rating and Investment Plan - Road survey and coding specification[10]
2. RAP-SR-2.3 Star Rating Inspection System Accreditation Specification and Record[11]
3. RAP-SR-2.4 Road Inspection Quality Assurance Guide[12]
4. RAP-SR-3.1 supporting data analysis and reporting specification[13]
5. RAP-SR-3.2 Supporting data template[14]
6. RAP-SR-3.3 Upload file specification[15]

Scheduling of tasks

To be developed in accordance with project identification and preparation schedule.

[10] http://downloads.irap.org/docs/RAP-SR-2-1_Road_survey_and_coding_specification.pdf

[11] http://downloads.irap.org/docs/RAP-SR-2-3_Inspection_System_Accreditation_Specification_and_Record.pdf

[12] http://downloads.irap.org/docs/RAP-SR-2-4_Road_Coding_QA_Guide.pdf

[13] http://downloads.irap.org/docs/RAP-SR-3-1_Supporting_data_analysis_and_reporting_specification.pdf

[14] http://downloads.irap.org/docs/RAP-SR-3-2_Supporting_Data_Template.xlsm

[15] http://downloads.irap.org/docs/RAP-SR-3-3_Upload_file_specification.pdf

Professional skills and experience required

iRAP service provider

An internationally recognized, iRAP-accredited provider of iRAP survey services with experience in low and middle-income country road environments[16].

iRAP support services

iRAP services are required for the delivery of Star Rating and Safer Road Investment Plan outputs.

Further information: icanhelp@irap.org

Professional skills and experience in service provider and support services teams for data analysis and reported will include:

Road Safety Engineering Specialist(s)

One or more internationally recognized specialists with more than 10 years practical experience in the design of innovative infrastructure safety facilities, including extensive experience with iRAP tools, safety audit and safety inspection. Experience with improving infrastructure safety in mixed-traffic/mixed-speed road environments in rapidly motorizing countries is essential.

Road Safety Analysis Specialist

An internationally recognized specialist with at least 10 years' experience conducting scientific analyses of road environment, vehicle and human factors contributing to road crashes and injuries. Hands-on experience of quantitative evaluations of safety interventions and outcomes is essential. Experience of road safety analyses in developing and transition countries is desirable.

Monitoring and Evaluation Specialist

An internationally recognized specialist with more than 10 years' experience in the design and implementation of traffic, vehicle and road user monitoring and evaluation systems. Knowledge of sample design methods and related measurement equipment requirements is required. Experience of road safety monitoring and evaluation in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Contractor responsibilities

a. The Contractor shall be responsible for the safe completion of the survey and coding activity and ensuring operation hours, vehicle safety, operator training, vehicle signage, escorts, security and all other required operational activities are conducted in a safe manner.

b. Incidental costs (such as customs duties, fuel, and insurance, and vehicle operating costs, accommodation, survey staff per diem allowances and permits) shall be covered by the Contractor.

[16] See http://www.irap.org/about-irap/accredited-suppliers.

c. Mobilization and demobilization costs associated with the project shall be covered by the Contractor.

d. A written project health and safety plan shall be provided by the Contractor to the Purchaser prior to the commencement of the survey.

Terms of reference N°4: Specification of project components

PHASE II: SPECIFICATION OF PROJECT CONCEPT [STEPS 4–7 & STEP 9, TASKS 9.1 & 9.2]

BEST PRACTICE RTRC ROAD SAFETY INTERVENTION, POLICY REFORMS, MONITORING & EVALUATION SYSTEMS, AND PROJECT MANAGEMENT ARRANGEMENTS

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Specify best practice interventions and policy reforms designed to address road safety priorities in the project RTRC.
- Formalize regional and country agency responsibilities for selected best practice interventions and policy reforms in the project and review agency management delivery capacity.
- Refine specified best practice interventions and policy reforms in the project RTRC.
- Specify project monitoring and evaluation systems and project management arrangements for best practice interventions and policy reforms in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Specify best practice interventions and policy reforms.*

1.1 Identification of best practice interventions with high potential to address identified project RTRC road safety priorities within agreed-on project budget and provision of indicative estimates of anticipated safety benefits

1.2 Identification of best practice policy reforms in the context of broader regional and national policy contexts and policy issues that have the most impact on the safety of RTRC traffic.

2 *Formalize agency intervention and responsibilities and assess related delivery capacity.*

2.1 Confirmation of regional and country agency responsibilities for selected best practice interventions and policy reforms in the project RTRC and commitment to delivering them

2.2 Assessment of agency capacity to deliver selected best practice interventions and policy reforms in the project RTRC

2.3 Refinement of proposed best practice interventions and policy reforms in the project RTRC.

3 *Specify monitoring and evaluation systems and project management arrangements for the RTRC road safety project.*

3.1 Identification of performance measures, measurement periods, and baseline measures for each intervention component in the project RTRC and broad specification of related measurement equipment and data management requirements

3.2 Identification of performance measures and measurement periods for each policy review component in the project RTRC

3.3 Specification of project management arrangements for the road safety project.

Method

Attachment 1 provides broad guidelines for the most promising best practice interventions and policy reforms in the project RTRC.

Attachment 2 provides guidelines and checklists for the assessment of delivery agency capacity for selected best practice interventions and policy reforms (output 2.2), and the refinement of proposed best practice interventions and policy reforms in the project RTRC (output 2.3).

Attachment 3 provides examples of project performance measures (output 3.1).

Attachment 4 provides guidance on project management arrangements (output 3.3).

Scheduling of tasks

To be developed in accordance with project identification and preparation schedule.

It is envisaged that these tasks will be carried out in accordance with the specified phases and steps of the RTRC guidelines. The first step is specification of best practice interventions, policy reforms, monitoring and evaluation systems, and project management arrangement sufficient to prepare a comprehensive, feasible project concept. The second step is to undertake, following approval of the project concept, a more detailed specification of project components.

Professional skills and experience required

Road safety management specialist

Internationally recognized road safety management specialist with more than 10 years of leadership experience in the development and implementation of national and regional road safety strat-

egies. Demonstrated success in working with lead agencies and associated safety-related agencies at the departmental head and ministerial levels is essential.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transition countries is desirable.

Monitoring and evaluation specialist

An internationally recognized specialist with more than 10 years of experience in the design and implementation of traffic, vehicle, and road user monitoring and evaluation systems in the road environment. Knowledge of sample design methods and related measurement equipment requirements is required. Experience in road safety monitoring and evaluation in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Attachment 1: Generic components of RTRC road safety projects

1. Corridor intervention priorities

Core elements	*Indicative budget*
Systematic infrastructure safety improvements These improvements will address head-on, run-off-road, intersection, pedestrian and cyclist crashes. Systematic International Road Assessment Programme (iRAP) safety inspection of corridors/corridor sections will identify priorities for cost-effective "Safe System" engineering investment for these key crash types. When crash data are limited, the traditional black spot elimination approaches to infrastructure safety improvements in high-risk corridors are ill-advised because it is difficult to assess their effectiveness in safety terms.	10% of total infrastructure budget[a]
General deterrence–based road safety enforcement programs Enhanced traffic enforcement campaigns can be designed and implemented in corridors to develop more effective deterrence–based measures to achieve improved compliance with vehicle and road user standards and rules. These measures will address speeding, drunk and drugged driving, not wearing safety belts and helmets, driver fatigue, and unsafe commercial vehicles (especially lighting and overloading). This component may present an opportunity to pilot a specially trained and equipped corridor highway patrol.	Road policing activity: 20% of total corridor region policing budget[b]
Publicity and awareness campaigns Social marketing campaigns will improve traffic safety awareness and support general deterrence–based safety enforcement programs in the corridor. These campaigns will target all relevant parties and use all appropriate media, taking into account local literacy levels and language needs. Media will include local television, radio, newspapers, billboards, and posters. Opportunities can be found to use local cultural events and outlets to disseminate key messages.	Publicity and awareness campaigns: minimum of 5% of road policing budget
Community development & corporate social responsibility programs Enhanced work-, school- and community-based education programs will be designed and implemented in the corridors and surrounding areas. These will be integrated with the traffic enforcement and social marketing campaigns. The new ISO 39001 road traffic safety management systems standards provide an opportunity for large commercial organizations along the corridor or regularly using the corridor to undertake pilot projects.	

Improved post-crash response and emergency medical services	
Enhanced post-crash safety services can be designed and implemented in the corridors and surrounding areas to improve the survivability of road crash victims and their longer-term recovery prospects. These services are likely to include: ■ First responder training programs for those (other than local health workers) most likely to attend crash scenes (e.g., taxi drivers, local business people, and traffic police) ■ Emergency response systems ■ Establishment of trauma registries ■ Computerized road traffic injury monitoring systems in health facilities. ■ Guidelines produced by the World Health Organization (WHO)[d] can be used to assist in the preparation and implementation of these services	$2 million plus

a. The Global Plan of the UN Decade of Action for Road Safety 2011–2020, together with regional statements (e.g., by the United Nations Economic Commission for Africa, UNECA), call for road infrastructure safety to make up at least 10 percent of the total road infrastructure budget.

b. Good practice traffic safety policing, which when combined with social marketing delivers high benefits to costs (e.g., see Bliss et al. 1998), would make up about 20 percent of the total police budget for the corridor, and, following mainstreamed road safety infrastructure treatments ,would be expected to make up two-thirds of the remaining project component costs.

c. ISO (2012).

d. Mock et al. (2004); Sasser et al. (2005).

2. Corridor road safety policy reforms

Core elements	*Indicative budget*
Heavy commercial vehicles	
The safety of heavy commercial vehicle safety operations (freight and passenger transport) is a major concern on RTRCs in LMICs. Key risk factors are speeding, overloading, and lack of conspicuity. A systematic policy review by independent experts of international best practice heavy vehicle safety regimes would assess the medium- to longer-term policy options for the corridor and the countries through which it passes. Links can also be made to interventions in project corridors that may, for example, provide opportunities for the provision of portable weigh stations.	$1–2 million
Heavy commercial vehicle drivers	
Heavy commercial vehicle driver standards are a major concern of RTRC agencies in view of the unsafe behavior of users stemming from weak licensing standards, weak enforcement of key safety rules, and the absence of self-explanatory road environments. A systematic policy review conducted by independent experts of international best practice heavy commercial vehicle driving standards would assess the medium- to longer-term policy options for regional harmonization	

Infrastructure safety performance standards

The current standards for junction design and management of the transition from high- to low-speed environments expect vulnerable road users to compete successfully against higher-speed, higher-mass vehicles. But the consequences are dire. Only the "Safe System" approach recommended by the World Bank and other international development organizations promotes design and operational solutions that have the potential to reduce inherent dangers in the road transport system. A systematic review of existing legislation governing the design, operation, and management of road infrastructure will assess the priority given to road user safety and the related highway agency roles, responsibilities, and accountability for safety performance. Special attention will be paid to the requirements for setting speed limits and to safe road designs to enhance their protective qualities for vulnerable road users, the related use of safety audit and safety rating tools, and work zone safety. It is expected that there would be interface between this activity and the infrastructure activity highlighted in corridor component 1.

3. Corridor Monitoring and Evaluation Systems

Core elements	*Indicative budget*
Performance targets A safety performance management framework must be established for corridor projects to allow the setting, monitoring, and evaluation of goals and targets for the long term and the interim. These goals and targets should take the form of final outcomes,[e] intermediate outcomes,[f] and outputs.[g] It is important that performance targets are ambitious, and that the project aims to determine what can be achieved with the systematic application of good practice measures as part of its learning by doing function. **Performance measures and periodic surveys** Every effort should be made to obtain reliable baseline estimates of both the current and ongoing performances in the targeted corridors and areas. This will require combining the available police and health sector data and iRAP surveys and carrying out periodic surveys of means speeds, drinking and driving, crash helmet use, and so forth (see table 5.2 for examples). **Reporting arrangements** Related to the project management and monitoring and evaluation requirements is the need to reach early agreement on the project performance reporting requirements. Consensus is needed across the project partnership on the process, content, and timing of project reporting arrangements.	$3–4 million

e. Final outcomes can be expressed as a long-term vision of the future safety of the road traffic system (e.g., as in the concept "Vision Zero" developed by Sweden and adopted by the EU to virtually eliminate deaths in road traffic by 2050 and "Sustainable Safety" approach adopted by the Netherlands to prevent road traffic crashes and injuries) and as more short- to medium-term targets expressed in terms of social costs, fatalities, and serious injuries presented in absolute terms and also in terms of rates per capita, vehicles, and distance traveled.
f. Intermediate outcomes are linked to improvements in the final outcomes. Typical measures include average traffic speeds, the proportion of drunk drivers in fatal and serious injury crashes, safety belt–wearing rates, helmet-wearing rates, the physical condition or safety rating of the road network, and the standard or safety rating of the vehicle fleet.
g. Outputs represent physical deliverables that result in improvements in intermediate and final outcomes. Typical measures include kilometers of engineering safety improvements, number of police enforcement operations required to reduce average traffic speeds, and number of vehicle safety inspections. Alternatively, they can correspond to milestones showing a specific task has been completed.

4. Corridor Project Management Arrangements

Core elements	*Indicative budget*
Designated lead agency arrangements	
An essential element will be to create a regional government lead agency role and body for the project that enables it to deliver effectively on its institutional management functions and build and strengthen its leadership and partnership in the process. The project management arrangements should model the vital lead agency contribution to directing and sustaining the production of improved road safety results and be designed to maximize the potential for the lead agency to rapidly assert itself in this role and build its capacity accordingly. This process will be informed by road safety management capacity review findings, which will help identify specific and appropriate leadership arrangements for the corridor.	$2 million
Coordination structures and working procedures	
Regional coordination arrangements must be established. Coordination structures should engage project participants on at least three decision-making and consultative levels: agency leaders, senior agency managers, and external partners and stakeholders. Basic management arrangements should include at a minimum a high-level steering group comprising agency heads, a senior managers working group, and an extended senior managers consultative group that includes wider business sector and community representation. These groups would be supported by expertise and resources provided via the lead agency and associated technical assistance, informed by capacity review findings.	
Project promotion	
Promotion of project goals and achievements is essential and should be managed by the lead agency, working through the steering group that should take responsibility for the RTRC road safety brand and core safety messages.	

Attachment 2: Guidelines and checklists for review of delivery agency capacity

Checklists 2–5 of the core World Bank capacity review guidelines provide useful reference material for addressing the assessment of agency capacity to deliver selected best practice interventions and policy reforms in the project RTRC (output 2.2) and the refinement of proposed best practice interventions and policy reforms in the project RTRC (output 2.3)—see Bliss and Breen (2009).

These checklists have been adjusted for the purposes of the RTRC road safety management capacity review process and are attached here as checklists 1–4.

Checklist findings must be interpreted using the judgments of expert safety management. If the answers to questions are mainly "no" or "pending," capacity is clearly weak. When a high number of "pending" or "partial" answers are encountered, capacity is again weak, but signs of capacity strengthening are evident and should be acknowledged and encouraged. It is only when there is a predominance of "yes" answers that capacity can be viewed as strong. It is important to seek a consensus on the assessment made for any particular element of the road safety management system being appraised.

Checklist 1: Planning, design, operation & use of RTRC

Question	*Yes*	*Partial*	*Pending*	*No*
Have comprehensive safety standards and rules and associated performance targets been set for the planning, design, operation, and use of the RTRC to achieve the desired focus on results?				
Are the official speed limits on the RTRC aligned with "Safe System" design principles to achieve the desired focus on results?				
Is a compliance regime in place on the RTRC to ensure adherence to specified safety standards and rules to achieve the desired focus on results? ❑ Road safety impact assessment? ❑ Road safety audit? ❑ Road safety inspection? ❑ Road safety rating? ❑ Black spot management? ❑ Network safety management? ❑ Speed management? ❑ Alcohol management? ❑ Safety belt management? ❑ Helmet management? ❑ Fatigue management?				
Do the specified RTRC safety standards and rules and related compliance regimes clearly address the safety priorities of high-risk road user groups to achieve the desired focus on results? Do the specified RTRC safety standards and rules and related compliance regimes compare favorably with international good practice?				

Checklist 2: Entry & exit of vehicles to and from RTRC

Question	*Yes*	*Partial*	*Pending*	*No*
Have comprehensive safety standards and rules and associated performance targets been set to govern the entry and exit of vehicles and related safety equipment to and from the RTRC to achieve the desired focus on results? ❑ Private vehicles? ❑ Commercial vehicles? ❑ Public transport vehicles? ❑ Motorcycle helmets? ❑ Cycle helmets?				
For each category of vehicles and safety equipment (private, commercial, public, helmets) are RTRC compliance regimes in place to ensure adherence to the specified safety standards and rules to achieve the desired focus on results? ❑ Vehicle certification? ❑ Vehicle inspection? ❑ Helmet certification?				
Do the specified RTRC safety standards and rules and related compliance regimes and safety rating surveys clearly address the safety priorities of high-risk road user groups to achieve the desired focus on results? Do the specified RTRC safety standards and rules and related compliance regimes and safety rating surveys compare favorably with international good practice?				

Checklist 3: Entry & exit of road users to and from RTRC

Question	*Yes*	*Partial*	*Pending*	*No*
Have comprehensive safety standards and rules and associated performance targets been set to govern the entry and exit of road users to and from the RTRC to achieve the desired focus on results? ❑ Private drivers and passengers? o Cars? o Heavy vehicles? o Mopeds? o Motorcycles ❑ Commercial drivers? ❑ Public transport drivers? o Taxis? o Buses? o Non-motorized vehicles?				
For each category of driver (private, commercial, public) are RTRC compliance regimes in place to ensure adherence to the specified safety standards and rules to achieve the desired focus on results? ❑ Driver testing? ❑ Roadside checks?				
Do the specified RTRC safety standards and rules and related compliance regimes clearly address the safety priorities of high-risk road user groups to achieve the desired focus on results? ❑ Young drivers? ❑ Older drivers? ❑ Commercial drivers? ❑ Public transport drivers?				
Do the specified RTRC safety standards and rules and related compliance regimes compare favorably with international good practice?				

Checklist 4: Recovery & rehabilitation of crash victims from RTRC

Question	*Yes*	*Partial*	*Pending*	*No*
Have comprehensive safety standards and rules and associated performance targets been set to govern the recovery and rehabilitation of crash victims from the RTRC to achieve the desired focus on results? ❑ Pre-hospital? ❑ Hospital? ❑ Long-term care?				
For each category of post-crash service (pre-hospital, hospital, and long-term care) are RTRC compliance regimes in place to ensure adherence to the specified safety standards and rules to achieve the desired focus on results?				
Do the specified RTRC safety standards and rules and related compliance regimes clearly address the safety priorities of high-risk road user groups to achieve the desired focus on results?				

Attachment 3: Examples of road safety performance measures for RTRC projects

Category	*Example of possible measure*
Risk exposure	Traffic volumes by vehicle and road user type
Final safety outcomes	Deaths and injuries recorded by police
	Hospital data for road deaths and injuries recorded by health authorities
	Other sources of death and injury registration
Intermediate safety outcomes	Average vehicle speeds by road type, summer and winter
	Front and rear seat safety belt wearing rates, driver and passengers
	Child restraint wearing rates
	Motorcycle helmet wearing rates, driver and pillion
	Excess alcohol levels
	Drug impairment levels
	Skid resistance of road surfaces
	Road infrastructure crash safety ratings (iRAP risk and protection scores)
	Vehicle compliance with testing standards
	Vehicle crash safety ratings
	Target audience recall and assessed relevance of publicity campaign messages
	Community attitudes toward road safety
	Average emergency medical services response times
Intervention outputs	Number of safety engineering treatments per section of road network
	Hours of police enforcement targeting high-risk behaviors
	Numbers of police infringement notices issued
	Media frequency and reach of publicity campaigns supporting police enforcement
	Hours of school-based education activities
	Volume of driver licensing and testing activities
	Volume of vehicles tested
	Number of emergency medical services responses to road network crashes

Attachment 4: Project Management Arrangements

Core project management functions include the coordination of RTRC road safety project delivery and should engage project participants on three decision-making and consultative levels: agency leaders, senior agency managers, and external partners and stakeholders.

Coordination structures should include:

- A high-level steering group composed of the heads of all participating RTRC road safety project agencies
- A working group composed of senior managers from all participating RTRC road safety project agencies
- A consultative group that includes all members of the working group plus representatives of the wider business sector and community.

These coordination structures should be supported by expertise and resources provided via the lead agency and associated project technical assistance. Ideally, the lead agency would chair the steering group and working group and take responsibility for ensuring the conduct of regular, productive meetings.

The steering group should meet about four times a year to track project progress reported by the working group, make related decisions, and provide guidance and direction where necessary.

The working group should meet on a more regular basis to guide the day-to-day management of project delivery and preparation of progress reports to the steering group. And the consultative group should meet as required to address relevant project issues that require business sector and community input.

Templates for terms of reference

Technical assistance for detailed project specification & implementation

Terms of reference N°5: Technical assistance for systematic infrastructure safety improvements

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY INTERVENTION PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Advise on and support the application of proactive tools and procedures for the design, implementation, maintenance, and evaluation of improved infrastructure safety features in the project RTRC.
- Train road agency and associated regional and national consulting staff in the design, implementation, maintenance, and evaluation of improved infrastructure safety programs in the project RTRC.
- Support the preparation of a post-project program of infrastructure safety improvements throughout the RTRC, based on successful experience in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Advise on and support the application of proactive tools, procedures, and programs for improving infrastructure safety in the project RTRC.*

1.1 Guidelines for the design, implementation, and maintenance of innovative infrastructure safety improvements in the project RTRC to address the recommendations of the iRAP Safer Roads Investment Plan (e.g., barriers, roundabouts, traffic calming, pedestrian and motorcyclist/cyclist facilities, signs and markings, lighting).

1.2 On-the-job support for application of the guidelines to improve infrastructure safety in the project RTRC, including preparation of designs for innovative road safety programs and draft bidding documents for civil works requirements.

2 *Train road agency and associated regional and national consulting company staff in the use of proactive tools and procedures for improved infrastructure safety in the project RTRC.*

2.1 Preparation and delivery of basic and advanced training programs in proactive tools and procedures for improved infrastructure safety and related monitoring and evaluation procedures.

3 *Evaluate the efficiency and effectiveness of improved road infrastructure safety programs in the project RTRC.*

3.1 Design and conduct of evaluations of improved infrastructure safety programs in the project RTRC (coordinated with a project monitoring and evaluation component).

3.2 Revision of the guidelines for improved infrastructure safety (developed in outputs 1.1 and 1.2), based on the evaluation findings in the project RTRC.

4 *Prepare a post-project program and guidelines for infrastructure safety improvements throughout the RTRC.*

4.1 Post-project infrastructure safety improvement program, including program cost estimates and implementation schedule.

4.2 Guidelines for improving infrastructure safety throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project.* Support the design, implementation, maintenance, and evaluation of improved infrastructure safety programs in the project RTRC and related staff training.
- *Final year of project.* Support the preparation of a post-project program and guidelines for the improvement of infrastructure safety throughout the RTRC.

Professional skills and experience required

Road safety engineering specialist(s)

One or more internationally recognized specialists with more than 10 years of practical experience in the design of innovative infrastructure safety facilities, including extensive experience with iRAP tools, safety audits, and safety inspection. Experience in improving infrastructure safety in mixed-traffic/mixed-speed road environments in rapidly motorizing countries is essential.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience in conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transition countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Support from the International Road Assessment Programme (iRAP)

iRAP support is recommended for the delivery of these outputs.

Terms of reference Nº6: Technical assistance for general deterrence-based safety enforcement programs

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY INTERVENTION PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Support the introduction and evaluation of general deterrence police enforcement targeting unsafe behaviors in the project RTRC.
- Train police staff in the implementation and management of general deterrence enforcement targeting unsafe behaviors in the project RTRC.
- Support the preparation of a post-project program of general deterrence police enforcement targeting unsafe behaviors throughout the RTRC, based on successful experience in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Support the preparation of annual police enforcement programs to achieve the general deterrence of unsafe behaviors in the project RTRC.*

1.1 Identification of unsafe behaviors in the project RTRC.

1.2 Operational strategies and tactics and related guidelines to address unsafe behaviors in the project RTRC.

1.3 Annual programs of (monthly) scheduled enforcement operations targeting unsafe behaviors in the project RTRC.

1.4 Analysis of equipment needs and specification and costing of additional equipment required to support annual enforcement programs.

1.5 Draft bidding documents for the procurement of additional equipment.

1.6 On-the-job support for the implementation of annual enforcement programs.

2 *Train regional and national police staff at all levels in the implementation of annual enforcement programs in the project RTRC.*

3.1 Preparation and delivery of a basic training program to upgrade the traffic safety knowledge and skills of road policing staff.

3.2 Preparation and delivery of an advanced training course on general deterrence theory and practice and related operational strategies and tactics.

3.3 Preparation and delivery of management training on the supervision of program implementation by operational staff.

3 *Evaluate the efficiency and effectiveness of police enforcement programs in the project RTRC.*

4.1 Design and conduct of evaluations of police enforcement programs in the project RTRC (coordinated with the project monitoring and evaluation component).

4.2 Recommended improvements to police enforcement programs (developed in output 1.3), based on the evaluation findings in the project RTRC.

4 *Prepare a post-project police enforcement program and guidelines to achieve the general deterrence of identified unsafe behaviors throughout the RTRC.*

4.1 Post-project RTRC enforcement program, including program cost estimates and implementation schedule.

4.2 Guidelines for police enforcement programs to achieve general deterrence of identified unsafe behaviors throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project.* Support the preparation, implementation, evaluation, and revision of police enforcement programs in the project RTRC, and related staff training.
- *Final year of project.* Support the preparation of a post-project program and guidelines for police enforcement programs throughout the RTRC.

Professional skills and experience required

Enforcement management specialist

A specialist with more than 10 years of experience in traffic enforcement leadership, coordination, and policy advice in a national police agency operating a successful general deterrence model. A demonstrated ability to communicate road safety enforcement philosophy and tactics to a broad audience is essential. Previous experience in a law enforcement training facility is desirable.

Enforcement operations specialist

A specialist with more than 10 years of road policing experience, including line management of traffic enforcement staff. Practical experience in the design, implementation, and management of

road safety enforcement strategies in a national police agency operating a successful general deterrence model is essential. A demonstrated ability to communicate road safety enforcement philosophy and tactics to a broad audience is also essential. Previous experience in a law enforcement training facility is desirable.

Enforcement equipment specialist

A specialist with about 10 years of experience in the specification, sourcing, evaluation, and procurement of road safety equipment and tools in a national police agency operating a successful general deterrence model. A demonstrated understanding of modern operational safety enforcement practices is essential.

Enforcement training specialist

A specialist with about 10 years of experience in the design, implementation, and evaluation of police officer and recruit training and development programs. Operational experience in a national police training college is essential.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Support from the International Road Policing Organization (RoadPOL)

RoadPOL support is recommended for the delivery of these outputs because of the specialist nature of road policing and the preference of road policing agencies to work on a peer-to-peer basis with officers from other relevant police agencies.

Terms of reference Nº7: Technical assistance for publicity & awareness campaigns supporting general deterrence-based safety enforcement programs

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY INTERVENTION PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Support the introduction and evaluation of publicity and awareness campaigns that support police enforcement programs targeting unsafe behaviors in the project RTRC.
- Train designated road safety agency staff, police staff, and associated regional and national consultants in the implementation and management of publicity and awareness campaigns that support police enforcement programs targeting unsafe behaviors in the project RTRC.
- Support the preparation of a post-project publicity and awareness campaign that supports police enforcement programs targeting unsafe behaviors throughout the RTRC, based on successful experience in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Prepare annual publicity and awareness campaigns to support police enforcement programs targeting unsafe behaviors in the project RTRC.*

1.1 Identification and prioritization of high-risk behaviors to be targeted through publicity and awareness campaigns.

1.2 Identification of road user groups demonstrating the identified high-risk behaviors and their extended social and business networks in the project RTRC.

1.3 Development of key road safety messages to high-risk road user groups and their extended social and business networks.

1.4 Identification of electronic, print media, and billboard services reaching high-risk road user groups and their extended social and business networks in the project.

1.5 Annual program of scheduled publicity and awareness campaigns, coordinated with police enforcement programs, targeting high-risk road user groups and their extended social and business networks in the project RTRC.

1.6 Monitoring and evaluation systems for annual publicity and awareness campaigns to track message recall and relevance (coordinated with monitoring and evaluation component).

1.7 Identification of suppliers of market research, public relations, and advertising services with sufficient capacity to produce, implement, and monitor specified publicity and awareness campaigns.

1.8 Draft bidding documents for the procurement of the required research, production, and media services.

1.9 Assistance with the evaluation of bids for research, production, and media services.

1.10 On-the-job support for the implementation of publicity and awareness campaigns.

2 *Train designated road safety agency and police staff in the design and implementation of annual publicity and awareness campaigns in the project RTRC.*

2.1 Preparation and delivery of training programs addressing the principles and practices of effective publicity and awareness campaigns for road safety, and related monitoring and evaluation procedures.

3 *Evaluate the efficiency and effectiveness of publicity and awareness campaigns that support police enforcement targeting unsafe behaviors in the project RTRC.*

3.1 Design and conduct of evaluations of publicity and awareness campaigns in the project RTRC (coordinated with the monitoring and evaluation component).

3.2 Recommended improvements to publicity and awareness campaigns that support police enforcement programs targeting unsafe behaviors (to be fed back into programs developed in output 1.5), based on the evaluation findings in the project.

4 *Prepare a post-project publicity and awareness campaign and guidelines to support police enforcement programs targeting unsafe behaviors throughout the RTRC.*

4.1 Post-project RTRC publicity and awareness campaigns, including campaign cost estimates and implementation schedule.

4.2 Guidelines detailing requirements for publicity and awareness campaigns that support police enforcement programs targeting unsafe behaviors throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Support the preparation, implementation, and evaluation of publicity and awareness campaigns that support police enforcement programs in the project RTRC and related staff training.
- *Final year of project*. Support the preparation of a post-project publicity and awareness campaign and guidelines to support police enforcement programs throughout the RTRC.

Professional skills and experience required

Communications specialist

A specialist with more than 10 years of experience in managing research-based advertising and public relations in road safety or a similar field. Previous account management experience in an advertising agency or public relations firm is desirable. Experience with successful social marketing campaigns is essential.

Community survey specialist

A specialist with more than 10 years of market research experience in quantitative and qualitative community attitude surveys. Experience in conducting community attitude surveys in developing and transitional countries is desirable.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience in conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference Nº8: Technical assistance for community development and corporate social responsibility programs

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY INTERVENTION PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Advise on and support the delivery of community development and corporate social responsibility road safety programs in the project RTRC.
- Train lead agency and associated regional and national consulting staff in the management and direction of community development and corporate social responsibility road safety programs in the project RTRC.
- Support the preparation of a post-project program of community development and corporate social responsibility road safety programs in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Prepare annual community development programs and identify opportunities for corporate social responsibility programs designed to support the infrastructure safety programs, road safety enforcement programs, and publicity and awareness campaigns in the project RTRC.*

1.1 Guidelines for the allocation of RTRC road safety project community development funds, including grant eligibility criteria, application processes, and monitoring and evaluation requirements

1.2 Guidelines for corporate social responsibility road safety programs seeking to support the achievement of RTRC road safety project objectives. These guidelines should include RTRC road safety priorities, available RTRC road safety resources, preferred coordination arrangements, and potential partnership and branding opportunities

1.3 On-the-job support for the implementation of community development and corporate social responsibility road safety programs in the project RTRC.

2 *Train road agency and associated regional and national consulting company staff in the delivery of community development programs and promotion of corporate social responsibility programs designed to support the infrastructure safety programs, road safety enforcement programs, and publicity and awareness campaigns in the project RTRC.*

2.1 Preparation and delivery of training programs in the use of the guidelines for the allocation of RTRC road safety project community development funds and corporate social responsibility programs in the project RTRC.

3 *Evaluate the efficiency and effectiveness of community development programs and corporate social responsibility programs designed to support the infrastructure safety programs, road safety enforcement programs, and publicity and awareness campaigns in the project.*

3.1 Design and conduct of evaluations of community development programs and (where agreed) corporate social responsibility programs in the project RTRC (coordinated with the project monitoring and evaluation component)

3.2 Revision of the guidelines (developed in outputs 1.1 and 1.2), based on the evaluation findings in the project RTRC.

4 *Prepare a post-project program and guidelines for the entire RTRC.*

4.1 Post-project RTRC community development and corporate social responsibility programs, including program cost estimates and implementation schedule

4.2 Guidelines for improving community development programs and corporate social responsibility programs throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Support the preparation, implementation, and evaluation of community development programs and corporate social responsibility programs in the project RTRC and related staff training.
- *Final year of project*. Support the preparation of post-project community development and corporate social responsibility programs and guidelines designed to support infrastructure safety programs, safety enforcement programs, and publicity and awareness campaigns throughout the RTRC.

Professional skills and experience required

Community development specialist

An internationally recognized community development specialist with more than 10 years of experience in the design, delivery, and evaluation of community-based road safety programs designed

to support the delivery of national road safety strategies. Experience in community road safety projects in developing and transition countries is desirable.

Corporate social responsibility specialist

An internationally recognized corporate social responsibility specialist with more than 10 years of experience in the design, delivery, and evaluation of corporate road safety programs designed to support the delivery of national road safety strategies. Experience in corporate safety projects in developing and transition countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference Nº9: Technical assistance for improved post-crash response services

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY INTERVENTION PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Support the improvement and evaluation of post-crash response services in the project.
- Train post-crash response services staff and other first responders at crashes in improved post-crash response procedures.
- Support the preparation of a post-project program of improved post-crash response services throughout the RTRC, based on successful experience in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Prepare and support improved post-crash response services programs in the project RTRC.*

1.1 Identification of priorities for improved post-crash response services in the project.

1.2 Annual programs of (seasonally) scheduled improved post-crash response services in the project.

1.3 Specification and costing of equipment and facilities, communications systems, and staffing requirements for improved post-crash response services in the project.

1.4 Draft bidding documents for the procurement of equipment and facilities.

1.5 On-the-job support for the implementation of improved rescue and post-crash response services in the project.

2 *Train regional and national emergency staff and other first responders at crash scenes in the provision of improved rescue and relief services in the project.*

2.1 Preparation and delivery of training programs for improved post-crash response services in the project.

3 *Evaluate improved post-crash response services programs in the project RTRC.*

3.1 Design and conduct of evaluations of improved post-crash response services in the project RTRC (coordinated with the project monitoring and evaluation component)

3.2 Recommended improvements to post-crash response services throughout the RTRC (to be fed back into programs developed in output 1.2), based on the evaluation findings in the project.

4 *Prepare a post-project post-crash response services program and guidelines.*

4.1 A post-project, post-crash response services program, including cost estimates and implementation schedule.

4.2 Guidelines detailing requirements for improved post-crash response services throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Prepare and support the preparation and implementation of improved post-crash response services in the project RTRC, and related staff and other first responder training.
- *Final year of project*. Assist the preparation of a post-project, post-crash response services program and guidelines throughout the RTRC.

Professional skills and experience required

Post-crash response specialist

A specialist with more than 10 years of experience in the design, implementation, and management of post-crash response and first responder training programs in developing and transitional countries. Thorough knowledge of international best practice and experience in working with senior officials and specialist staff in national health agencies in developing and transitional countries is essential.

Emergency medical services specialist

A specialist with more than 10 years of experience in the design, implementation, and management of emergency medical services in developing and transitional countries. Thorough knowledge of international best practice and experience in working with senior officials and specialist staff in national health agencies in developing and transitional countries are essential.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference Nº10: Technical assistance for improved medical emergency services

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY INTERVENTION PRIORITIES

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Support the improvement and evaluation of emergency medical services in the project RTRC.
- Train emergency medical services staff in the delivery of improved services in the project RTRC.
- Support the preparation of a post-project program of emergency medical services throughout the RTRC, based on successful experience in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Prepare and support improved emergency medical services programs in the project RTRC.*

1.1 Identification of priorities for improved emergency medical services in the project RTRC.

1.2 Annual programs of (seasonally) scheduled improved emergency medical services in the project RTRC.

1.3 On-the-job support for the implementation of improved emergency medical services in the project RTRC.

2 *Train regional and national emergency medical services staff in the provision of improved services in the project RTRC.*

2.1 Preparation and delivery of training programs for improved emergency medical services in the project RTRC.

3 *Evaluate improved emergency medical services programs in the project RTRC.*

3.1 Design and conduct of evaluations of improved emergency medical services in the RTRC (coordinated with the project monitoring and evaluation component).

3.2 Recommended improvements to emergency medical services throughout the RTRC (to be fed back into programs developed in output 1.2), based on the evaluation findings in the project RTRC.

4 *Prepare a post-project RTRC emergency medical services program and guidelines.*

4.1 Post-project, throughout the RTRC, an emergency medical services program, including cost estimates and implementation schedule.

4.2 Guidelines detailing requirements for improved emergency medical services throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project.* Assist and support the preparation and delivery of improved emergency medical services in the project RTRC and related staff training.
- *Final year of project*, Assist the preparation of a post-project emergency medical services program and guidelines throughout the RTRC.

Professional skills and experience required

Emergency medical services specialist

A specialist with more than 10 years of experience in the design, implementation, and management of emergency medical services in developing and transitional countries. Thorough knowledge of international best practice and experience in working with senior officials and specialist staff in national health agencies in developing and transitional countries are essential.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference N°11: Technical assistance for heavy commercial vehicles

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY POLICY REFORMS

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Evaluate heavy commercial vehicle safety regulatory systems (freight and passenger).
- Make recommendations for improved heavy commercial vehicle safety.
- Support the implementation of heavy commercial vehicle safety reforms.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Review heavy commercial vehicle safety standards and rules, compliance regimes, and safety performance in the project RTRC countries and region.*

1.1 Quantification of scale of heavy commercial vehicle freight and passenger transport task in the project RTRC and projected traffic growth and safety performance over the coming decade

1.2 Benchmarking of *heavy commercial vehicle safety standards and rules, compliance regimes, and safety performance in the project RTRC countries and region against international country and regional best practice.*

2 *Recommend reforms to heavy commercial vehicle safety standards and rules and compliance regimes in the project RTRC.*

2.1 Specification of heavy commercial vehicle (freight and passenger) safety reform options in the project RTRC with estimated costs and benefits, identifying the preferred option

2.2 Preparation and delivery of training programs on recommended reform option to the relevant RTRC road safety project staff.

3 *Support the implementation of recommended reforms.*

3.1 Specification of a heavy commercial vehicle safety reform implementation strategy, identifying related consultation processes, a legislative change program, promotional requirements, and monitoring and evaluation systems

3.2 Preparation of a post-project program for ongoing reform activities, including program cost estimates and implementation schedule.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Support the heavy commercial vehicle safety policy reform process in the project RTRC and related staff training.
- *Final year of project*. Support the preparation of a post-project program for ongoing heavy commercial vehicle safety reforms throughout the RTRC.

Professional skills and experience required

Heavy vehicle safety specialist

A specialist with more than 10 years of experience in the area of heavy commercial vehicle safety inspection and testing. Detailed knowledge of and experience in international standards for heavy commercial vehicles and the international practice of vehicle testing and certification are essential. Previous experience working in a national vehicle testing and inspection agency, preferably in a developing or transitional country, or for a major international vehicle manufacturer is desirable.

Registry management specialist

A specialist with more than 10 years of experience in the management of modern registry systems for vehicles and drivers and the related business procedures and technology. Extensive experience working at the senior management level in a national registry is essential. Previous experience working with a national registry in a developing or transitional country is desirable.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of road safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference N°12: Technical assistance for heavy commercial vehicle drivers

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY POLICY REFORMS

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Evaluate heavy commercial vehicle driver safety regulatory systems (freight and passenger) in the project RTRC.
- Make recommendations for improved heavy commercial vehicle driver safety in the project RTRC.
- Support the implementation of heavy commercial vehicle driver safety reforms in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Review heavy commercial vehicle driver safety standards and rules, compliance regimes, and safety performance in the project RTRC countries and region.*

1.1 Quantification of scale of the heavy commercial vehicle freight and passenger transport task in the project RTRC and projected traffic growth and safety performance over the coming decade.

1.2 Benchmarking of heavy commercial vehicle driver safety standards and rules, compliance regimes, and safety performance in the project RTRC countries and region against international country and regional best practice.

2 *Recommend reforms to heavy commercial vehicle driver safety standards and rules and compliance regimes in the project RTRC.*

2.1 Specification of heavy commercial vehicle driver (freight and passenger) safety reform options in the project RTRC with estimated costs and benefits, identifying the preferred option

2.2 Preparation and delivery of training programs on the recommended reform option to the relevant RTRC road safety project staff.

3 *Support the implementation of recommended reforms.*

3.1 Specification of a heavy commercial vehicle driver safety reform implementation strategy, identifying related consultation processes, a legislative change program, promotional requirements, and monitoring and evaluation systems

3.2 Preparation of a post-project program for ongoing reform activities, including program cost estimates and implementation schedule.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Support the heavy commercial vehicle driver safety policy reform process in the project RTRC and related staff training.
- *Final year of project*. Support the preparation of a post-project program for ongoing heavy commercial vehicle driver safety reforms throughout the RTRC.

Professional skills and experience required

Commercial vehicle driver testing and licensing specialist

A specialist with more than 10 years of experience with commercial motor vehicle driver training, testing, and licensing in a national jurisdiction. A thorough knowledge of international best practice—including graduated driver licensing systems—is essential. Previous experience in the provision of advisory services to a national driver testing and licensing agency in a developing or transitional country is desirable.

Registry management specialist

A specialist with more than 10 years of experience with the management of modern registry systems for drivers and vehicles and related business procedures and technology. Extensive experience working at the senior management level in a national registry is essential. Previous experience working with a national registry in a developing or transitional country is desirable.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Support from national, regional, and international industry organizations

Valuable support for the driver training–related aspects of the recommended heavy commercial vehicle driver safety reforms can be provided by industry organizations with proven experience in the management of driver safety.

Terms of reference Nº13: Technical assistance for infrastructure safety performance standards

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.3 & 10.4]**

CORRIDOR ROAD SAFETY POLICY REFORMS

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Evaluate infrastructure safety performance standards in the project RTRC.
- Make recommendations for improved infrastructure safety performance standards in the project RTRC.
- Support the implementation of infrastructure safety performance standards reforms in the project RTRC.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Review infrastructure safety performance standards and rules, compliance regimes, and safety performance in the project RTRC countries and region.*

1.1 Quantification of scale of heavy commercial vehicle freight and passenger transport task in the project RTRC and projected traffic growth and safety performance over the coming decade

1.2 Benchmarking of infrastructure safety performance standards and rules, compliance regimes, and safety performance in the project RTRC countries and region against international country and regional best practice.

2 *Recommend reforms of infrastructure safety performance standards and rules and compliance regimes in the project RTRC.*

2.1 Specification of the options for infrastructure safety performance standards reforms in the project RTRC with estimated costs and benefits, identifying the preferred option

2.2 Preparation and delivery of training programs on the recommended reform option to the relevant RTRC road safety project staff.

3 *Support implementation of the recommended reforms.*

3.1 Specification of an implementation strategy for infrastructure safety performance standards reforms, identifying related consultation processes, a legislative change program, promotional requirements, and monitoring and evaluation systems

3.2 Preparation of a post-project program for ongoing reform activities, including program cost estimates and implementation schedule.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Support the process for reforming infrastructure safety performance standards in the project RTRC and related staff training.
- *Final year of project*. Support the preparation of a post-project program for ongoing infrastructure safety performance standards reforms throughout the RTRC.

Professional skills and experience required

Road safety engineering specialist(s)

One or more internationally recognized specialists with more than 10 years of practical experience in the design of innovative infrastructure safety facilities, including extensive experience with iRAP tools, safety audits, and safety inspection. Expert knowledge of international best practice infrastructure safety standards and experience in improving infrastructure safety in mixed-traffic/mixed-speed road environments in rapidly motorizing countries are essential.

Road safety legislation specialist

A specialist with more than 10 years of experience in transport sector legislation, with specific knowledge of traffic safety legislation for and regulation of road networks in a national context. Previous experience with road safety legislation in developing or transitional countries is desirable.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Support from the International Road Assessment Programme (iRAP)

iRAP support is recommended for the delivery of these outputs.

Terms of reference Nº14: Technical assistance for project management support

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.1]**

CORRIDOR PROJECT MANAGEMENT ARRANGEMENTS

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are as follows:

- Advise on and support the designated lead agency arrangements, coordination structures and working procedures, and project promotional activities for the RTRC road safety project.
- Train designated lead agency staff in project coordination and promotional support roles.
- Support the preparation of a post-project RTRC road safety program.

Outputs

The outputs of the required technical assistance services are as follows:

1 *Advise on and support RTRC road safety project management.*

1.1 Specification of project coordination arrangements and preparation of related schedules for meetings of the project's steering group, working group, and consultative group and guidelines for the content and conduct of the meetings and related activities, including project promotional initiatives

1.2 On-the-job support for the implementation of RTRC road safety project management meetings and activities.

2 *Train designated lead agency staff in RTRC road safety project coordination and promotional support roles.*

2.1 Preparation and delivery of training programs in the use of the guidelines prepared for the content and conduct of RTRC road safety project management meetings and related activities.

3 *Support the preparation of a post-project RTRC road safety program.*

3.1 Preparation of a post-project program of integrated activities for all RTRC project components and related guidelines, including program cost estimates and recommended implementation schedule

3.2 Specification of designated lead agency reforms and multisectoral partnership and stakeholder arrangements for sustained improvements in road safety throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Support the designated lead agency management of the RTRC road safety project and related staff training.
- *Final year of project*. Support the preparation of a post-project program and guidelines, and associated lead agency reforms, for the improvement of road safety performance throughout the RTRC.

Professional skills and experience required

Road safety management specialist

Internationally recognized road safety management specialist with more than 10 years of leadership of experience in the development and implementation of national and regional road safety strategies. Demonstrated success in working with lead agencies and associated safety-related agencies at the departmental head and ministerial levels is essential.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience in conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

Terms of reference Nº15: Technical assistance for performance measures and periodic surveys

PHASE III–DETAILED PROJECT SPECIFICATION	**[STEPS 9, TASK 9.2]**
PHASE IV–PROJECT IMPLEMENTATION	**[STEPS 10, TASKS 10.2]**

CORRIDOR MONITORING & EVALUATION SYSTEMS

Background

Provide description of proposed project.

Objectives

The objectives of the required technical assistance services are to:

- Support the establishment of project monitoring and evaluation systems in the project RTRC (and control corridors and areas).
- Train monitoring and evaluation agency staff, and associated regional and national consultants, in the implementation and management of the monitoring and evaluation systems in the project RTRC (and control corridors and areas).
- Support the preparation of a post-project program for the establishment of a monitoring and evaluation system throughout the RTRC, based on successful experience in the project RTRC (and control corridors and areas).

Outputs

The outputs of the required technical assistance services are as follows:

1 *Design and support project monitoring and evaluation systems for the project RTRC (and control corridors and areas).*

1.1 Specification of road safety performance measures in the project RTRC (and control corridors and areas) to monitor risk exposure and road network characteristics, final safety outcomes, intermediate safety outcomes, and intervention outputs, as well as sampling frames for the surveys required to monitor identified measures, quarterly and annual reporting procedures and formats, and evaluation procedures to assess effectiveness of interventions

1.2 Conduct of baseline surveys in the project RTRC (and control corridors and areas)

1.3 Specification and costing of survey equipment, data processing and storage system, and staffing requirements

1.4 Draft bidding documents for the procurement of the required survey equipment and data processing and storage systems.

1.5 Procedural guidelines for the conduct of surveys, data processing, and quarterly and annual reporting.

1.6 Identification of suppliers of data surveying services with sufficient capacity to undertake monitoring programs in the project RTRC (and control corridors and areas)

1.7 Draft bidding documents for the procurement of the required data surveying services

1.8 On-the-job support for the baseline and ongoing data surveys; data processing, storage, and analysis; and the preparation of quarterly and annual performance reports

1.9 Review (and adjustment) of project results indicators using the baseline measures and the first 12 months of survey data.

2 *Train monitoring and evaluation agency staff, and associated regional and national consulting company staff, in monitoring and evaluation systems.*

2.1 Preparation and delivery of basic and advanced training programs in the implementation and management of monitoring and evaluation systems.

3 *Evaluate the efficiency and effectiveness of the monitoring and evaluation systems in the project RTRC (and control corridors and areas).*

3.1 Design and conduct of monitoring and evaluation system review

3.2 Revision of monitoring and evaluation procedures (to be fed back into procedures developed in output 1.1), based on the evaluation findings in the project RTRC (and control corridors and areas).

4 *Prepare post-project program and guidelines for the establishment of a monitoring and evaluation system throughout the RTRC.*

4.1 Post-project RTRC monitoring and evaluation program, including sampling frames for surveys of identified performance measures, program cost estimates, and implementation schedule.

4.2 Guidelines for data surveys, data processing and storage, reporting of results, and performance evaluation throughout the RTRC.

Scheduling of tasks

The scheduling of the required technical assistance services is as follows:

- *Duration of project*. Design and support the implementation, evaluation, and revision of monitoring and evaluation systems in the project RTRC (and control corridors and areas) and related staff training.

- *Final year of project*. Prepare a post-project program and guidelines for the monitoring and evaluation of safety performance throughout the RTRC.

Professional skills and experience required

Monitoring and evaluation specialist(s)

One or more specialists with more than 10 years of experience in the design and implementation of traffic, vehicle, and road user monitoring and evaluation systems in the road environment. Knowledge of sample design methods and related measurement equipment requirements is required. Experience in road safety monitoring and evaluation in developing and transitional countries is desirable.

Road safety analysis specialist

An internationally recognized specialist with more than 10 years of experience in conducting scientific analyses of the road environment, vehicle, and human factors contributing to road crashes and injuries. Hands-on experience in quantitative evaluations of safety interventions and outcomes is essential. Experience in road safety analyses in developing and transitional countries is desirable.

Community survey specialist

A specialist with more than 10 years of market research experience with quantitative and qualitative community attitude surveys. Experience in conducting community attitude surveys in developing and transitional countries is desirable.

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

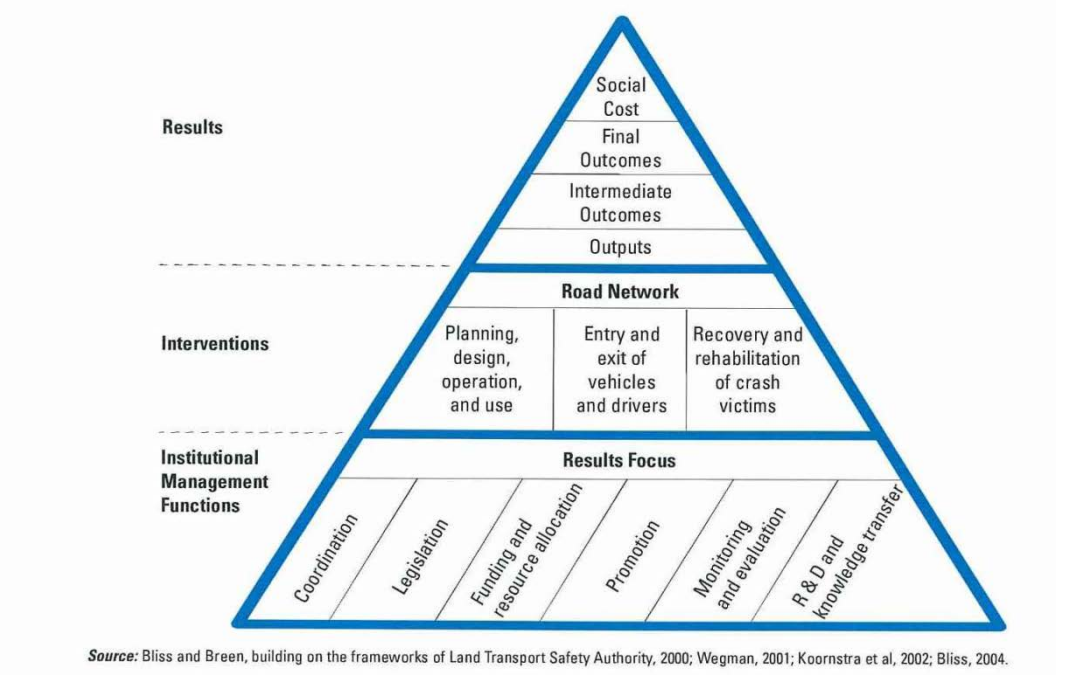
Support from the International Road Traffic Accident Database Group (IRTAD)

IRTAD support is recommended for the delivery of these outputs.

Appendix A. Road safety management system

Road safety management can be viewed as a production process with three interrelated elements: *institutional management functions* that produce *interventions* that in turn produce *results* (figure A.1). Close attention must be paid to all elements and their linkages for the limits to improving country road safety performance are shaped by their inherent weaknesses and vice versa (Bliss and Breen 2009).

Figure A.1 Road Safety Management System



Source: Bliss and Breen, building on the frameworks of Land Transport Safety Authority, 2000; Wegman, 2001; Koornstra et al, 2002; Bliss, 2004.

This systemic management framework is derived from New Zealand's 2010 target-setting model that links desired results with interventions and related institutional implementation arrangements (Land Transport Safety Authority 2000). Elements

of this model were adopted by the European Transport Safety Council, which highlighted the specification of results measures (Wegman 2001). These measures were further elaborated by the SUNflower Project, which defined implementation arrangements in terms of "structure and culture" (Koornstra et al. 2002). They were then further extended by the World Bank prototype guidelines, which identified key management functions, including lead agency and related coordination arrangements on the basis of international best practice as well as the conduct of road safety management capacity reviews (Bliss 2004).

Appendix B. Selected strategic road safety documents

COMMISSION FOR GLOBAL ROAD SAFETY

"Make Roads Safe Reports: A New Priority for Sustainable Development: A Decade of Action for Road Safety, Time for Action." London, 2006, 2008, 2011.

INTERNATIONAL ROAD ASSESSMENT PROGRAMME (iRAP)

"Star Rating Roads for Safety: The iRAP Methodology." Basingstoke, UK, 2007. http://www.irap.org.

Vaccines for Roads. 2nd ed. Basingstoke, UK, 2012.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

"Towards Zero: Achieving Ambitious Road Safety Targets through a Safe System Approach." International Transport Forum, OECD, Paris, 2008.

UNITED NATIONS ROAD SAFETY COLLABORATION (UNRSC)

Global Plan for the Decade of Action for Road Safety 2011–2020. Geneva: World Health Organization, 2011.

UNRSC INTERVENTION GUIDELINES SERIES

Global Road Safety Partnership. *Speed Management: A Road Safety Manual for Decision-Makers and Practitioners.* Geneva: World Health Organization, 2008.

UNRSC. *Safe Roads for Development: A Policy Framework for Safe Infrastructure on Major Road Transport Networks.* Geneva: World Health Organization, 2011.

World Health Organization (WHO). *Helmets: A Road Safety Manual for Decision-Makers and Practitioners,* Geneva: WHO, 2006.

WORLD BANK/GLOBAL ROAD SAFETY FACILITY

Blliss, T., and J. Breen. "Implementing the Recommendations of the World Report on Road Traffic Injury Prevention. Country Guidelines for the Conduct of Road Safety Management Capacity Reviews and the Specification of Lead Agency Reforms, Investment Strategies and Safe System Projects." Global Road Safety Facility, World Bank, Washington, DC, 2009.

Global Road Safety Facility, T. Bliss, and J. Breen. "Road Safety Management Capacity Reviews and Safe System Projects." World Bank, Washington, DC, 2013.

WORLD BANK/WORLD HEALTH ORGANIZATION

Peden, M., R. Scurfield, D. Sleet, D. Mohan, A. Hyder, E. Jarawan, and C. Mathers, eds. *World Report on Road Traffic Injury Prevention*. Geneva: World Health Organization and World Bank (Washington, DC), 2004.

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Commission for Global Road Safety. 2006, 2008, 2011. "Make Roads Safe Reports: A New Priority for Sustainable Development: A Decade of Action for Road Safety, Time for Action." London.

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EuroRAP (European Road Assessment Programme). 2011. "How Safe Are You on Europe's Trade Routes? Measuring and Mapping the Safety of the TEN-T Road Network." Basingstoke, UK.

Global Road Safety Facility. 2012. "Building Capacity for Safer Roads." World Bank, Washington, DC. http://worldbank.org/GRSF.

Global Road Safety Facility, T. Bliss, and J. Breen. 2013. "Road Safety Management Capacity Reviews and Safe System Projects." World Bank, Washington, DC.

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