23rd UN Road Safety Collaboration Meeting
‘Safer Roads and Mobility’ Project Group Meeting
Pillar 2

18 November 2016
WHO Geneva

MINUTES

Present:                 Apologies:
Susanna Zammataro (IRF Geneva)  Carmen Giron (DGT- Ministry of Interior - Spain)
Victoria Smith (IRF Geneva)  Esteban Diez Roux (IADB)
Geert van Waeg (Int. Fed. of Pedestrians)  Mohammed Al-Malki (MoI Qatar)
Mike Dreznes (IRF Washington)  Michael Tziotis (ARRB)
Rob MrInerney (iRAP)  Claudia Adriaiza (WRI-EMBARQ)
Awa Sarr (Laser international)  Hilda Gomez (CAF)
Carmen Giron (DGT- Ministry of Interior - Spain)  Nana Soetantri (ADB)
Esteban Diez Roux (IADB)  Per Mathiasen (EIB)
Mohammed Al-Malki (MoI Qatar)  Soames Job (GRSF - World Bank)

1. Welcome and Introduction
   PG Co-Chair Susanna Zammataro started the meeting by welcoming the attendees. The attendees introduced themselves. Susanna Zammataro read the list of apologies received.

2. Approval of minutes of New York meeting (13 April 2016)
   Approved with no modifications.

3. Presentation of web-based PG output document
   Susanna Zammataro - PG Co-Chair - delivered a presentation (copy attached to these minutes) first wrapping-up on structure of the Project Group, aim and content for each of the 4 Focus areas, salient features of output document. She then showed progress on work for hosting the output document (web-based document) on the Global Transport Knowledge Practice (gTKP). She thanked The Global Road Safety Facility (GRSF) for the contribution given to support this effort. A dedicated section has been created on the homepage of gTKP in order to give prominent visibility to UNRSC work. For the sake of clarity and completeness, the 5 pillars of the Decade of Action are mentioned although gTKP will host for the moment only output documents of PG1 – Road Safety Management and PG2 -Safer Roads and Mobility. For PG 3-4-5, links are established towards the WHO website (UNRSC pages). Being the work of each focus area particularly exhaustive and articulated, the navigation model retained is the one of interactive table of contents. More details on layout and functionalities in the presentation attached. The work should be finalized by the end of December 2017.

   Awa Sarr, suggested to add to the material the Road Safety Manuals of the African Development Bank. Rob suggested to add a specific reference to the iRAP toolkit at the end of each section of Focus area 3. It was also suggested to solicit the Inter-American Development Bank (IADB) and the other donor agencies to provide case-studies for Focus Area 1.

4. PG new Terms of Reference
   As reported in the minutes of the 22nd meeting (New York, April 2016), the group has decided to focus work on case studies. The output document produced during the first mandate of the group
has put in place a model framework. The latter now needs to be illustrated with concrete examples that can be of inspiration for others on how to do things.

As greed in the last meeting, Rob McInerney presented three case studies: China, India and El Salvador to be included under FA1. He also shared another case study on “Global Star Rating Policy and Project Targets”. The four case studies are attached to these minutes.

Mike Dreznes suggested revising the case studies presented by Rob to include a bit of the storyline and to make more evident what really made it possible for the country to get there. Rob will give it a try at least with one case study to see how it would look like. Rob added also that there are indeed a couple of elements common to all the countries/case studies: they all started with funded pilots and there’s always a “champion” in the country that helps make things happen.

Susanna Zammataro stressed the importance of the issue of reviewing design manuals and standards. She wondered whether we could also provide some guidance to authorities through some concrete case studies. Rob McInerney said he could provide case studies on this.

As reported in the previous minutes, a new focus area has been identified: Focus Area 5 “Safer Mobility”. During the first mandate, the group has in fact focused more on the “safer roads” perspective and wishes now to address the “safer mobility” dimension. Claudia Adriazola – who was to present some ideas for discussion – did not get her visa on time to attend the meeting. She sent a summary of the report “Saving Lives with Sustainable Transport” to be circulated to the group. The Summary is attached to these minutes.

5. Closing

The meeting closed at 10:30 to allow participants to attend the monitoring and evaluation working group currently discussing the zero draft of the document on country voluntary targets.

*****
The Chinese Government is committed to improving the safety of its road infrastructure. Following the success of the Highway Safety Enhancement Project from 2004-2013, the Ministry of Transport has rapidly expanded their ChinaRAP initiative to support the CNY 12 billion (US$1.8 billion) Highway Safety to Cherish Life programme. Through the use of the consistent star rating of roads for all road users, and the associated safer road investment plans that maximise the life-saving potential of the road improvements, provincial governments are mobilising rapid, large-scale upgrades to improve the star rating of roads across the country.

Key successes of the Highway Safety to Cherish Life and ChinaRAP policies and systems include:

- Star rating and investment plans on more than 150,000km of existing roads across 12 provinces
- Investment of CNY12 billion (US$1.8 billion) in safety countermeasures over the next 5 years
- Upgrade of 30,000km of high-risk roads already, with an estimated 65,000km of roads to be upgraded by the end of 2017
- Production of national guidelines explaining the ChinaRAP process and safety countermeasures which can be considered for installation. Importantly, this guide gives road authorities ‘permission’ to try countermeasures that go beyond traditional design standards.
- Safe road design training for over 2,000 engineers in 12 provinces that includes the star rating of designs to measure safety of roads for all road users before they are built
- The mobilisation and training of more than 100 people in road surveys and 300 people in road attribute coding activities.

ChinaRAP is a collaboration between iRAP and the Research Institute of Highway (RIOH), Ministry of Transport. Financial support through the World Bank Global Road Safety Facility by Bloomberg Philanthropies has played a key role in building the foundation of local capacity and integrated ownership within the Ministry. The ChinaRAP team, which has grown from 2 to 11 members and is building and supporting national capacity across the country, has a broad range of skills, including road engineering, software and hardware development, and research.

Engaging internationally for success
International engagement through project delivery and technical and knowledge exchange has been a critically important part of ChinaRAP’s development and the integration of ChinaRAP in the Highway Safety to Cherish Life investment. Through links with RAP programmes in more than 70 countries worldwide, the successes and learnings from those countries has helped motivate and inform the use of ChinaRAP by the Ministry of Transport. The Ministry of Transport ChinaRAP team has also participated in World Bank and Asian Development Bank projects in China to build project delivery experience and demonstrate the applicability of risk assessments. Since 2012, the team has been involved in 13 projects with a combined value of more than US$2.4 billion. They have also successfully delivered international projects for Governments in New Zealand, Australia, Cambodia and Yemen.

The Highway Safety to Cherish Life and ChinaRAP initiative is a striking example of large scale and coordinated implementation of proven road engineering countermeasures that will save lives. Already more than 10,000 deaths and serious injuries are being saved each and every year from investments to improve the star rating of roads over the last 2 years.
Target: Improved road engineering conditions to achieve a minimum of 3-star rating along India’s road corridors.

The World Bank, through the Global Road Safety Facility with the support of Bloomberg Philanthropies has pioneered the specification of minimum star rating targets for new road construction across India. Through the provision of an objective target for road safety performance, Development Bank staff, governments and design teams are motivated to build in the engineering treatments that deliver a 3-star or better performance for all road users.

Since 2010, National and State Government agencies have driven major policy, road upgrade and public health outcomes through the use of IndiaRAP including:

- The specification of 3-star or better roads for all road users as part of over $5.4 billion of World Bank financing of road investment
- iRAP Star Ratings and Safer Roads Investment Plans used to motivate and integrate safety outcomes in World Bank funded projects across 10 different states in India
- Training of local design teams to assess road user risk, improve the safety of proposed road upgrades, improve the star rating or roads for all road users and build local road safety capacity
- Star rating and Investment Plans developed or underway on over 15,000km of existing roads
- Star Rating of Road Designs. Many state Public Works Departments including Assam, Gujarat, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh have been using the iRAP Star Ratings to measure the impact on risk of various design options ensuring new roads are constructed to a minimum 3-star standard. The use of Star Rating targets on many of the project corridors has provided a simple and objective measure of the likelihood of a crash occurring and its severity, and is helping to save lives through improved road designs. Using the star ratings, design teams are able to measure, and be motivated and rewarded for improving the safety of their designs for all road users.
- Post-construction assessments have been undertaken on roads upgraded with World Bank finance, including road safety demonstration corridors in Karnataka and Gujarat. In addition, 3,800km of the highest risk roads from Delhi-Mumbai-Chennai are currently being assessed, along with a further project on the Delhi-Chandigarh road.
- Star Rating Policies. The Government of Andhra Pradesh shared their vision for major roads to be 4-star or better by 2025.

The extensive experience across various states in India is now being consolidated at the national level with the development of IndiaRAP. Building on the local capacity across the country, the initiative will harness the full potential of the programme to inform and incentivise road safety planning, design and construction outcomes across government, development banks and the private sector.
CASE STUDY 3: El Salvador

Improving pedestrian safety as part of the US$101.6 million Coastal Highway Expansion Project in El Salvador.

After implementing the iRAP methodology to improve the safety of proposed road upgrades and build local road safety capacity in projects in the Philippines and Moldova, the Millennium Challenge Corporation (MCC) undertook iRAP assessments to provide design star ratings for the Coastal Highway Expansion Project in El Salvador. The US$101.6 million project was part of MCC’s $365.2 million El Salvador Investment Compact with the Government of El Salvador.

The Coastal Highway Expansion Activity sought to relieve congestion at the most-trafficked segment of El Salvador’s coastal highway (CA-2). The CA-2 is one of the two most important logistical corridors in the country and connects El Salvador’s major logistical nodes, including its two sea ports and the country’s only international airport. The object of the project was to duplicate 24km of the road between Zacatecoluca and the Comalapa Highway and rehabilitate and improve 3km of the two lane segment connection between the Comalapa Highway and the intersection to La Libertad.

Together with local design teams the iRAP assessments included the star rating of the project’s detailed design drawings, proposed modifications to the design that would improve safety for all road users, then worked closely with the road authority and designers to improve the safety of subsequent iterations of the design.

The project resulted in a safer design particularly for vulnerable road users, and additionally, a better understanding within the road authority of road safety design principles and the use of star rating targets for future road investment. The MCC’s work in El Salvador is helping to upgrade dangerous roads and is informing safer road design into the future.
CASE STUDY 4: Making a Difference: Global Star Rating Policy and Project Targets

“At least 3-star safety on the highest risk roads by 2020 – no excuse”

Zoleka Mandela, Brazil 2015

Governments, Development Banks and Toll-road operators around the world are developing and undertaking Road Assessment Programmes to take advantage of the independent, international benchmark standard for the safety performance of road infrastructure. With the ability to objectively measure the star rating of road infrastructure to a consistent standard, agencies are able to implement policy commitments, specify project safety performance and integrate road infrastructure safety metrics in the financing, planning, design, construction and maintenance of roads.

**New Zealand**: 4-star roads of national significance, Toll-road minimum 4-star standards and a Safety Alliance to upgrade existing roads to 3-star or better standards.

**United Kingdom**: 90% of travel on 3-star or better roads by 2020, and related targets for 4 and 5-star motorways

**Malaysia**: 75% of travel on 3-star or better high volume roads by 2020 (Malaysia MoT)

**Australia**: Recommendations for all new roads to be 4-star or better and no road user group less than 3-star; Queensland target for 85% of travel on 3-star or better roads by 2020; National and State Government commitments to raise the Midlands Highway in Tasmania to a 3-star minimum

**Sweden**: 75% of network at 3-star or better by 2020 and near 100% by 2025

**Chile**: Autopista Centrale toll roads assessed and immediately upgraded to minimum 3-star standard

**Netherlands**: No 1 or 2-star roads by 2020

**International**: 4-star roads for pedestrians and cyclists in linear settlements and those carrying 50,000 vehicles and more, 3-star or better for all other road projects (**ADB**)

Minimum 3-star for new roads (**MCC**)

Minimum 3-star roads for projects in India (**World Bank**
A web-based knowledge tool to promote UNRSC work

Susanna Zammataro
Executive Director

International Road Federation
Geneva
UNITED NATIONS ROAD SAFETY COLLABORATION (UNRSC)
PILLAR 2 – SAFE ROADS & MOBILITY

- **FA1**: Successful integration of road safety into existing systems and policies.
- **FA2**: Road safety infrastructure management tools.
- **FA3**: ‘How-to’ road safety solutions.
- **FA4**: A model framework for road safety engineering capacity building
• How can responsible authorities/agencies be encouraged to adopt proper RS policies?

• How can development banks influence roads administrations to integrate and enhance road safety activities into their normal operations.
• **Case studies** - National and Sub-national level
  (Sweden Vision Zero, WHS, Abu Dhabi, ...)

• **Banks**: EBRD and EIB Cases
  (New requirements in lending policy, new internal procedures, new guidelines for project appraisal)
Overall aim:

Provide a high level guideline that identifies activities that need to be undertaken for effective road safety infrastructure management. What tools are available and how to determine which tool/method should be used and when.
<table>
<thead>
<tr>
<th>Proactive approaches</th>
<th>New Roads</th>
<th>Existing Roads</th>
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<tr>
<td></td>
<td>Road Safety Impact Assessment</td>
<td>Maintenance Inspections</td>
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<tr>
<td></td>
<td>Road Safety Audit</td>
<td>Star Rating (iRAP) – Existing Roads</td>
</tr>
<tr>
<td></td>
<td>Star Rating (iRAP) – New Roads &amp; Schemes</td>
<td>Road Safety Inspection</td>
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<tr>
<td>Reactive approaches</td>
<td></td>
<td>Blackspot Analysis and Treatment</td>
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<tr>
<td></td>
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<td>Route/Corridor Analysis and Treatment</td>
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<td></td>
<td></td>
<td>Network/Area Analysis and Treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Road Safety Assessment</td>
</tr>
</tbody>
</table>
Problems with definitions...

RS impact assessment
Road safety audits
RS Inspections
RS Rating

Better roads, better world.
**Aim**: provide rapid reference sources and a convenient **selection of solutions** for measures that are proven, readily available and easily adaptable.

**Content:**

- Solutions for different road user safety problems
- Solutions for different type of crashes
- Monitoring and evaluation
3 Solutions for different road user safety problems

3.1 Pedestrian crashes

A detailed crash investigation is required to identify crash causation and crash severity factors. This information will form the basis for the selection of the targeted cost-effective remedial treatment options.

The solution selected will ultimately depend upon available budget, prevailing site factors, treatment cost, CRF or CMF and economic worth of the treatment.

The combined effectiveness of multiple remedial treatments is NOT additive. Refer to Section 1.4 for calculating the expected effectiveness of multiple treatments.

<table>
<thead>
<tr>
<th>Solutions</th>
<th>Tmt Life (years)</th>
<th>Effectiveness</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian crossing (un-signalised)</td>
<td>1-5</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Traffic calming (localised / threshold treatments)</td>
<td>10-20</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Hatched/painted medians</td>
<td>1-5</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Pedestrian crossing raised (un-signalised)</td>
<td>5-10</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Parking improvements²</td>
<td>5-10</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Pedestrian fencing</td>
<td>10-15</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Kerb extensions</td>
<td>5 - 10</td>
<td>✔</td>
<td>$</td>
</tr>
<tr>
<td>Traffic calming (treatments along a road segment)</td>
<td>10-20</td>
<td>✔</td>
<td>$$</td>
</tr>
</tbody>
</table>
**Aim:** Provide a **practical framework and model**, for improving and significantly scaling up road safety engineering capacity.

**Content:**

- Identify and list competences of RS professionals
- Required learning outcomes for training curricula
- Review of existing training offer
Objectives of PG2

• Not write another manual
• Use existing knowledge
• No duplication of efforts = point to other resources
• Wide audience: Engineers, road authorities, private sector, development banks, local governments
• Format: Web-based (easy to update/greater audience)
GTKP Website and Knowledge Centre

- 9 Themes
- 270 searchable Pages
- 2,300 documents
- ≈ 7,000 Subscribers
- Multiple languages
- Free access

www.gtkp.com
Why GTKP?

• **Existing tool** to promote the take-up, sharing and application of transport knowledge.
• It is an established **platform since 2005**
• It is a **comprehensive knowledge centre** covering 9 Themes (270 searchable pages, 2,300 knowledge items)
• In **several languages**
• With **regular subscribers** (more than 7’000) spread out across the globe
• It is **easy to add and update content** (this solves the problem of keeping information alive)
• **Users can submit knowledge** items (this facilitates engagement of audience).
Better roads, better world

INTERNATIONAL ROAD FEDERATION
FEDERATION ROUTIERE INTERNATIONALE

Welcome to the global Transport Knowledge Resource Centre!

The global Transport Knowledge Practice (gTKP) is a comprehensive resource centre that features the latest, state-of-the-art information on road infrastructure and transport. Case studies, research papers, publications, reports, presentations – it's all at your fingertips! Read more

Latest additions to the library

15 Nov 2016  Global Status Report on Road Safety 2015
14 Nov 2016  World report on child injury prevention
10 Nov 2016  Brasilia Declaration on Road Safety 2015
07 Nov 2016  Energy Efficiency and Climate Change
14 Oct 2016  Extending Emergency Transport Services
14 Oct 2016  Road Safety Management
14 Oct 2016  A Shared Approach to Managing Road Safety
14 Oct 2016  Community-based health and first aid

Most popular

05 Nov 2013  Road Safety in 170 Low-, Middle- and High-Income Countries
15 Mar 2013  Global Status Report on Road Safety 2012
30 Nov 2009  Small Structures for Rural Roads Guidance
18 Jul 2013  Joint Declaration on Road Safety
01 Dec 2009  Williamsburg Declaration
01 Dec 2009  Road Traffic Injury Prevention
15 Nov 2016  World report on child injury prevention
11 Nov 2016  World report on traffic injury prevention
10 Nov 2016  Brasilia Declaration on Road Safety 2015
07 Nov 2016  Energy Efficiency and Climate Change
14 Oct 2016  Extending Emergency Transport Services
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UNRSC

1  Road Safety Management
2  Safer Roads and Mobility
3  Safer Road Users
4  Post-crash Response
5  Safer Vehicles

Testimonials

This is an excellent website. I am very pleased to be a member of gTKP. I wish all the success for all programmes and policies of gTKP.
Dr. Sanjiv Aggarwal, India
United Nations Road Safety Collaboration

In April 2004, the United Nations General Assembly resolution A/RES/59/285 on “improving global road safety” invited WHO to act as the coordinator for road safety issues across the United Nations system. The World Health Assembly accepted this invitation in May 2004 and the WHO, created the UN Road Safety Collaboration (UNRSC) in October 2004. To date, there are 88 members coming from United Nations and associated specialized agencies, governments, foundations, and academic institutes, road safety organizations, and private companies.

The Collaboration serves as an informal consultative mechanism whose members are committed to road safety efforts, particularly to the implementation of the recommendations of the Global Plan for Action on Road Safety 2011-2020 and the World Report on Road Safety. The goal of the Collaboration is to facilitate international cooperation, strengthening global and regional coordination among UN agencies, other international partners to implement UN General Assembly Resolutions and the recommendations of the World Report.

More information can be found on the UNRSC website here: www.who.int/roadsafety/en/

1. Road Safety Management
2. Safer Roads and Mobility
3. Safer Road Users
4. Post-crash Response
5. Safer Vehicles
1 Road Safety Management

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1 Introduction
2 Road Safety Institutional Arrangements and Processes
3 Road Safety Data Systems
4 Funding Road Safety
5 Country-Level, Regional, and International Road Safety Management Context

1 Introduction

Pillar 1 of the Global Plan for the UN Decade of Action for Road Safety focuses on the need to strengthen institutional capacity to further national road safety efforts. It includes activities such as putting into practice major United Nations road safety conventions, establishing a lead agency for road safety in the country involving partners from a range of sectors, developing a national road safety strategy, and setting realistic and long-term targets for related activities with sufficient funding for their implementation. It also calls for the development of data systems to effectively monitor and evaluate activities. Below, a list of important publications that can help road safety stakeholders address Pillar 1 are provided and are broken down into 4 main categories including “Road Safety Institutional Arrangements and Processes,” “Road Safety Data Systems,” “Funding Road Safety,” and “Country-Level, Regional, and International Road Safety Management Context.” It is important to note that many of these documents overlap into more than one of the categories defined, and therefore have been divided on the basis of each publication’s main focus. By utilizing the holistic approach provided by the documents in each of these sub-categories for road safety institutional management, road safety stakeholders and practitioners will be able to more effectively implement pillar 1 in their countries, thereby contributing to the achievement of the UN Decade of Action for Road Safety and the road safety targets in the recently approved Sustainable Development Goals.
2 Road Safety Institutional Arrangements and Processes

This section covers publications that provide both a focus on the institutional arrangements and processes around effective road safety management. These publications discuss issues such as the development of road safety national strategies, lead agencies, setting appropriate road safety targets, effective methods for implementing road safety interventions, and several other important topics related to effective road safety management.

Global Status Report on Road Safety 2015:

This joint World Bank and WHO report underscores that unsafe road traffic systems are seriously harming global public health and development, and are preventable. Recommendations for preventing road traffic injuries are made, and many of these recommendations revolve around improvements in proper institutional road safety management capacity.


These guidelines from the Global Road Safety Facility and World Bank provide a pragmatic approach to overcoming road safety related institutional capacity barriers and to achieving positive and sustainable road safety outcomes.

Road Traffic Injury Prevention Training Manual:

This training manual is based on The World Report on Road Traffic Injury Prevention, and many sections of this manual deal with road safety management, including Units in the manual entitled, “Importance of Evidence as a Foundation for Prevention,” “Multisectoral Collaboration,” and “Formulating and Implementing Road Safety Policy.”

Towards Zero: Ambitious Road Safety Targets and the Safe System Approach:

The purpose of the report is to review the state of the art in improving road safety performance and examine the role of targets in raising the level of ambition and achieving effective implementation of road safety policies. It highlights the institutional management changes required in many countries to implement effective interventions through a strong focus on results and underlines the economic case for road safety investment.
Safer Roads and Mobility

Many road authorities do not have the staff resources or the expertise to fully understand and apply the best practice safety measures. In order to assist in adopt the vision and objectives of Pillar II resources have been drawn together across four key areas, 'focus areas', related to providing safe road infrastructure and safe travel across the road network.

The Pillar II provides the support and tools needed to achieve safety benefits. The take up and application of information provided within each of the four key focus areas of Pillar II will assist Governments and road safety practitioners to achieve the goals of a Safe System.

The Focus Areas (FA) and their objectives are as follows:

- **FA1: The Successful integration of road safety into existing systems and policies.**
  - **Objectives:** to outline key motivators/incentives to ensure that road safety is fully and successfully integrated into existing systems and policies within government, development banks, etc., for road planning, design and construction.
  - **FA2: The identification and application of road safety infrastructure management tools.**
    - **Objectives:** to identify and provide road safety practitioners with infrastructure management tools to assist them undertake road safety tasks, to enable them to evaluate, prioritise and monitor infrastructure and operational safety performance.
  - **FA3: How-to road safety solutions.**
    - **Objectives:** to provide governments and road safety practitioners with evidence based targeted crash countermeasures in a ‘how-to’ manner.
  - **FA4: A model framework for road safety engineering capacity building.**
    - **Objectives:** to provide countries with a practical framework for improving capacity in road safety engineering.

**FOCUS AREA 01**
Integrating Road Safety into Existing Systems and Policy

**FOCUS AREA 02**
Road Safety Infrastructure Management: Tools and Methods
FOCUS AREA

01 Integrating Road Safety into Existing Systems and Policy

Authors: Claudia Adriacele Delgado, Ben Welle, Susy Charman, Hilda Maria Gomez, Michael Tzidis, Susanne Zammataro, Per Mathiasen, Suprunenko Stanislav

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3 National and sub-national policies on road safety
   3.1 Creating Safer Cities through Sustainable Mobility and Urban and Street Design
   3.2 Case Studies
      3.2.1 National
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4 Opportunities for development banks to influence road safety
   4.1 European Bank for Reconstruction Development
      4.1.1 EBRD Process
   4.2 European Investment Bank
      4.2.1 The EIB Action Plan for Road Safety
      4.2.2 Main EIB challenges towards 2020

1 Introduction

Historically, roads played a key role in the development of communities by providing required access to destinations, mobility, and transportation services. Therefore, from the social aspect, roads were considered as a source of social benefits, comfort, and income which often resulted in settlements along the main transport corridors. For a long time, this situation was considered as acceptable in low- and middle-income countries with very low traffic and car ownership, and where majority of transit was carried predominantly by rail transport. Under these circumstances, road safety was not considered as a significant social issue.

The situation is changing as transport growth associated with increased number of vehicles, rising population, and increased wealth


Registered User Login
### 3.2 Bicycle crashes

A detailed crash investigation is required to identify crash causation and crash severity factors. This information will form the basis for the selection of the targeted cost-effective remedial treatment options.

The solution selected will ultimately depend upon available budget, prevailing site factors, treatment cost, CRF or CMF and economic worth of the treatment.

The combined effectiveness of multiple remedial treatments is also NOT additive. Refer to Section 1.4 to calculate the expected effectiveness of multiple treatments.

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<th>Solutions</th>
<th>Tmt Life (years)</th>
<th>Effectiveness</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
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<td>Intersection 'Stop' control sign from no control</td>
<td>1-5</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Bicycle lanes</td>
<td>1-5</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Parking improvements[6]</td>
<td>5-10</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Traffic calming (treatments along a road segment)</td>
<td>10-20</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Sight distance improvements / remove obstruction</td>
<td>10-15</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>School zones[7]</td>
<td>6-10</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Speed management (incl. review of speed limits)</td>
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<td>✔️</td>
<td>$</td>
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<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Street lighting[9]</td>
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<td>$</td>
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<tr>
<td>Restrict or combine direct access points</td>
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<td>✔️</td>
<td>$</td>
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<tr>
<td>Shoulder sealing</td>
<td>10-15</td>
<td>✔️</td>
<td>$</td>
</tr>
<tr>
<td>Traffic calming (area-wide treatments)</td>
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<td>✔️</td>
<td>$</td>
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<table>
<thead>
<tr>
<th>Effectiveness</th>
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<td>✔️ up to 15% reduction</td>
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</tr>
<tr>
<td>✔️ 30% to 60% reduction</td>
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<td>✔️ more than 60% reduction</td>
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<th>Cost</th>
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<td>$less than US$25,000</td>
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Better roads, better world.
**THEME**

SAFE Roads & SMART Mobility as engines of economic growth

**DATES**

14-17 November 2017

**SPECIAL FEATURE**

Global Meeting of Ministers of Transport on 13 November 2017

Focus on Road Safety

Call for Papers open till end of January 2017

www.WRM2017.org
Thank You

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Saving Lives with Sustainable Transport

The funding and evaluation criteria for sustainable transport projects and policies often overlook an important benefit: traffic safety. A growing body of research points to the safety benefits of sustainable transport, defined as projects and policies that aim to reduce car traffic, increase improved mass transit, and promote cycling and walking in cities. Evidence of the safety benefits of sustainable transport have been reviewed, with a particular focus on the applicability of these findings to cities in developing countries. The relationship between traffic volume and safety have been considered and presented in the form of an evidence that traffic volumes (measured as vehicle kilometers traveled, or VKT) are a strong predictor of accidents. Figure 1 shows the graph plotted with daily VKT/capita against annual traffic fatalities/100,000 in the US states. The graph shows a clear linear association between the two variables.

![Figure 1. VKT on urban roads and traffic fatality rate in US states.](source)

**Mass Transit**

Drawing on experiences in Europe, Latin America, and India, it can be shown that cities that have restricted car traffic and promoted mass transit have realized measurable safety benefits. In London and Stockholm, charges levied on vehicles traveling through congested city centers reduced traffic volumes and were associated with a drop in accidents causing injuries. In Bogotá, Guadalajara, and Ahmedabad, bus rapid transit (BRT) systems have improved safety on the streets on which they run. Figure 3 displays the crash rates before and after the implementation...
of the Macrobús BRT in Guadalajara. The number of monthly crashes was drastically reduced after the implementation of the BRT system.

Figure 2. (Left) A BRT lane can carry more passengers with fewer crashes whereas general traffic lanes carry lesser passenger with higher number of crashes. Figure 3. (Right) Drastic reduction in number of crashes after the implementation of BRT system in Guadalajara.

Cycling

Cities that have invested in infrastructure for cyclists and pedestrians, such as Copenhagen, Minneapolis, and New York City, have reported safety improvements for these vulnerable road users. The evidence in New York City and Copenhagen suggests that these benefits extend to other road users as well.

Figure 4. Comparison of cycling commuting indicator and cycling risk in New York City.
Figure 4 above compares the cycling commuting indicator with the cycling risk indicator in New York City. The cycling commuting indicator is a measure of the change in cycling commuter volumes with 2000 as a base year, whereas the cycling risk indicator is a ratio of cycling injuries to cyclist commuters. The figure clearly indicates that with the rise in the number cyclist commuters, the injury risk to cyclist is radically reduced.

**Integrating safety into Transportation planning and Policy**

The safety benefits of sustainable transport—both motorized and non-motorized—should be weighed in light of the many other factors that determine road safety. Policies targeting only traffic volumes, for example, do not address hazards related to poor infrastructure design. Similarly, transit service without high-quality infrastructure and safety oversight will not bring any safety benefits. The fact that even in the most bike-friendly cities, cyclists remain more vulnerable than motor vehicle occupants, should not be overlooked either. Through evidence based practice it can be shown that well-planned and designed sustainable transport projects and policies can play a significant role in improving road safety. Figure 5 demonstrates the low risk of pedestrian death at lower vehicular speeds. The death risk increases exponentially when the vehicular impact speed increases more than 30km/h.

![Figure 5. Pedestrian death risks increase exponentially at vehicular speeds of more than 30km/h.](image)

After setting out the evidence linking sustainable transport and road safety, implications can be drawn for better integrating safety into transportation planning and policy. There is always the need to develop estimates of the expected safety impacts of different types of transit systems so that policymakers can better integrate the safety benefits of transit into cost-benefit analyses for funding decisions.