

ASSESSING & ENABLING ROAD SAFETY FOR TOD PROJECTS

WORKSHOP SERIES

SESSION # 2

8 October 2020



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Session 1

TOD and Road Safety

October 1, 2020



Session 2

Assessing and Enabling Road Safety within a TOD project cycle

October 8, 2020



Session 3

Planning and Designing Road Safety measures in TOD

October 15, 2020



Session 4

Financing and Implementing Road Safety measures in TOD

October 22, 2020

ASSESSING & ENABLING ROAD SAFETY FOR TOD PROJECTS

WORKSHOP SERIES

SESSION # 2
PROJECT OVERVIEW

8 October 2020



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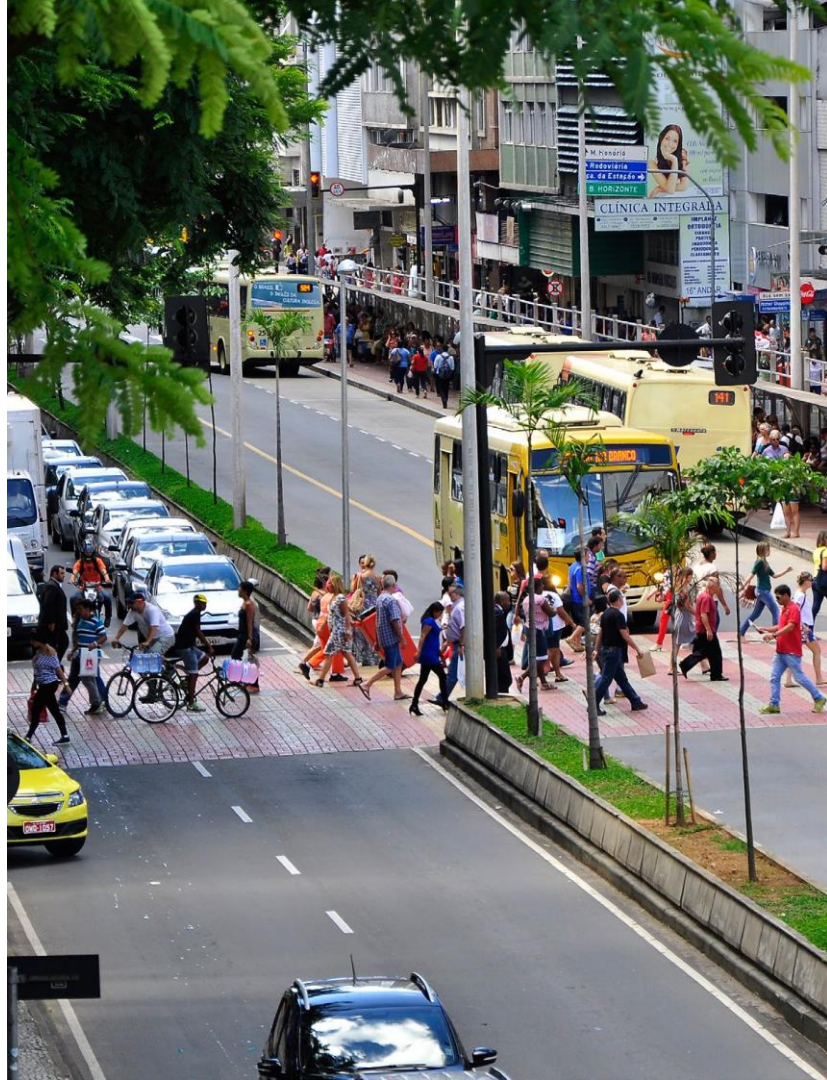
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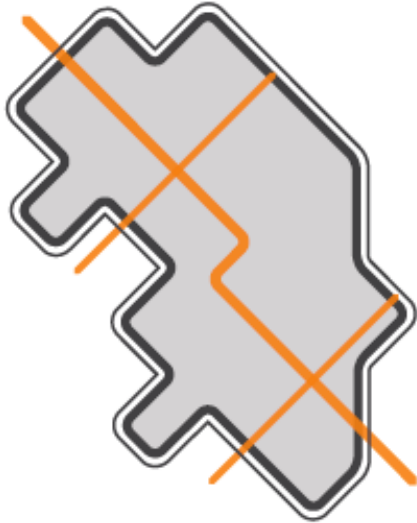


自由が丘駅
JIYUGAOKA STA.

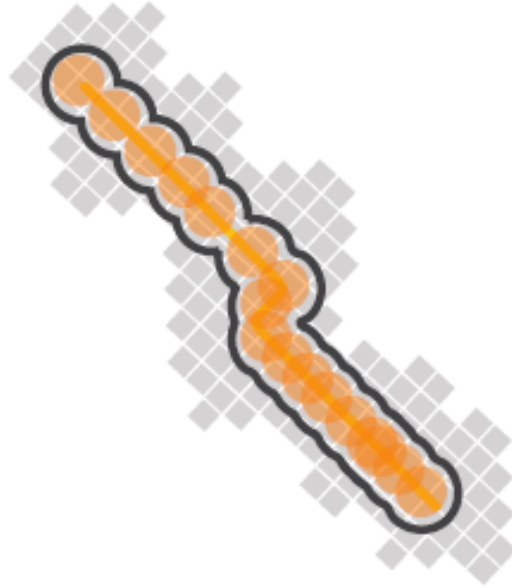




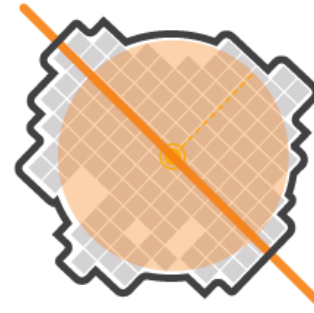
SCALES OF PLANNING



Region/City Level



Corridor level

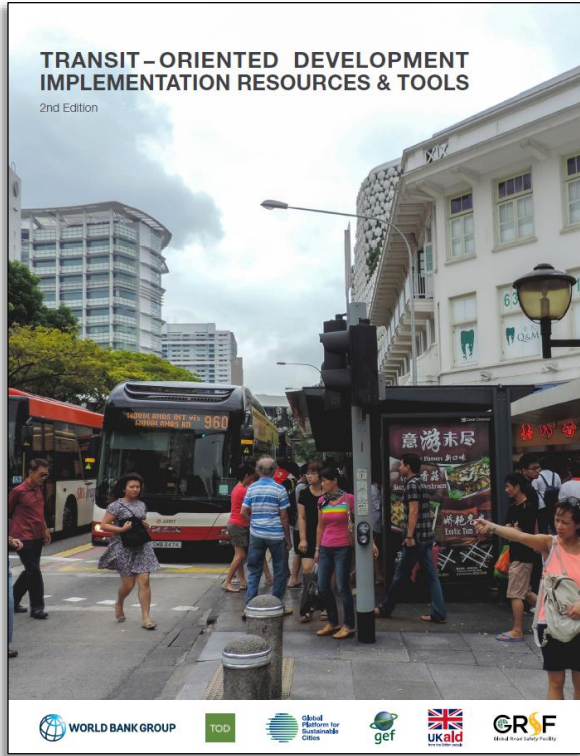


Station area level



Site level

TOD TOOLKIT & FRAMEWORK



ANALYTICAL



The Products under this category build on the available facts or information to make critical evaluations

➔ SPREADSHEETS | REFERENCE DOCUMENT | CHECKLIST

COMMUNICATION



This category of Products impart or exchange information with the purpose of conveying a message or expecting better results

➔ INTERACTIVE GAMES | REFERENCE DOCUMENT

'HOW-TO' GUIDES



Products created as a step-by-step approach for evaluating the multitude of information to reach a conclusion

➔ STEP-BY-STEP GUIDE

RESOURCES



Products include details of external sources that can be referred for informed assessment

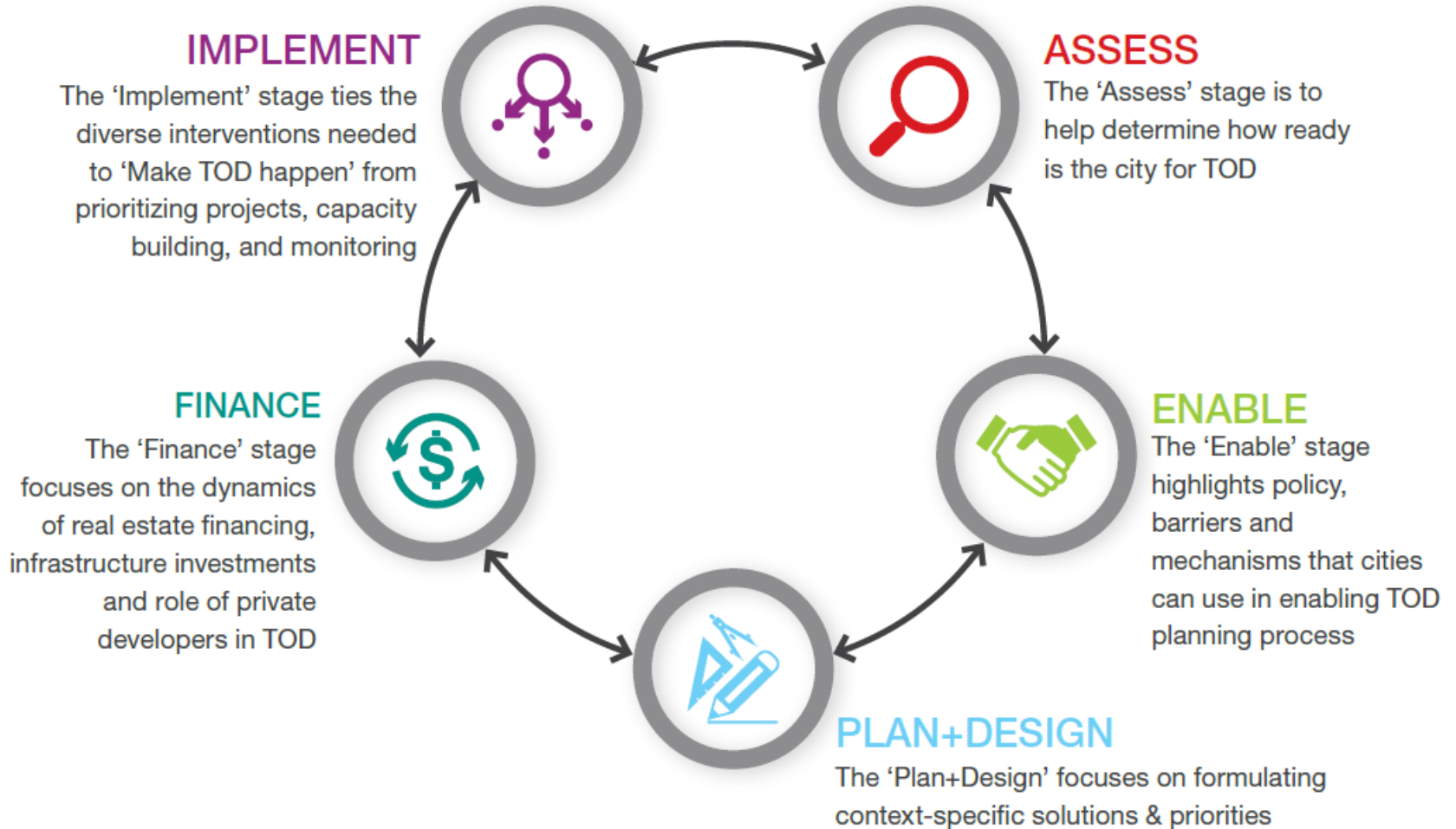
➔ CHEAT-SHEETS | SPREADSHEETS | WEBLIOGRAPHY | GLOSSARY OF TERMS

PROCUREMENT



The Products help in acquiring services/works from an external source to accomplish a task/attain the objectives

➔ REFERENCE DOCUMENT | TOR TEMPLATE



GOOD PRACTICE NOTE

Integration of Road Safety Considerations In
Transit-Oriented Development projects

CONTENTS

Abbreviations	3
List of Tables	4
List of Figures	4
Introduction	9
Road crash and impact	9
Safe system approach	10
Case for transit-oriented development (TOD)	12
Scoping	13
Assess	14
Road safety capacity reviews: Policy, Regulatory and institutional framework	14
Road inventory, road crash data collection and analysis	15
Road safety assessment and engineering tools	17
Enable	19
Planning of TOD networks	21
Plan+Design	21
Design of Elements within TOD Network	22
Finance	23
Implement	24
Institutional set-up and Capacity building	24
Execution of design	25
Monitoring and evaluation	26
Appendix a	27
Appendix B	33
References	59

ASSESSING & ENABLING ROAD SAFETY FOR TOD PROJECTS

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SESSION # 2

ASSESSING ROAD SAFETY FOR TOD READINESS

8 October 2020



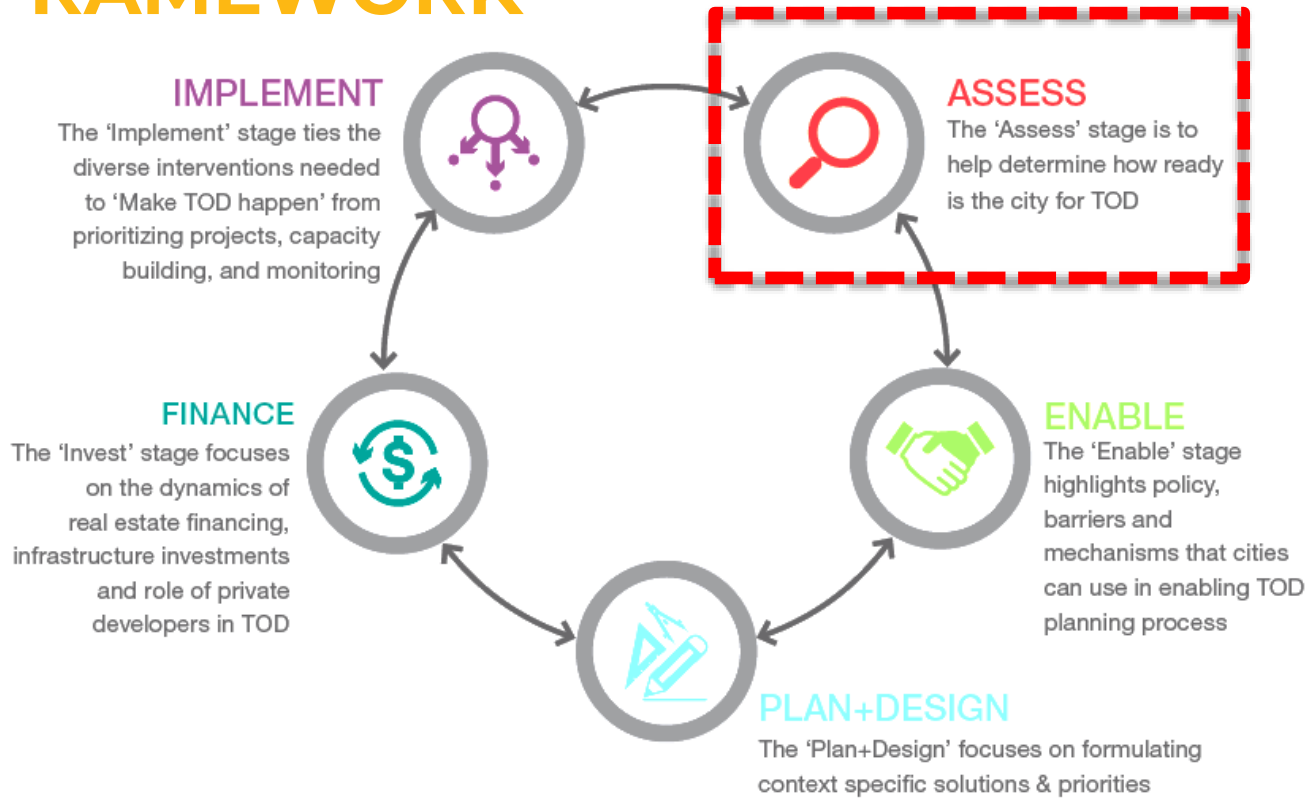
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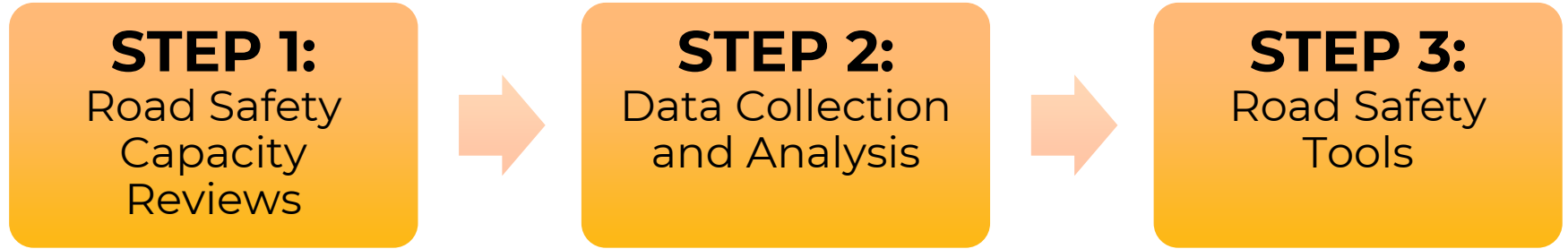


TOD FRAMEWORK





ROAD SAFETY ASSESSMENT



1. ROAD SAFETY CAPACITY REVIEWS

**Policies &
Regulations**

Institutional set-up

2. DATA COLLECTION & ANALYSIS

Data Collection

Physical Context Data

Road Crash Data



Data Analysis

Basic Trend Analysis

Blackspot Identification

Crash Factor Analysis

Crash Conflict Analysis

DATA COLLECTION – ROAD CRASH DATA

Date & Time

Characteristics of persons involved

Characteristics of the Vehicle

Crash Severity

Crash Type

Geo-coded Crash location

ROAD CRASH DATA SOURCES

Police Records

Hospital Records

Vehicle Insurance Records

DATA ANALYSIS

Basic Trend Analysis

- Helps determine crash trends and identify vulnerable users

Data is recorded at crash level and includes date and time, characterises of persons and vehicles involved, crash severity and location

DATA ANALYSIS

Crash Factor Analysis

- Helps in understanding the underlying causes of traffic crashes – apart from human errors.

Involves analysis of detailed crash report and various non-behavioral factors, such as road, characteristics of the vehicle(s) involved and crash type

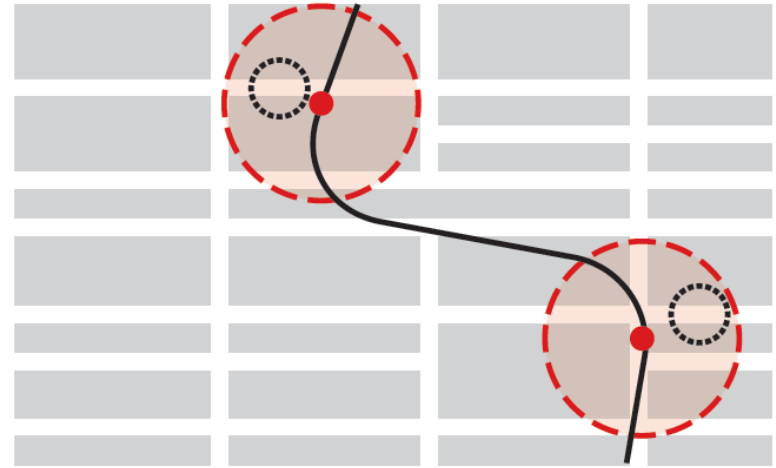
	Human Factors	Vehicle Factors	Road Factors
Pre-crash			
During crash			
Post-crash			

DATA ANALYSIS

Blackspot Identification

- Helps in identifying locations with high crash risks or 'black-spots'

Determined by high crash frequencies, using geo-coded crash locations, mode and crash type.



- Black-spots
- TOD zone
- Transit line

Thematic Map with transit alignment

CRASH CONFLICT ANALYSIS

Crash Conflict Analysis

- Involves a count of all incidents that could potentially lead to a crash during a given period – called ‘near misses’

Count
number of
conflicts

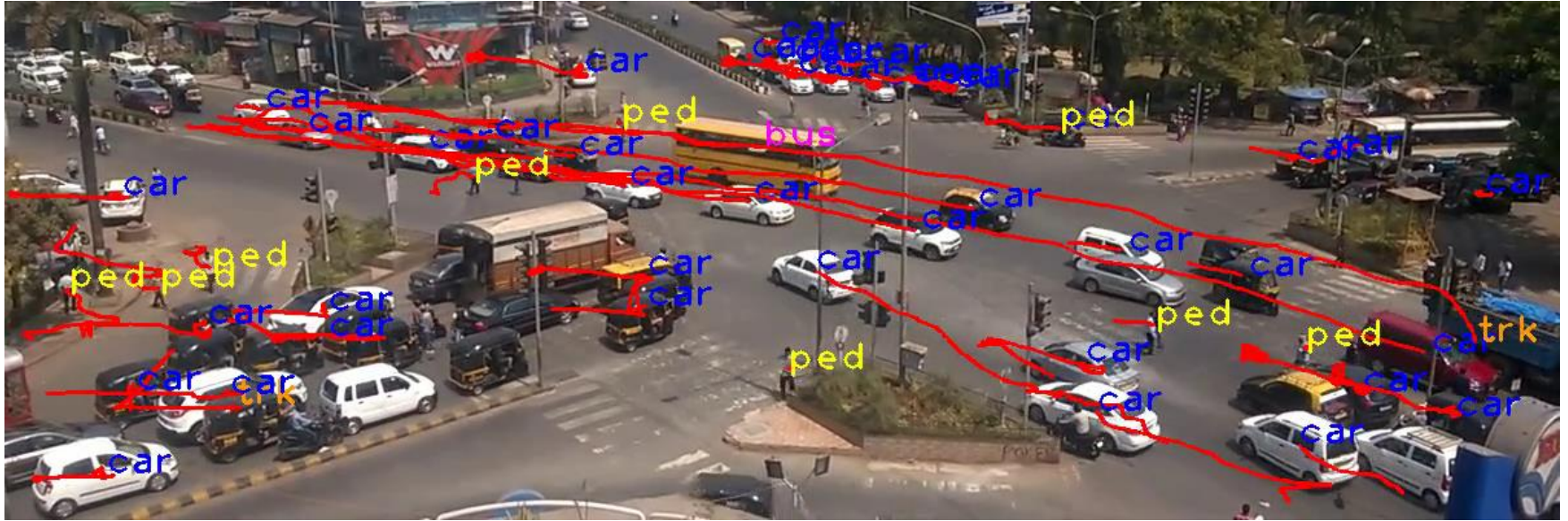
Classify
according
to risk

Estimate
the number
of accidents

Apply
remedial
measures

Post-
intervention
conflict
analysis

SOURCES FOR DATA



Video credit:  BriskSynergies

BENEFITS OF CONFLICT ANALYSIS

- Not waiting for accidents to happen
- Identify exact spot of high risk
- Quick and easy to scale-up
- Can easily compare before-after results

3. ROAD SAFETY TOOLS

Road Safety Impact Assessments

Road Safety Audits

Road Safety Inspections

iRAP Road Assessment Programs

WHAT IS A ROAD SAFETY AUDITS (RSA)

It is a systematic examination of a road project by a trained safety expert

Objectives:

1. Identify safety risks (location-specific or system-wide)
2. Recommend **appropriate** solutions

WHY IS ROAD SAFETY AUDIT NECESSARY?

Prevention is better than cure. Sometimes, blackspots can be found in new constructions

Design standards are not always adequate for specific, unique circumstances

Based on how road users *actually* behave, rather than how they *should* behave

It is much cheaper and easier to change a project on paper than through remedial actions later on

STAGES OF AUDITING

Stage 1: Feasibility (Planning)

Stage 2: Preliminary Design

Stage 3: Detailed Design

Stage 4: Pre-opening

Stage 5: Monitoring

WHAT IS A ROAD SAFETY INSPECTION (RSI)

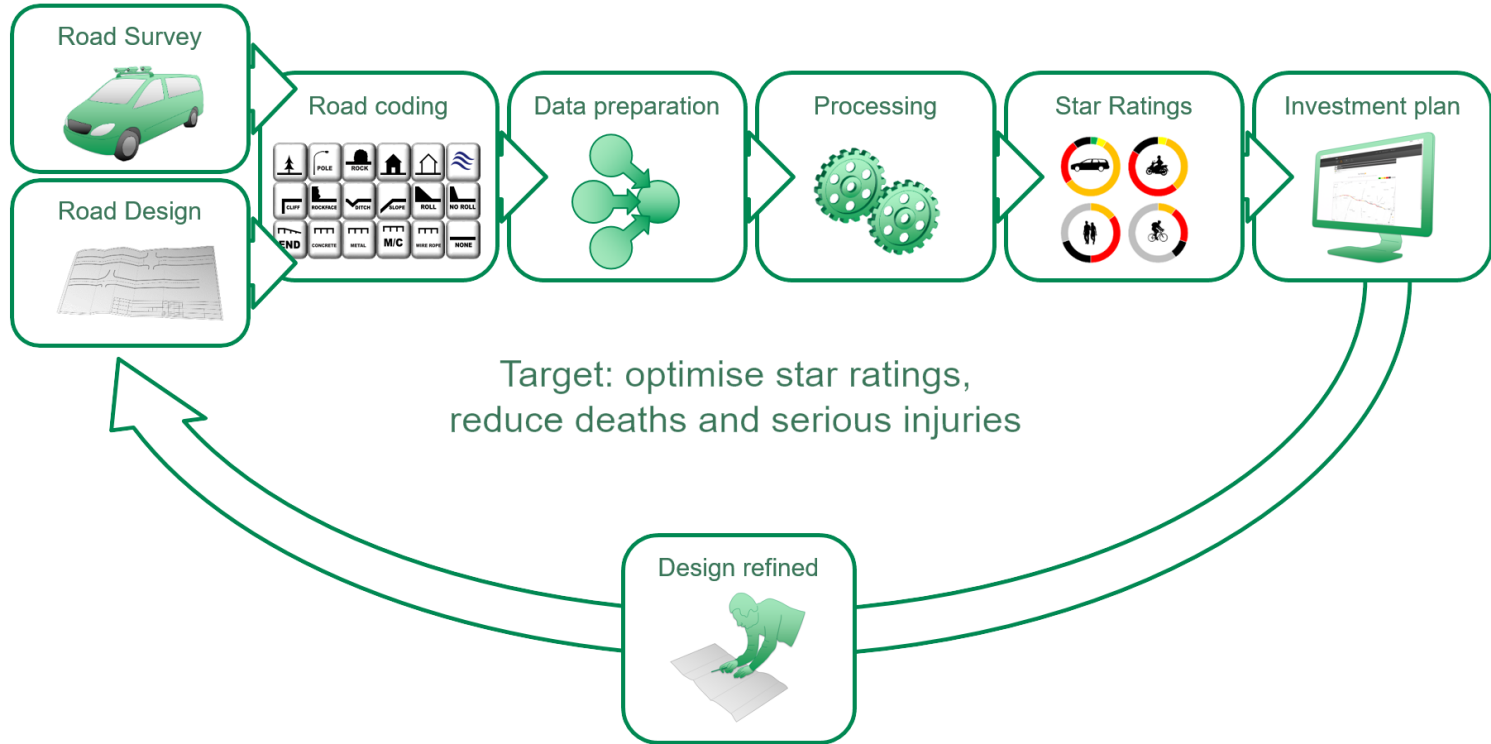
It is a systematic examination of an **existing road** by a trained safety expert.

- It generally predates the commissioning of a road improvement project
- Or it is a remedial measure for a road/system with a high crash risk
- Conducted on-site, in different traffic conditions





Objectives:

1. Identify safety risks (location-specific or system-wide)
2. Recommend **appropriate** solutions

iRAP ROAD ASSESSMENT PROGRAMS



iRAP ROAD ASSESSMENT PROGRAMS

Star Rating				
★	No sidewalk, No safe crossing, 60 km/h traffic	No cyclepath, No safe crossings, poor road surface, 70 km/h traffic	No motorcycle lane, undivided road, trees close to road, winding alignment, 90 km/h traffic	Undivided road with narrow centerline, trees close to road, winding alignment, 100 km/h traffic
★★★	Sidewalk present, pedestrian refuge, street lighting, 50 km/h traffic	On-road cycle lane, good road surface, street lighting, 60 km/h traffic	On-road motorcycle lane, undivided road, good road surface, >5m to any roadside hazards, 90 km/h traffic	Wide centerline separating oncoming vehicles, >5m to any roadside hazards, 100 km/h traffic
★★★★★	Sidewalk present, signalized crossing with refuge, street lighting, 40 km/h	Off-road dedicated cycle facility, raised platform crossing of major roads, street lighting	Dedicated separated motorcycle lane, central hatching, no roadside hazards, straight alignment, 80 km/h traffic	Safety barrier separating oncoming vehicles and protecting roadside hazards, straight alignment, 100 km/h traffic

ASSESSING & ENABLING ROAD SAFETY FOR TOD PROJECTS

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ENABLING ROAD SAFETY FOR TOD

8 October 2020



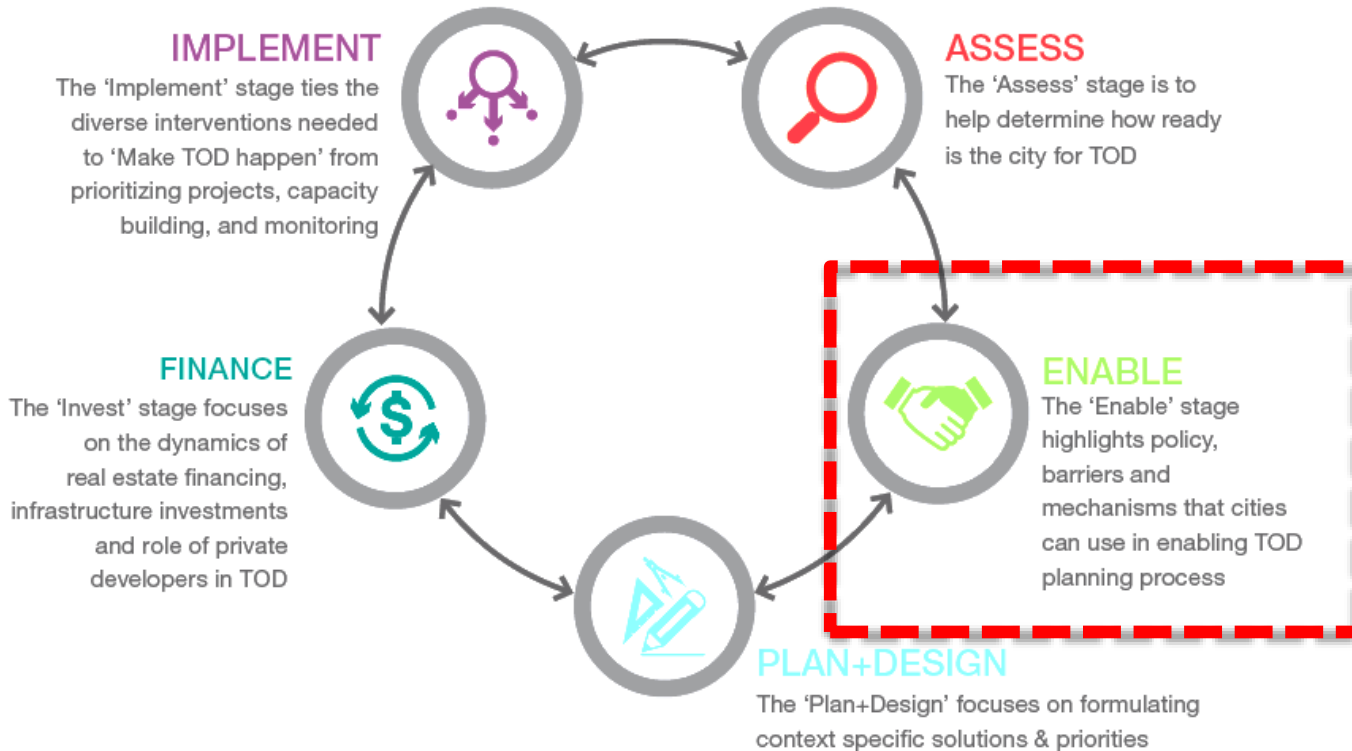
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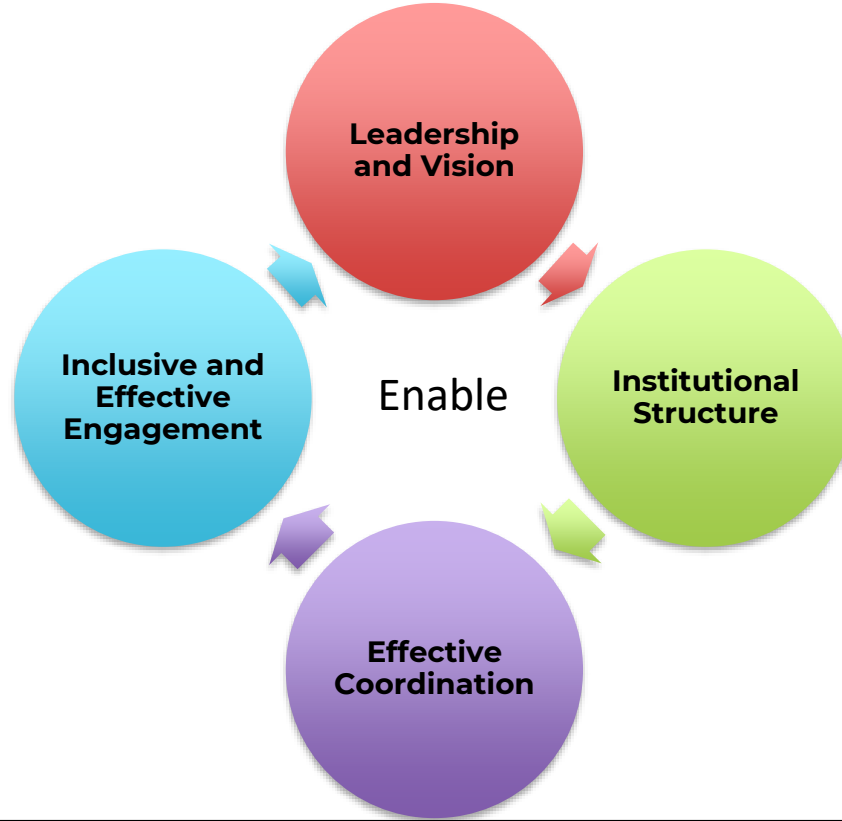
TOD FRAMEWORK



CHALLENGES FOR ENABLING ROAD SAFETY

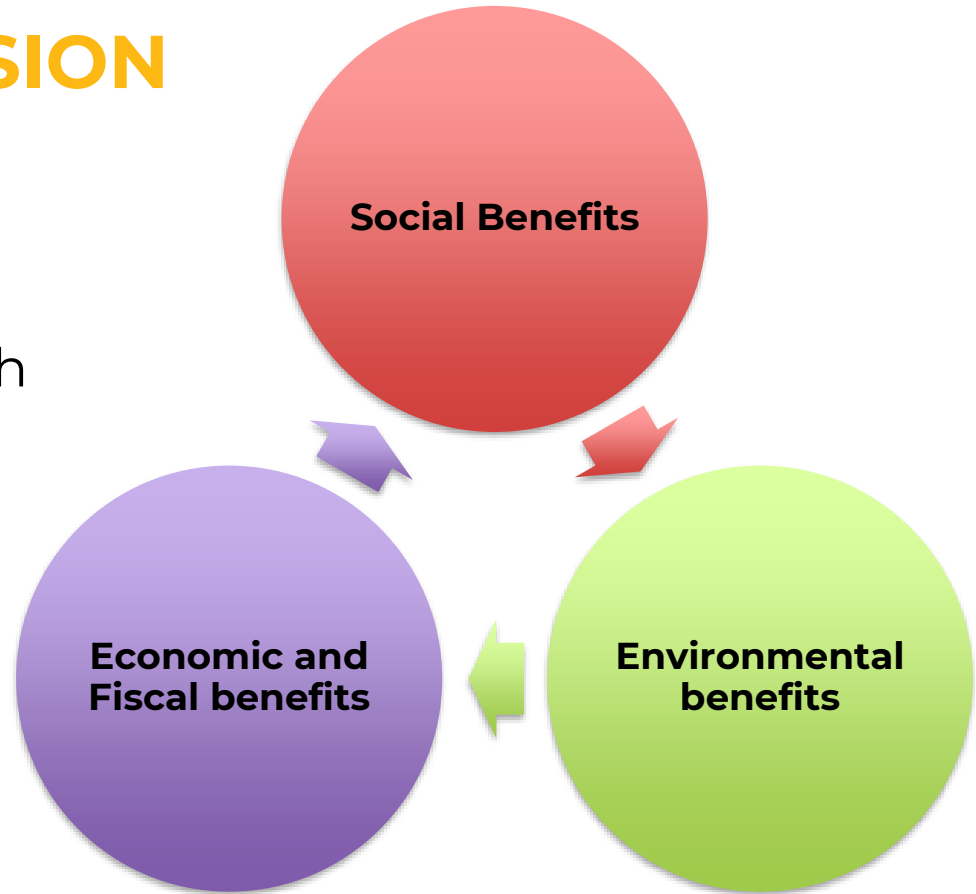
- Lack of an **empowered institution**.
- Lack of a **TOD-supportive policy framework**

INSTITUTIONALIZE AN ENABLING ENVIRONMENT



LEADERSHIP & VISION

- Influencing leaders with benefits
- Aligning the vision to include road safety



ROBUST INSTITUTIONAL STRUCTURE

- Include road safety experts or organizations at various scales of Planning
- Defining clear roles and responsibilities of involved stakeholders early in the process.
- Ensuring road safety components are addressed in TOD plans
- Identify project champions at the individual and organizational levels

EFFECTIVE COORDINATION

- Infrastructure agencies/ Public works departments
- Police and Security agencies

INCLUSIVE & EFFECTIVE COMMUNITY ENGAGEMENT

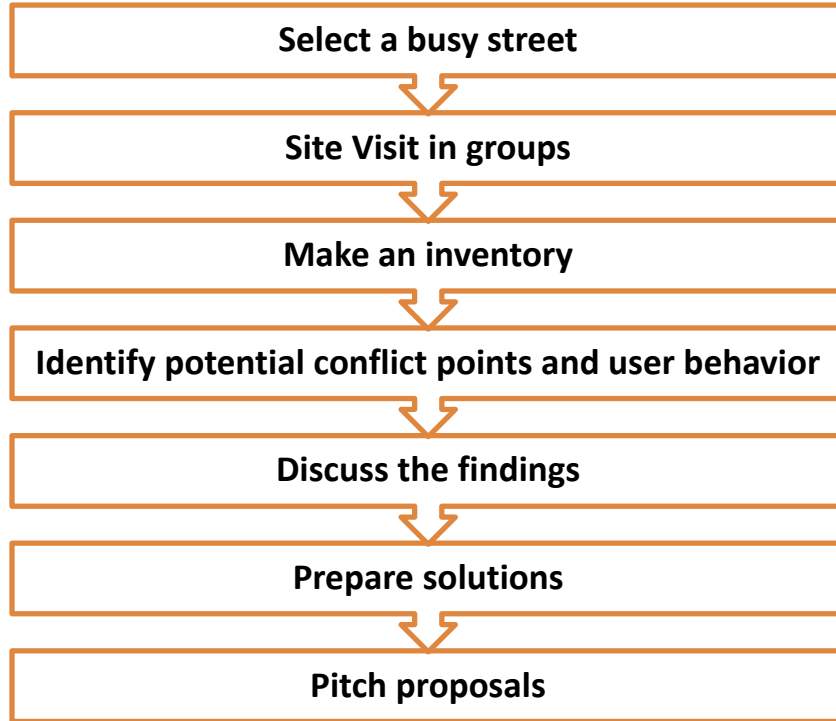
ROAD SAFETY WORKSHOP

Purpose

- To sensitize participants about road safety challenges faced by the vulnerable road users, and
- To create awareness on both the risk factors as well as the solutions, covering infrastructure, traffic management and urban planning.



WORKSHOP PROCESS

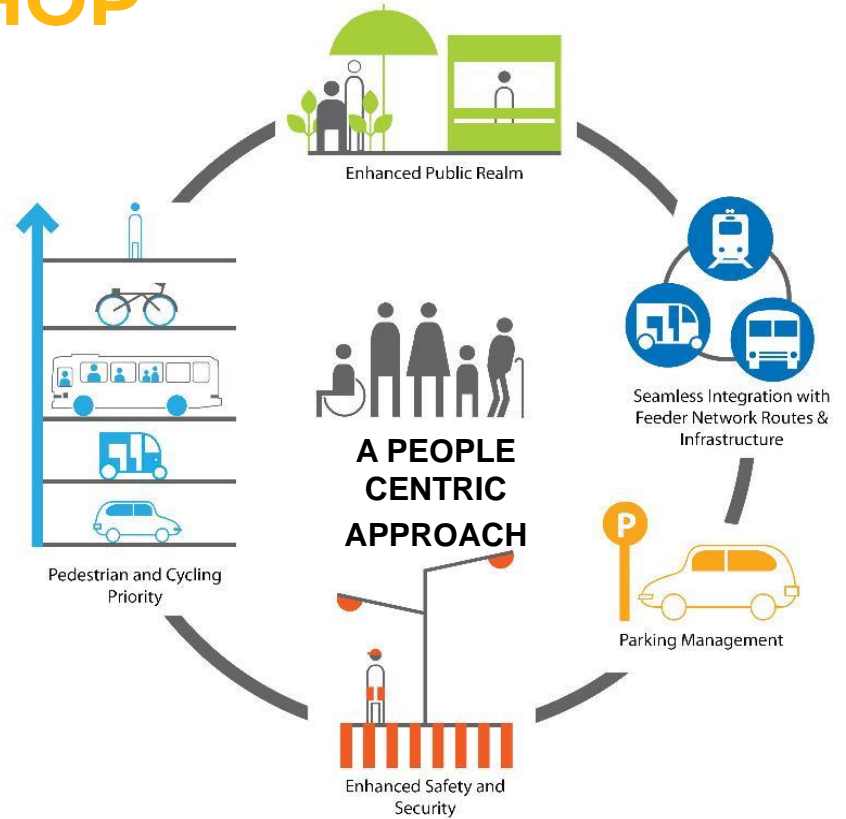


SAFE ACCESS WORKSHOP

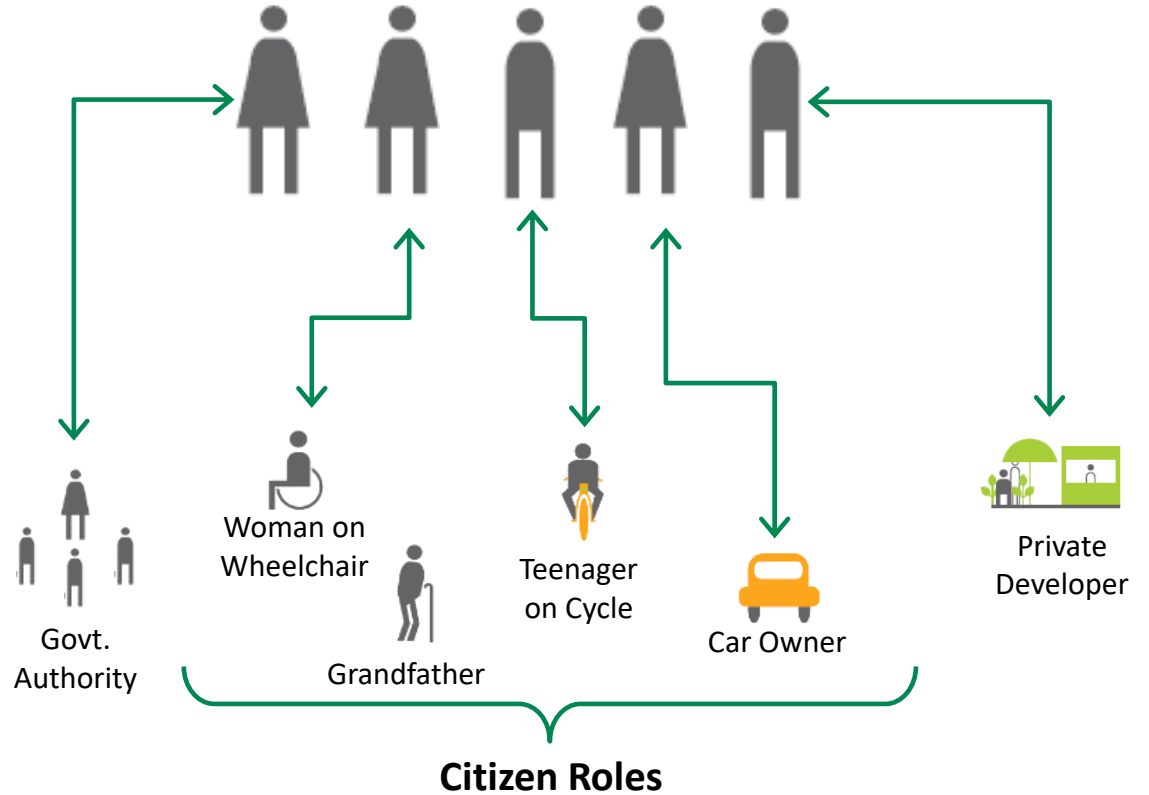
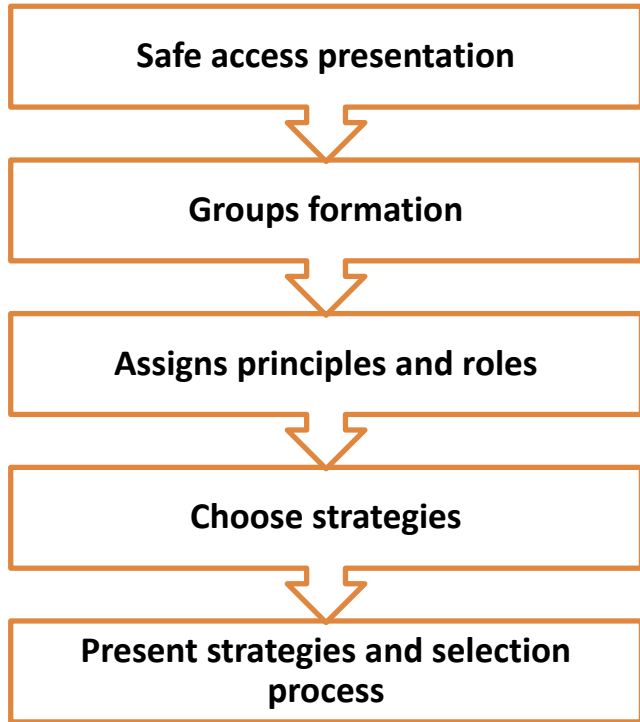
Purpose

- Inculcate awareness about the importance of safe and equitable access for all street users
- Derive implementable solutions through a collaborative decision-making process
- Prioritizing through stakeholder inputs.

<https://thecityfixlearn.org/tool/enabling-safe-access-mass-transit-sam-toolkit>



PROCESS



ENGAGEMENT WITH STAKEHOLDERS



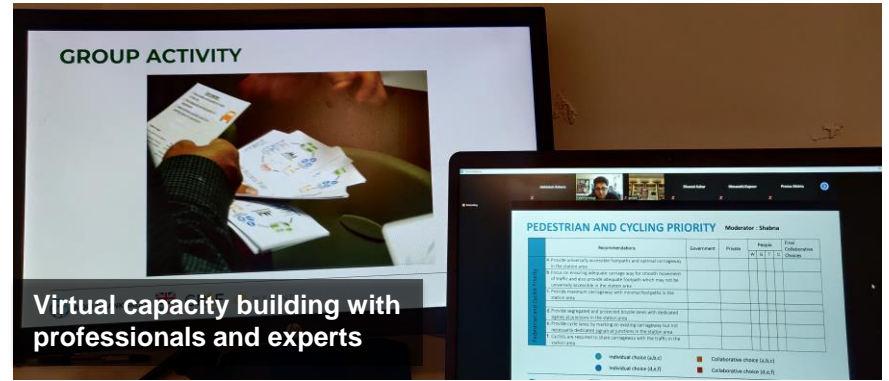
Engagement with various departments for STAMP (Station Access Mobility Program)



Training Experts in LUTP Workshop at Addis Adaba



Engagement with local communities for 2 station areas



Virtual capacity building with professionals and experts

THANK YOU



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CASE STUDIES: ASSESSING AND ENABLING ROAD SAFETY FOR TOD

Webinar Series. Session 2

Integration of Road Safety Considerations in Transit-Oriented Development Projects

8 October 2020

Alina F. Burlacu & Juan Miguel Velasquez, World Bank GRSF



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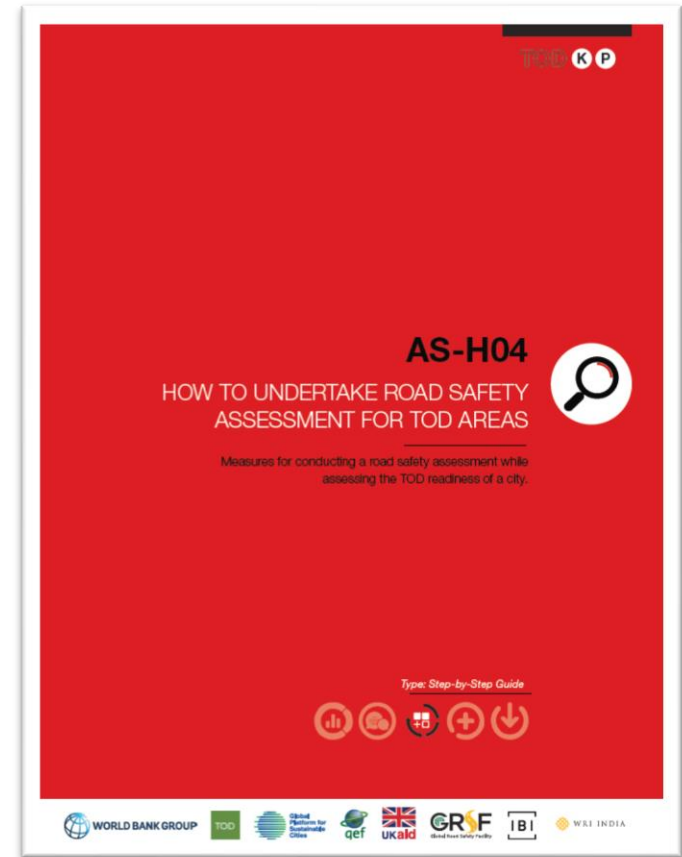
INTRODUCTION - ASSESS

How to undertake road safety assessments for TOD areas?

Road safety management capacity reviews

Data collection and analysis

Road safety engineering tools



INTRODUCTION - ENABLE



HO CHI MINH, VIETNAM

Webinar Series. Session 2

Integration of Road Safety Considerations in Transit-Oriented Development Projects

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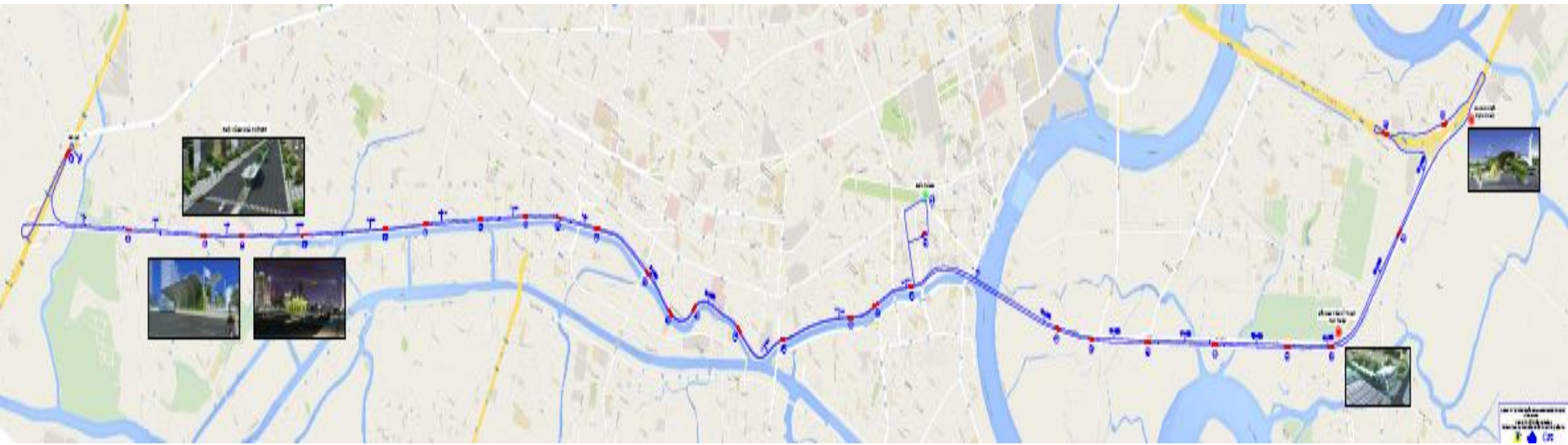


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PROJECT BACKGROUND

- Ho Chi Minh City Green Transport Development project will introduce to Ho Chi Minh City a faster, safer, and more comfortable bus rapid transit (BRT) line along Vo Van Kiet – Mai Chi Tho corridor.



ROAD SAFETY ACTIVITIES: ASSESS & ENABLE



ASSESS – ROAD SAFETY MANAGEMENT CAPACITY REVIEWS



10 FOCUS COUNTRIES:

ACCOUNT FOR MORE THAN HALF OF 1.24M ROAD TRAFFIC DEATHS ANNUALLY



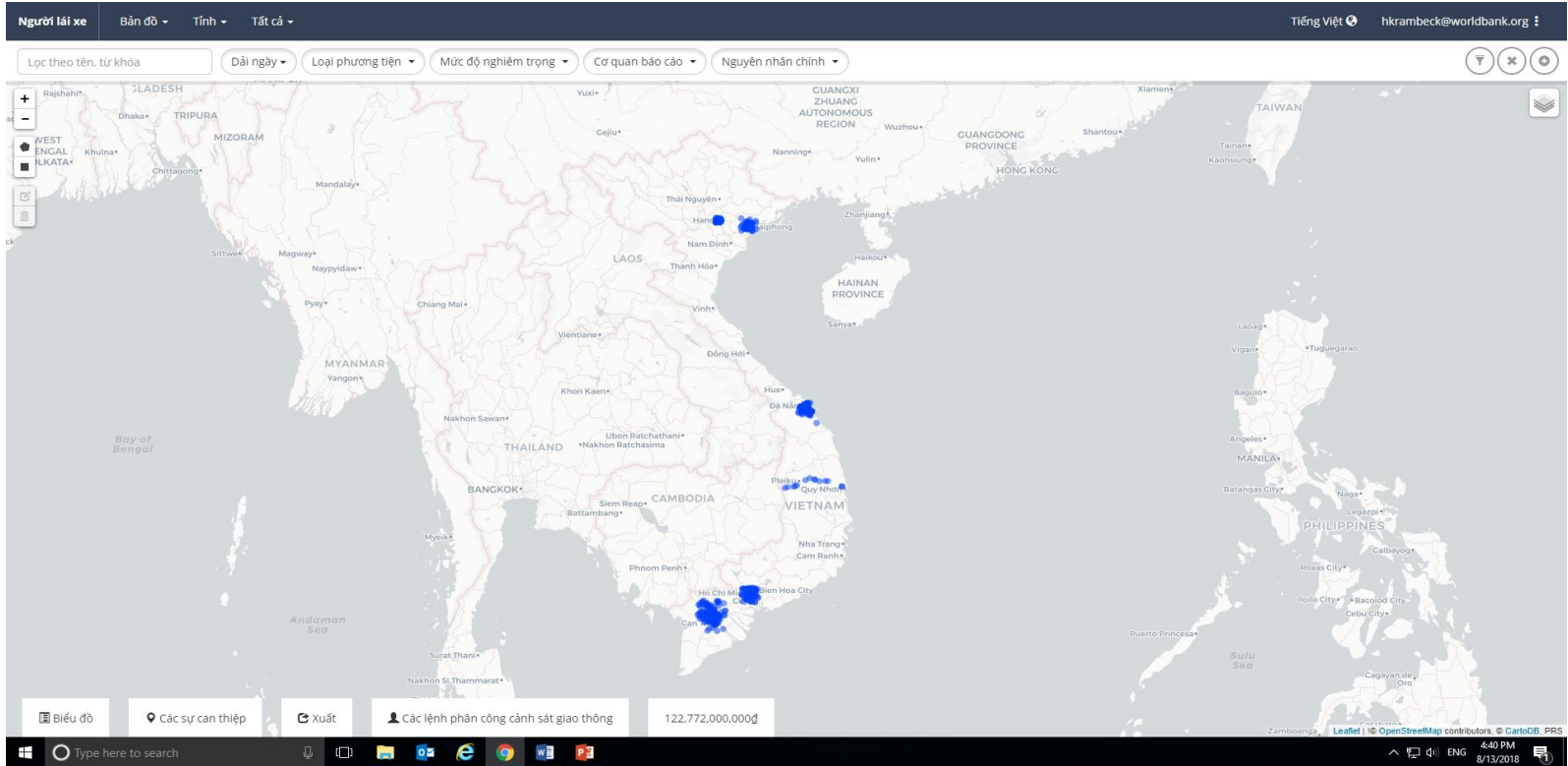
Bloomberg Philanthropies

GRSF engagement

World Bank Project Cycle → GRSF RS-10 Activities



ASSESS – ROAD CRASH DATA



ASSESS – ROAD SAFETY ENGINEERING TOOLS

Proposed
BRT
corridor

118 km roads for baseline assessments, including feeder roads

75 km roads for design and scenario assessments

37 schools surveyed and assessed

9 pedestrian footbridges surveyed and assessed



ASSESS – ROAD SAFETY ENGINEERING TOOLS



Figure 1.1: Most schools are located on busy streets. (BauSen_S1)



Figure 1.2: Some schools are located near residential blocks, with less crowded streets surrounding. (NguyenVanLuong_S1)

40% of point locations surveyed had no sidewalk

35% with no pedestrian crossing facilities



Figure 1.3: Parked vehicles obstruct sidewalks around the school. (PhamDinhHo_S1)



Figure 1.4: Temporarily parked motorbikes are allowed at some schools at dismissal time. (ChinhNghia_S1)

17% of crossings in poor condition

No facilities for bicyclists

ASSESS – ROAD SAFETY ENGINEERING TOOLS



Poor quality side road crossing

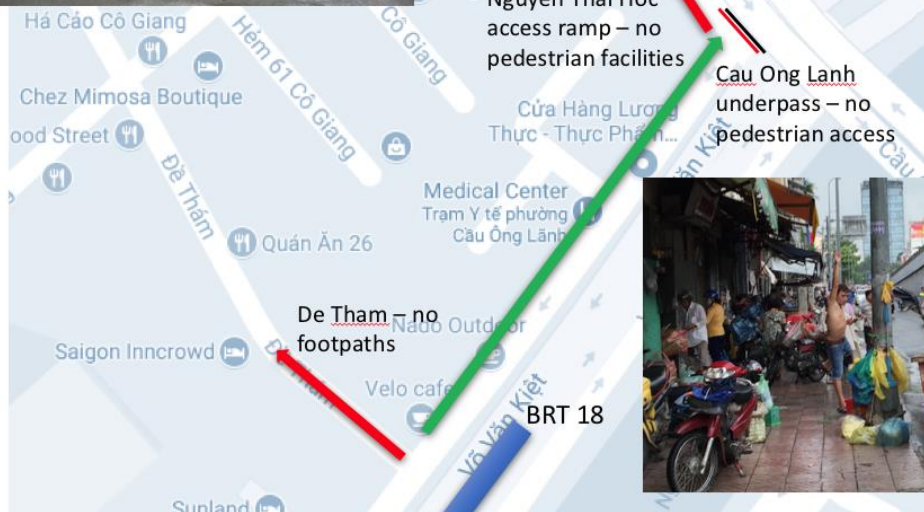
Co Giang – no footpaths



Nguyen Thai Hoc access ramp – no pedestrian facilities

Cau Ong Lanh underpass – no pedestrian access

While pedestrian facilities on main roads can be good, side road access is often lacking.

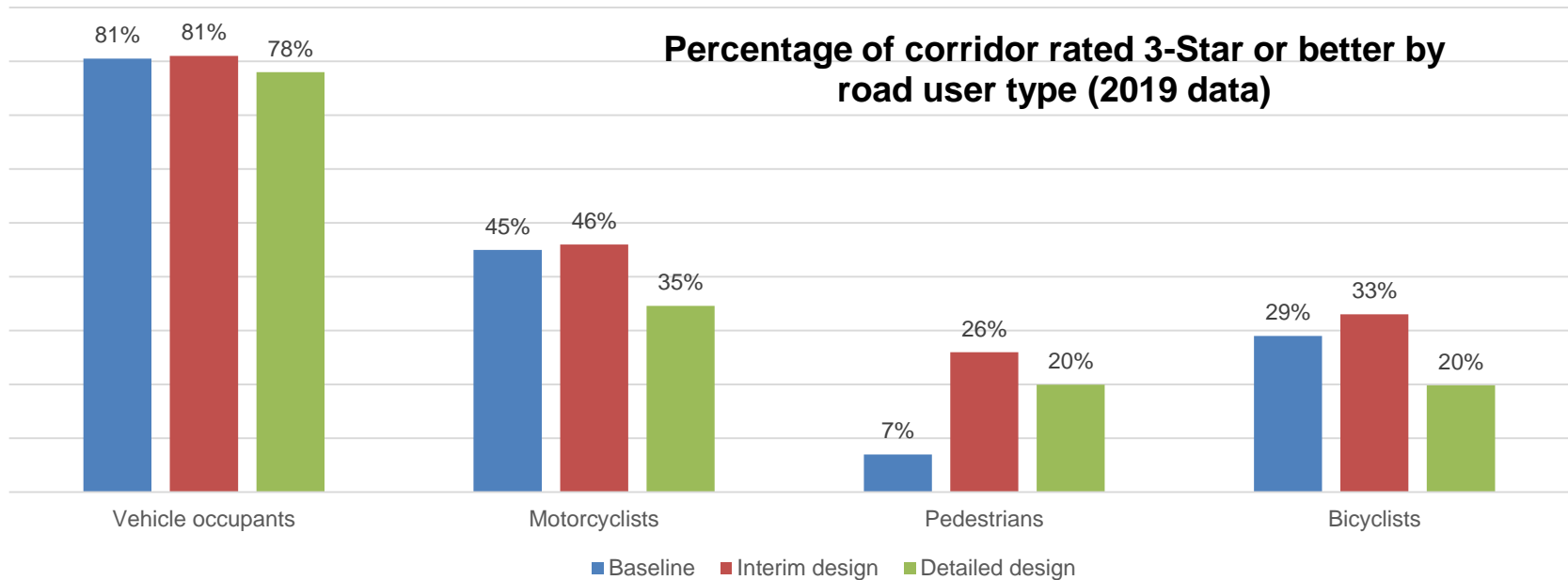


ASSESS – ROAD SAFETY ENGINEERING TOOLS

Footbridges along the BRT corridor



ASSESS – ROAD SAFETY ENGINEERING TOOLS



The biggest contributor to the change in safety outcome is the change of speeds along the corridor. A number of posted speed increases (and some decreases) of 10 and 20km/h, resulted in a net increase of risk.

ASSESS – ROAD SAFETY ENGINEERING TOOLS



WORLD RESOURCES INSTITUTE | WRI ROSS CENTER FOR SUSTAINABLE CITIES



Road Safety Audit Report

HCMC Saigon BRT
Ho Chi Minh City, Vietnam

October 2020

Acknowledgement

This road safety audit report was made possible through funding from Bloomberg Philanthropies under the Bloomberg Initiative for Global Road Safety (BIGRS).

WRI Sustainable Cities would like to acknowledge the support and coordination provided by The Transportation Works Construction Investment Project Management Authority (TCIP) of Ho Chi Minh City, which provided us with all materials needed and support in our audit and discussions.

WRI Sustainable Cities would like to thank Mr. Jan Luxemburger of Luxemburger Trafiksikkerhed & Vejteknik for contributing his road safety expertise in the production of this report.

The audit team is grateful for support from the Ho Chi Minh City Traffic Safety Committee and Department of Transport, as well as BIGRS' international partners. We appreciate the efforts of HealthBridge Vietnam in facilitating and supporting the audit.

WORLD RESOURCES INSTITUTE

1. Segregation of the BRT lanes

Along the BRT corridor, bollards and curbs with reflectors added along the dedicated BRT lane to keep other vehicles from driving into the corridor.

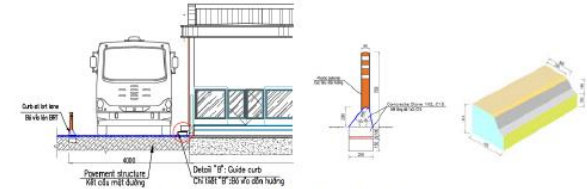


Figure 2 The curbs added along the BRT lanes

2. Improved accessibility to the stations

New pedestrian pathways and raised crossings connecting to footbridges in median have been added to improve the accessibility of BRT system in multiple BRT stations.



Figure 3 New pedestrian pathways added (left); Raised crossings installed with rumble strips (right)

ASSESS – ROAD SAFETY ENGINEERING TOOLS



Before (2 stars)



After (4 stars)



Pilot school 2: *Mach Kiem Hung Secondary School, District 5*

Key intervention:
Install raised-cross walk

ENABLE – CAPACITY BUILDING

Capacity building – 341 professionals trained on road safety engineering



www.utc2.edu.vn/news/view/0/2716/phan-hieu-truong-dh-gtvt-tai-tp-hcm-lam-viec-voi-to-chuc-ngan-hang-the-gioi-world-bank-va-
GOV Interessant Road Safety Business WB SGP travel My Drive - Google Drive RockTV Google Calendar

Phân hiệu trường ĐH GTVT tại Tp. HCM làm việc với Tổ chức ngân hàng Thế giới (World Bank) và Tổ chức đánh giá an toàn giao thông đường bộ Quốc tế (IRAP)

Ngày 18/08/2017 870

Chiều ngày 17/08/2017, Phân hiệu trường ĐH GTVT tại Tp. HCM đã có buổi làm việc với Tổ chức ngân hàng Thế giới (World Bank) và tổ chức đánh giá an toàn giao thông đường bộ Quốc tế (IRAP). Đơn tiếp và làm việc với Đoàn, về phía Phân hiệu có TS. Võ Trường Sơn - Phó Giám đốc Phân hiệu; PGS.TS Lê Văn Bách - Trưởng Khoa Công Trình; PGS.TS Nguyễn Thị Bích Hằng - Phó khoa Văn tài - Kinh tế; TS. Ngô Châu Phương - Trưởng phòng KHCN&ĐT; ThS NCS. Trần Quang Vương - Trưởng BM XDCTĐT. Về phía Tổ chức ngân hàng Thế giới (World Bank) có bà Fiorentina-Alina Burlacu - đầu mối của Ngân hàng Thế giới về an toàn đường bộ ở Đông Nam Á và Thái Bình Dương; Bà Trần Thị Vân Anh - Chuyên viên cấp cao về Giao thông - Ngân hàng Thế giới Chi nhánh Hà Nội. Về phía Tổ chức đánh giá an toàn giao thông đường bộ quốc tế (IRAP) có Ông Greg Smith - Giám đốc IRAP.



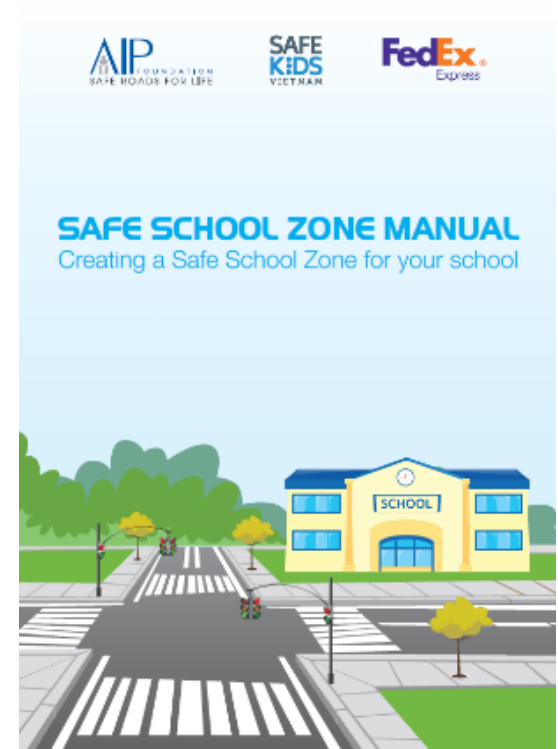
ENABLE – NEW GUIDELINES

School zone manual

Establish standardized safe school zones in Vietnam through the mass use of this manual.

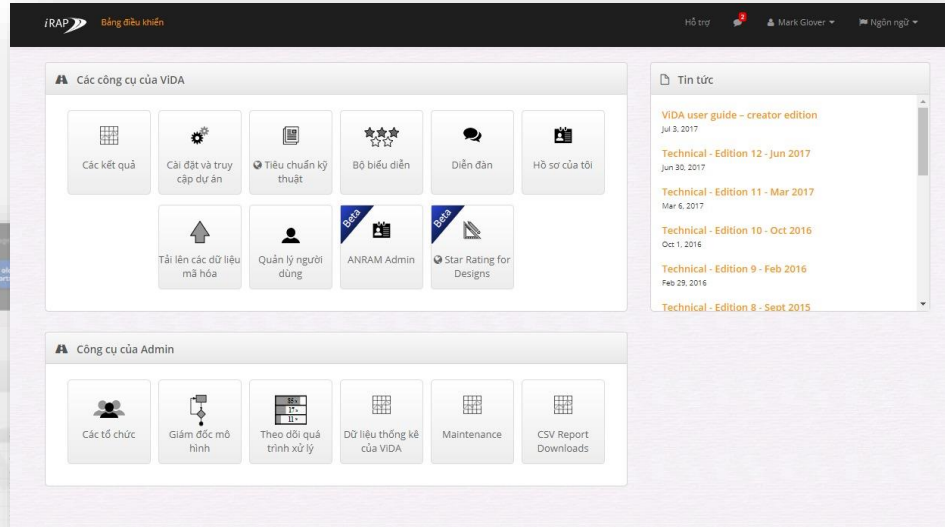
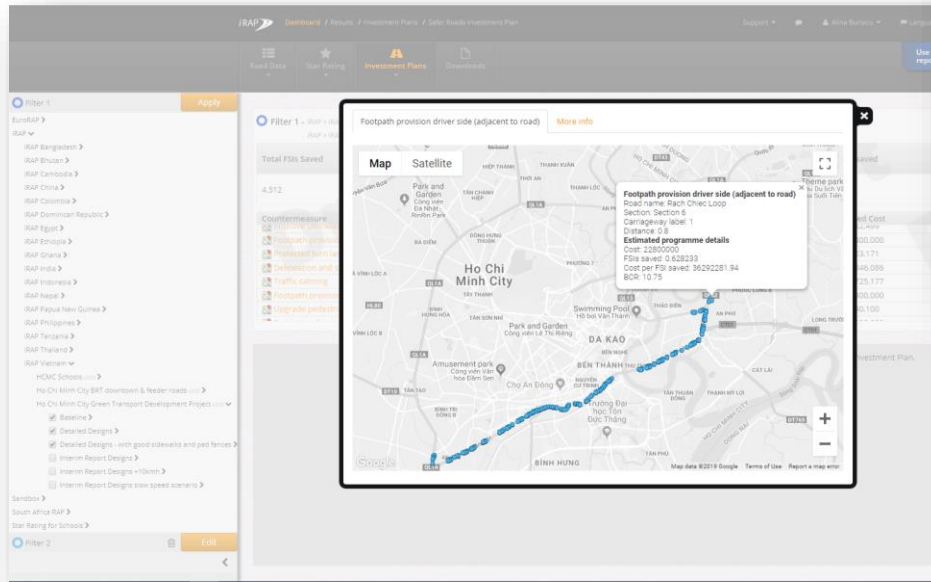
School zone modification

Advocate for modification implementation at the rest of 33 schools along the BRT corridor and feeder roads lead by government



A self-contained framework to help school principals advocate to the government for the creation of a safe school zone

ENABLE – LOCALLY ADAPTED TOOLS



SÃO PAULO, BRAZIL

Webinar Series. Session 2

Integration of Road Safety Considerations in Transit-Oriented Development Projects

8 October 2020



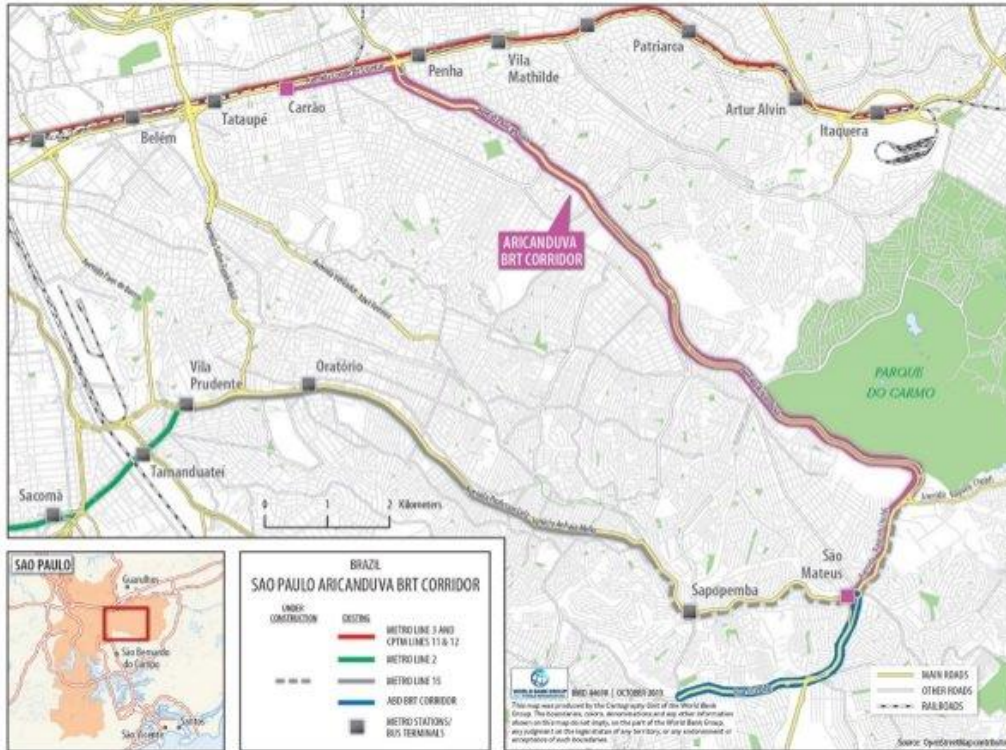
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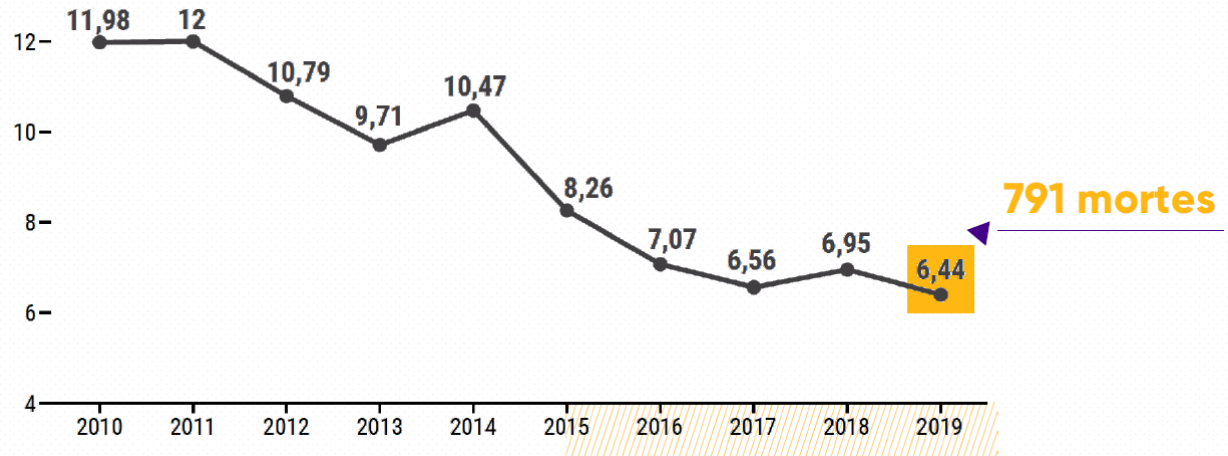


PROJECT BACKGROUND – SÃO PAULO ARICANDUVA BRT



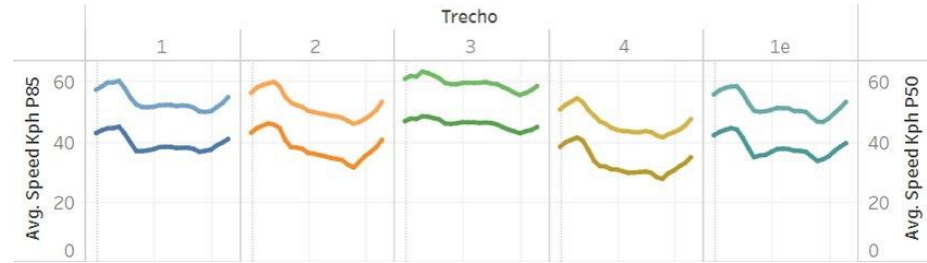
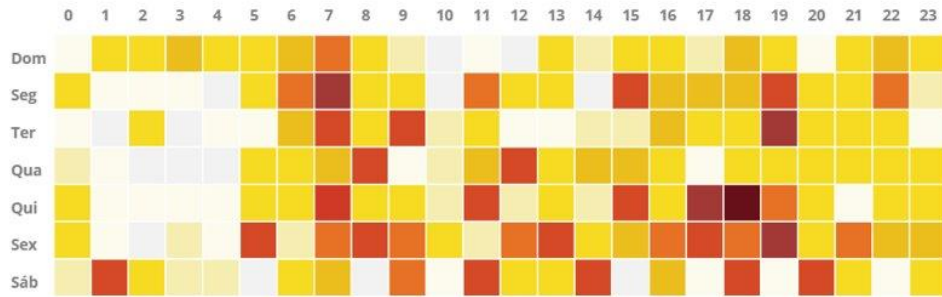
- BRT Corridor (14 km)
- Footpath Improvements
- Bicycle Lane
- Universal Accessibility
- Intermodal Terminal
- Improved Street Lighting

ASSESS – ROAD SAFETY MANAGEMENT CAPACITY



- Ten Year Road Safety Plan
- Goal of 50% reduction in fatal victims by 2030

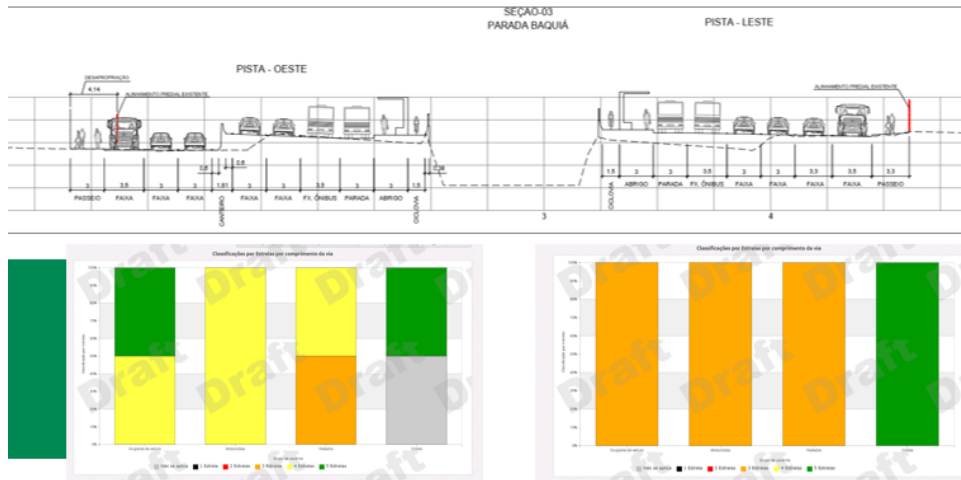
ASSESS – ROAD CRASH DATA ANALYSIS



ASSESS – ROAD SAFETY ENGINEERING TOOLS

Proposed
BRT
corridor

Baseline assessment and
star rating for designs



Relatório Técnico
Análise de Segurança Viária do
Corredor Leste Aricanduva



Bloomberg Initiative for Global Road Safety
(BIGRS) 2015-2019 São Paulo, Brazil

Dezembro/2019


ASSESS – ROAD SAFETY ENGINEERING TOOLS



- 67% of the road was classified as 1 or 2-stars for pedestrians
- 37% of the corridor was classified as 1 and 2-stars for motorcyclists

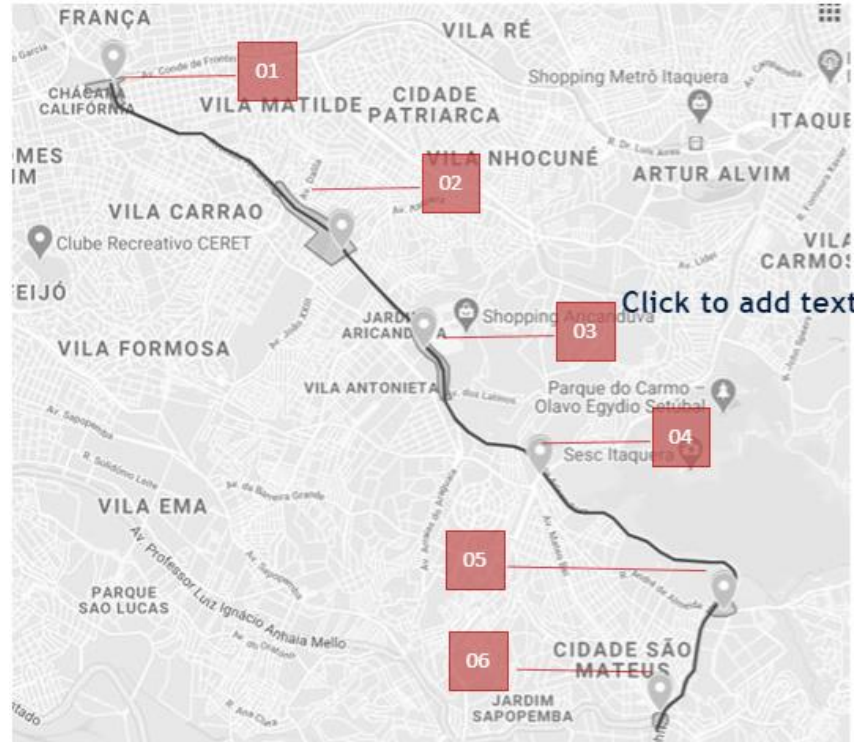
ASSESS – ROAD SAFETY ENGINEERING TOOLS

WRI BRASIL

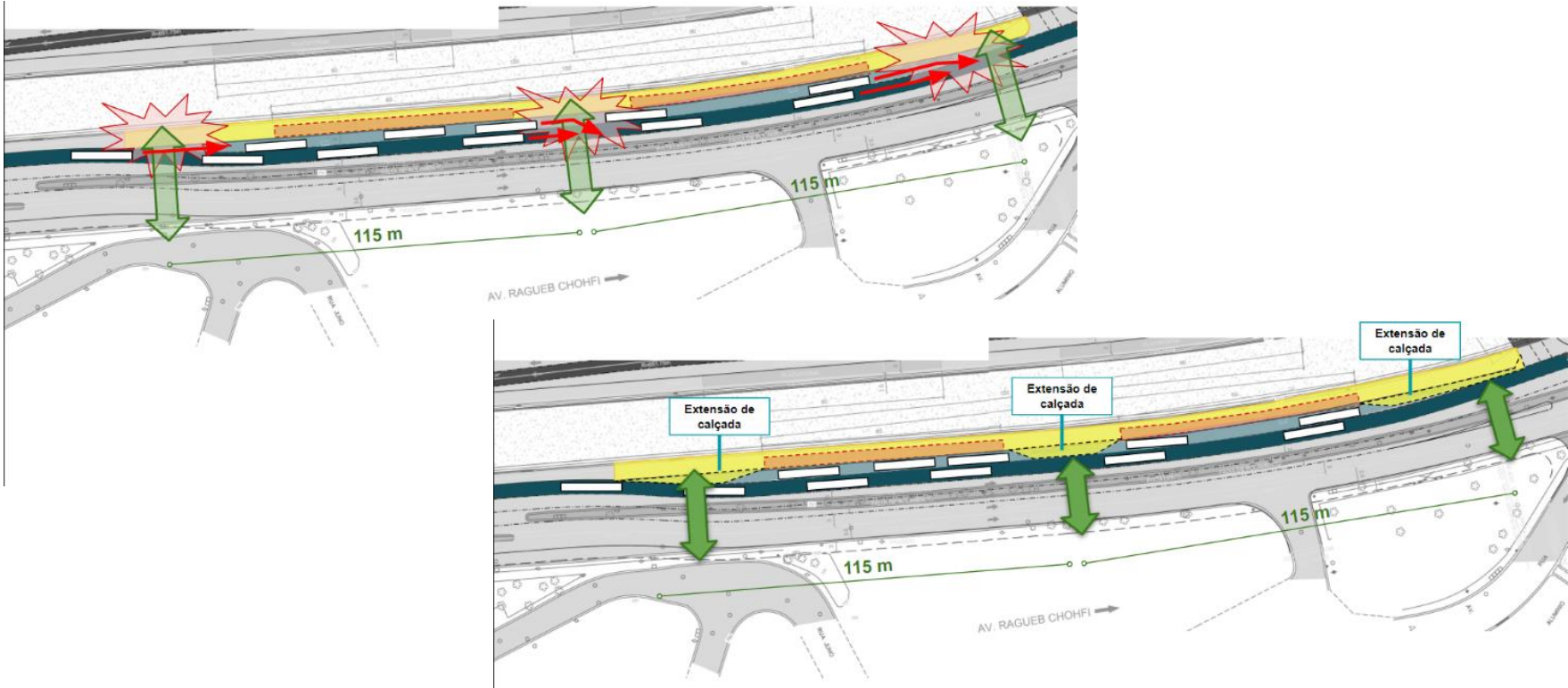


Auditoria de Segurança Viária
BRT Aricanduva

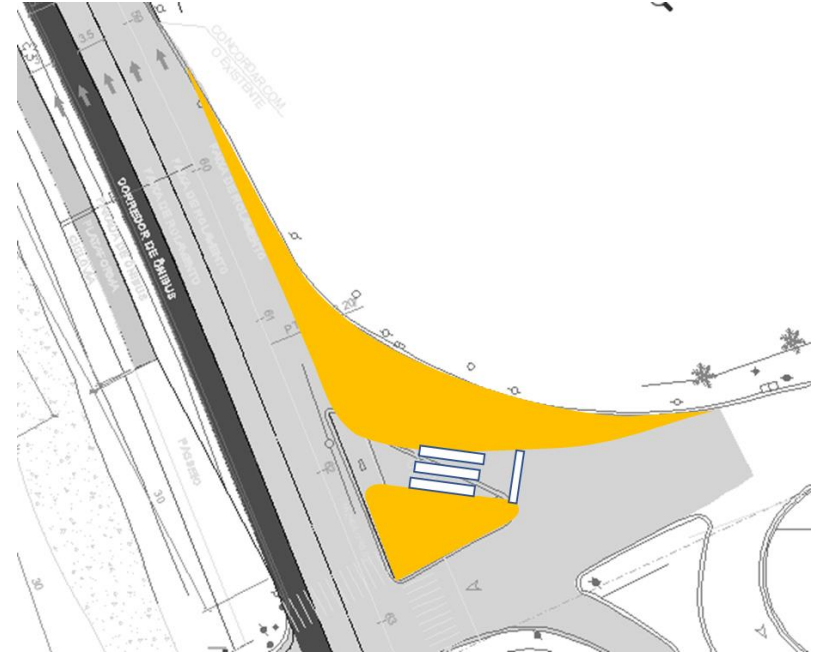
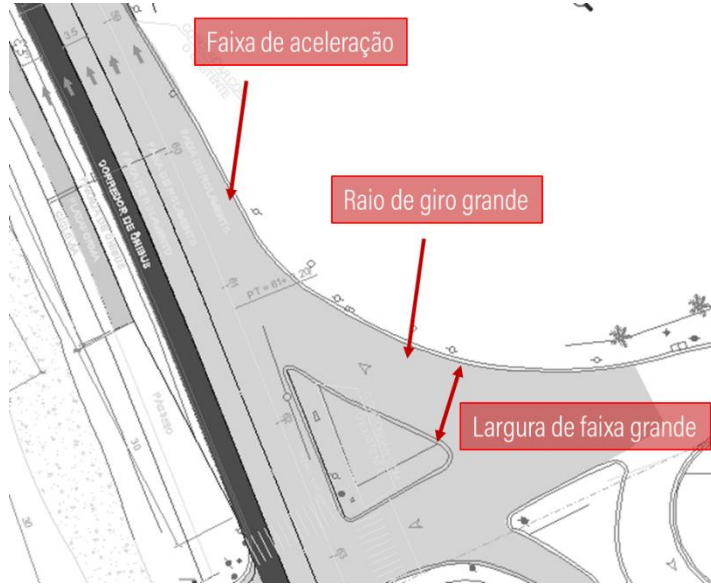
São Paulo, Brasil
Outubro, 2020



ASSESS – ROAD SAFETY ENGINEERING TOOLS



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ENABLE

- Stakeholder Engagement Plan
- Grievance Redress Mechanism



ENABLE

- Obtaining input to project from community of users and inhabitants
- Engaging different authorities to disseminate results from the assessment and discuss solutions



ENABLE

- Capacity building on road safety engineering



THANK YOU!

Webinar Series. Session 2

Integration of Road Safety Considerations in Transit-Oriented Development Projects

8 October 2020

Alina F. Burlacu & Juan Miguel Velasquez, World Bank GRSF



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QUESTION & ANSWERS

Workshop series on

INTEGRATION OF ROAD SAFETY CONSIDERATIONS IN TRANSIT ORIENTED DEVELOPMENT PROJECTS

October, 2020

Session 3: Planning and Designing road safety measures in TOD

15th October, 2020. 90 minutes. 6.30pm IST (9.00am EST).

Session type: *Online presentation. 90 minutes.*

Speakers: Project team, The World Bank & WRI India. Chaired by Alina F. Burlacu (Senior Transport Specialist, The World Bank)

Guest speakers: Gerald Olivier (Lead Transport Specialist, The World Bank), Representative from ChinaRAP

This session will discuss the planning and designing of physical infrastructure and strategic solutions that ensure road safety within a TOD project. A case study presentation will highlight the *'Tianjin Urban Green Mobility Project'* emphasizing on alignment with the City's vision and goals for ensuring road safety, identifying challenges and applying design solutions within the TOD station areas in Tianjin, China.

Session 4: Financing and Implementing of road safety in TOD

22nd October, 2020. 5.00pm IST (7.30am EST)

Session type: *Online presentation followed by panel discussion. 90 minutes.*

Speakers: Project team, The World Bank & WRI India. Chaired by Felipe Targa (Senior Transport Specialist, The World Bank)

Panelists: Radoslaw Czapski (Senior Transport Specialist, The World Bank), **Mriganka Saxena** (Principal, HTAU), TBC

The final session will discuss allocation of funds, innovative financing tools and incentives for ensuring road safety within TOD that benefit both the public and private sectors. Actions to be undertaken for implementing a TOD project including project prioritization, capacity building, and monitoring will also be discussed, together with challenges related to the incorporation of roads safety considerations in the five-steps of TOD framework. The panel will explore solutions for these challenges through case examples and project implementation experiences and discuss different short-, mid- and long-term strategies that could be adopted for implementation of road safety in TOD projects.

Photo credit: Nicholas Mirguet/ flickr