Measuring TRANSPORT related Sustainable Development Goals and Indicators

DATA DIGGING FOR BETTER TRANSPORT PLANNING

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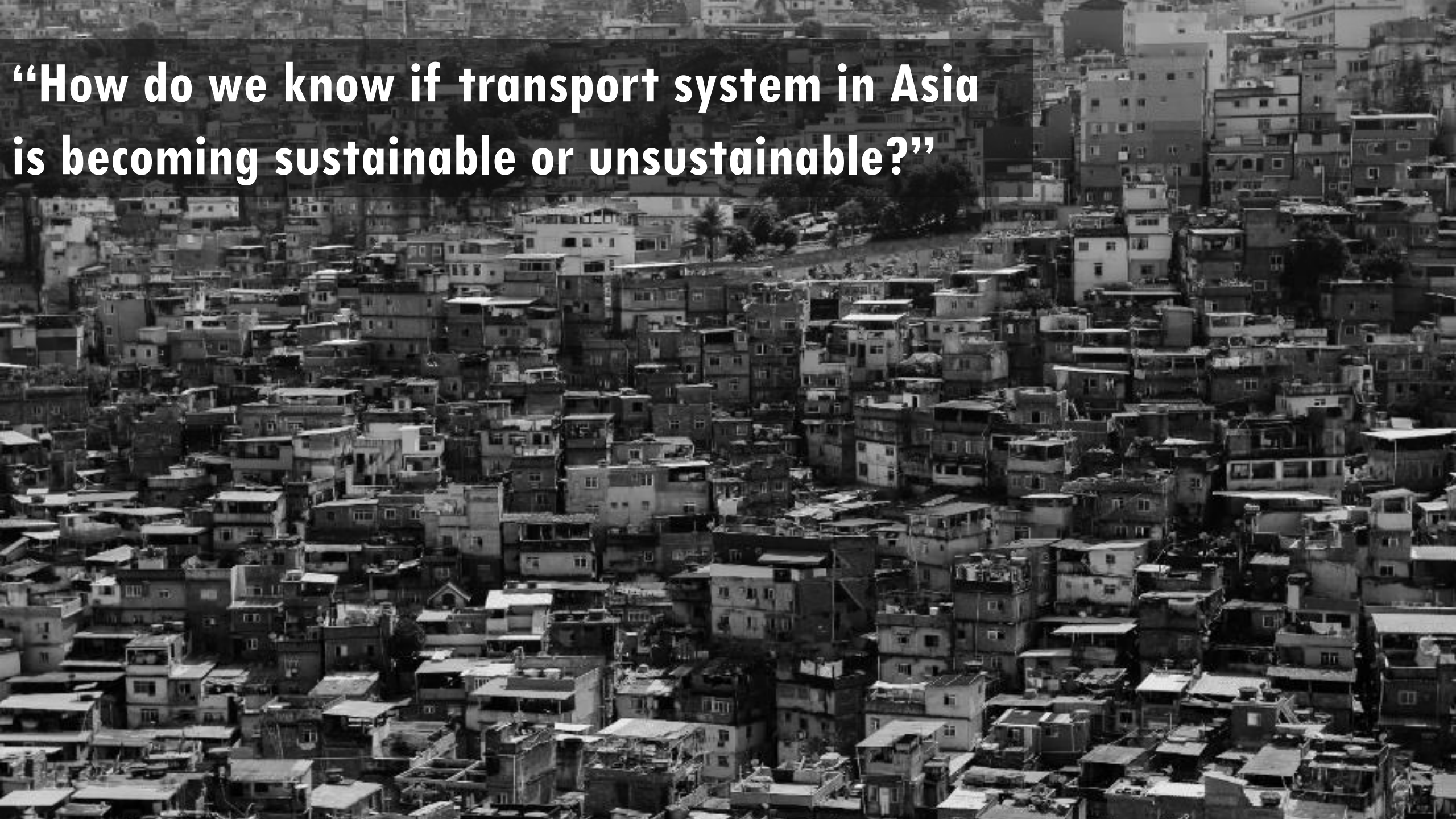
Credit: Michael Replogle

ADB Transport Forum
Manila, September 14, 2016
Measuring Transport-Related SDGs and Indicators

ITS UCDAVIS INSTITUTE OF TRANSPORTATION STUDIES


“How do we know if transport system in Asia
is becoming sustainable or unsustainable?”

Data: JICA has estimated that congestion costs the Metro Manila economy over **US$52 million per day…rising to US$ 130 million per day by 2030**

Data: PRC Government measured particulate matter levels in Beijing at **993 mg/m^3 in January 2013** (compared to WHO maximum level of 25 mg/m^3)

WHY DATA MATTERS

Decisions need data

- Investments into private v. shared modes
- Investments to reduce pollutant and CO_2 emissions
- questions around prioritizing "avoid/shift/improve"
- Setting targets, such as for a 2 degree scenario

WHY DATA MATTERS

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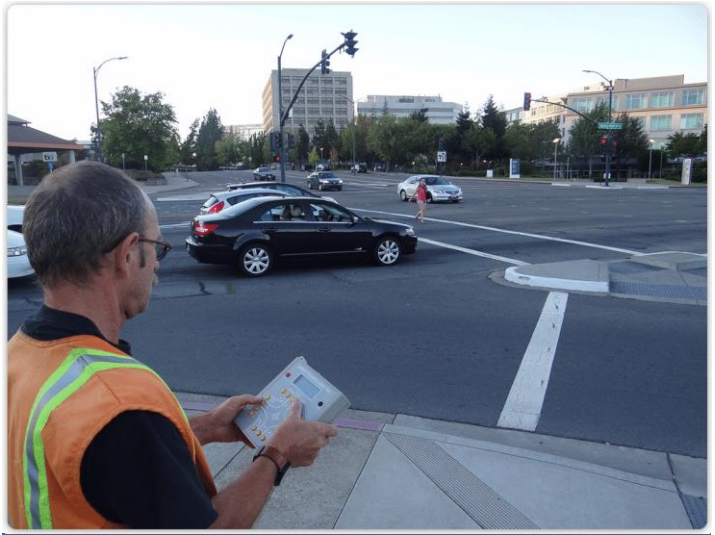
STRONG VARIATION BETWEEN CITIES AND COUNTRIES

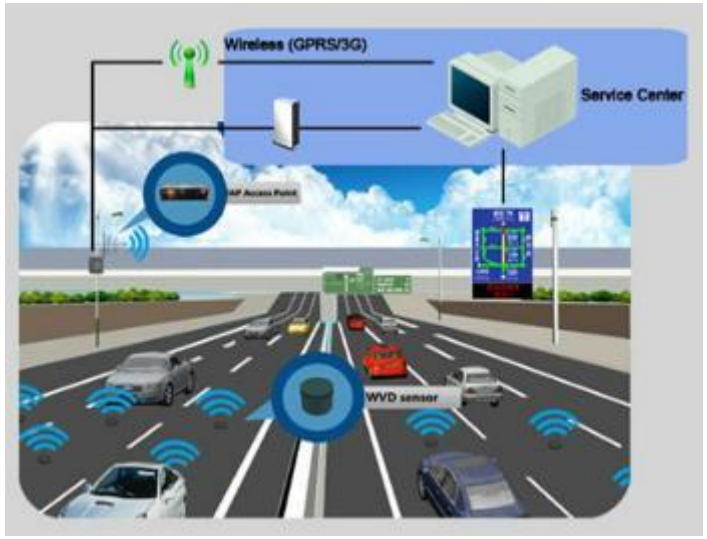
TYPES OF DATA COLLECTION



TRADITIONAL

- HOUSEHOLD SURVEYS
- FIELD TRAFFIC COUNTS

TIME CONSUMING AND LABOR INTENSITVE



INTELLIGENT TRANSPORT SYSTEMS

COSTLY HIGH TECHNICAL REQUIREMENTS

OPEN TRANSPORT

OPEN SOURCE

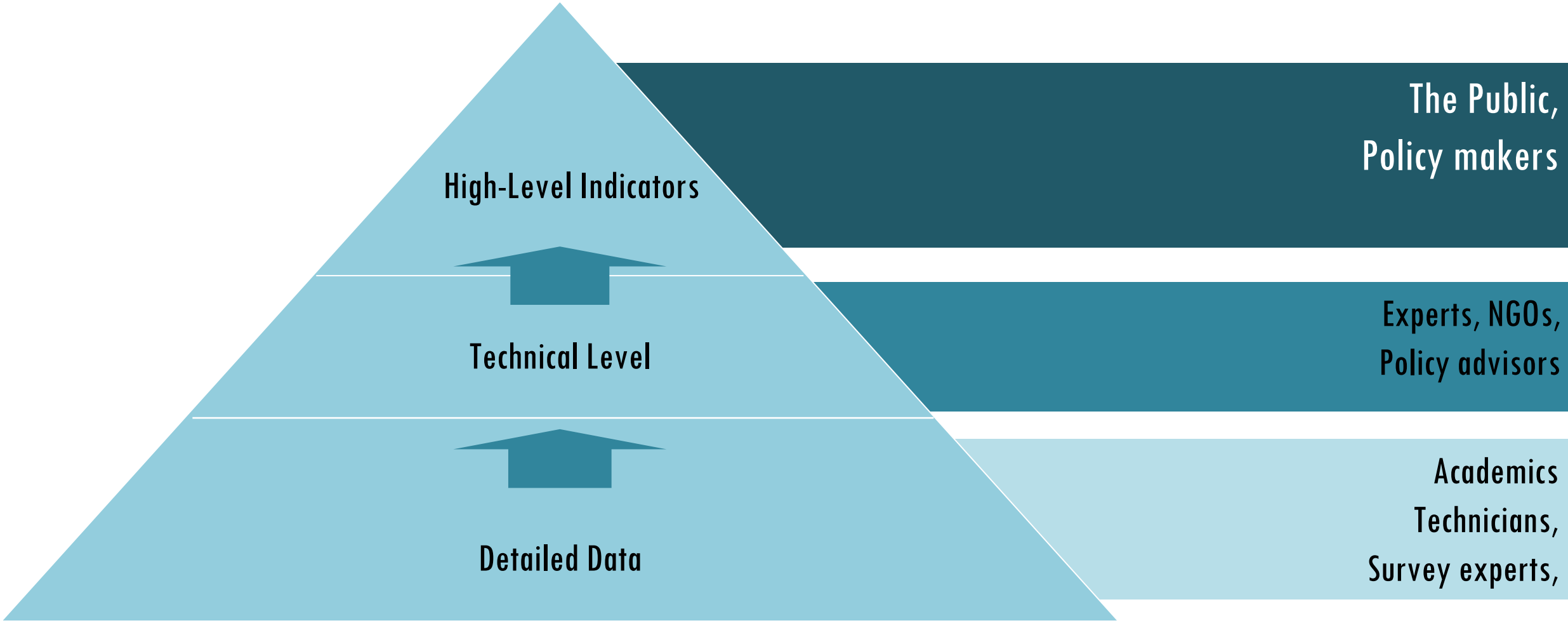
LICENSE FREE

WHAT IS "OPEN" DATA?

1. Complete
2. Primary
3. Timely
4. Accessible
5. Machine processable
6. Non-discriminatory
7. Non-proprietary
8. License-free

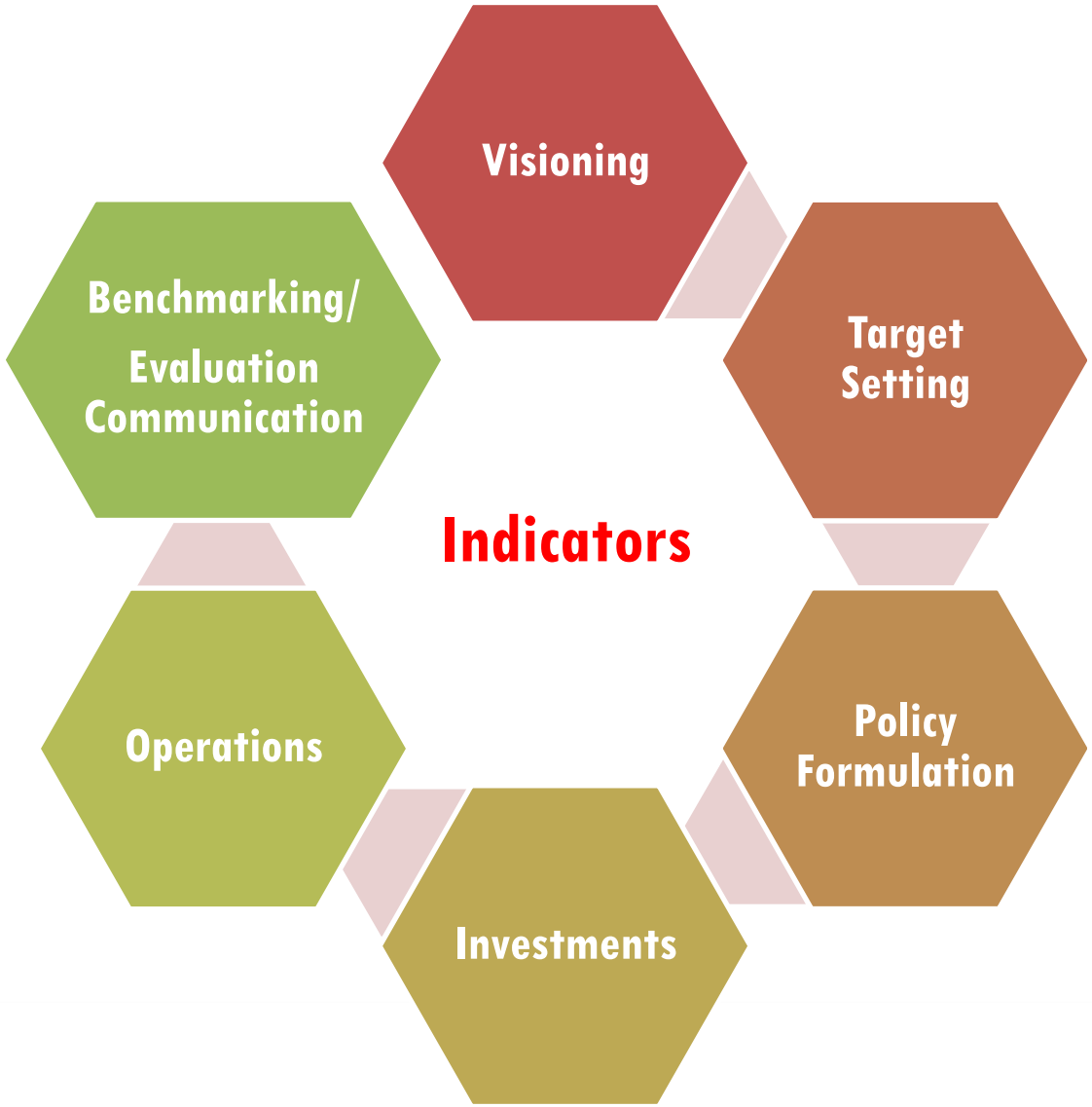
Based on: The Role of Open Data in Sustainable Transport, GIZ, 2015
Image from Open Data Kosovo https://pbs.twimg.com/profile_images/506404944375603200/d-n-bsXI.png

INDICATORS PYRAMID



Henrik Gudmunsson, DMU

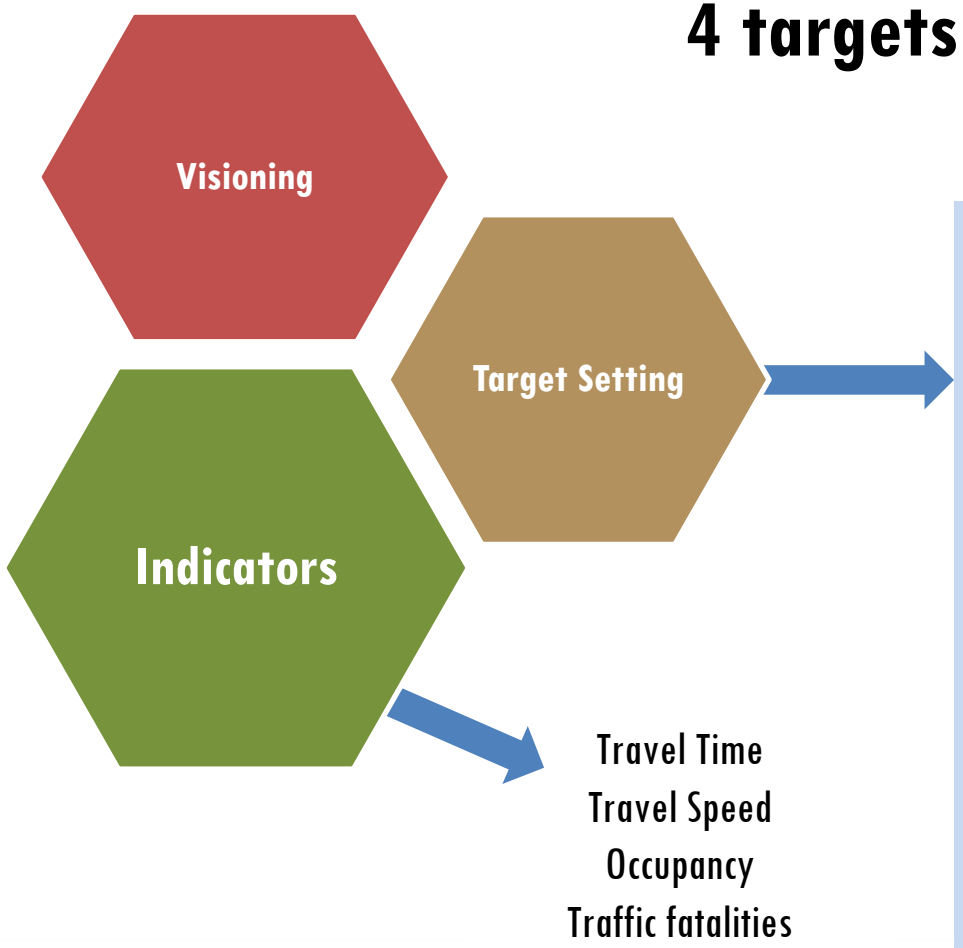
“INDICATOR CYCLE” IN TRANSPORT



Source: Sudhir Gota

VISION INDICATORS AND TARGETS

Philippine Development Plan 2011-2016:



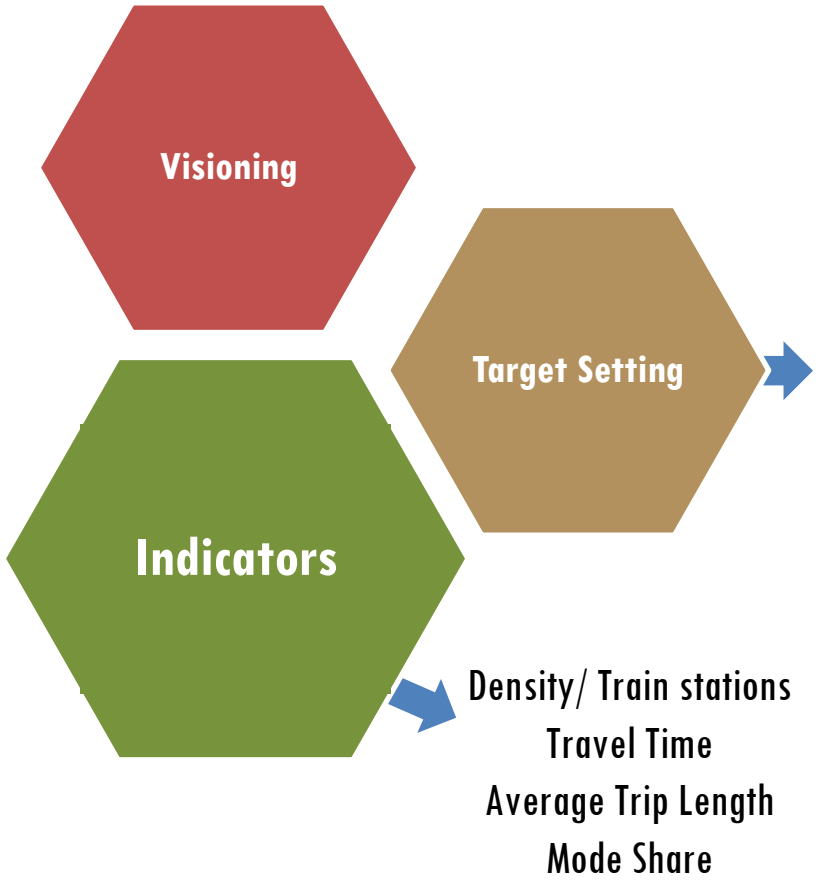
4 targets for urban transport (Metro Manila)

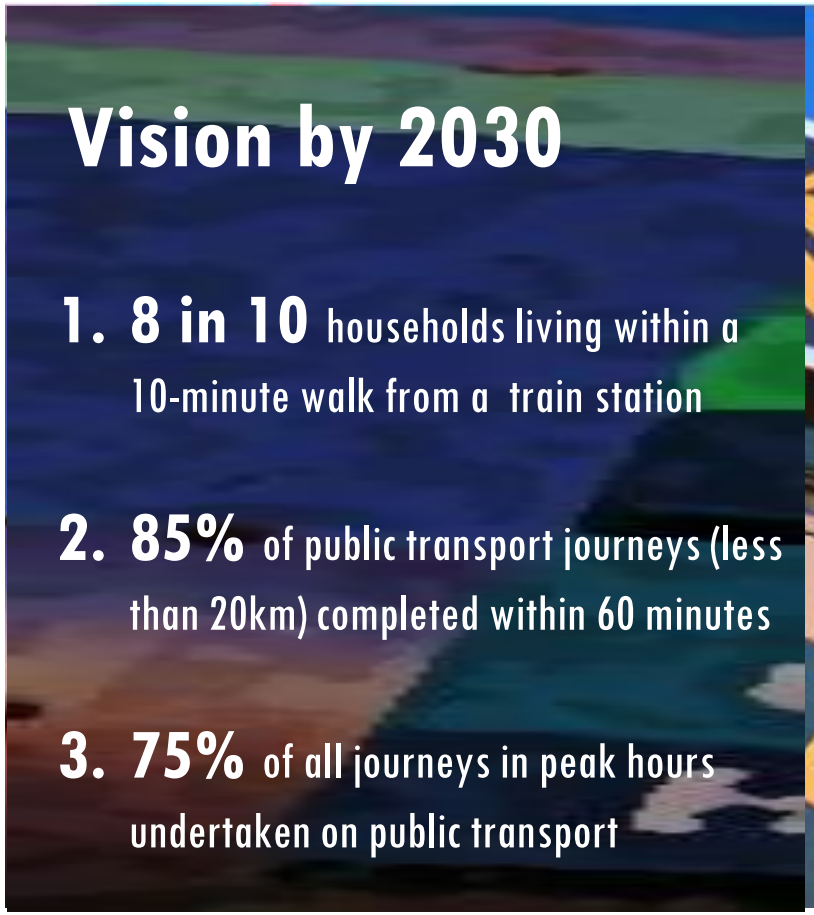
1. **Decreased travel time** from 2.17 min/km to 1.57 min/km in 2016
2. **Increase in travel speed** from 27.79Km/hour to 38.2 km/hour by 2016
3. **Increased occupancy** due to reduction of city buses - air-conditioned from 40 to 65, non-air-conditioned from 37 to 45.
4. **Decrease in pedestrian vehicle conflict** (302 in 2010 to 10 in 2016)

Source: Adopted from Sudhir Gota

VISION INDICATORS AND TARGETS

Singapore Land Transport Management Plan :





Source: Adopted from Sudhir Gota

TRANSPORT INDICATORS FOR THE SDGs

TRANSPORT INDICATORS FOR THE SDGs

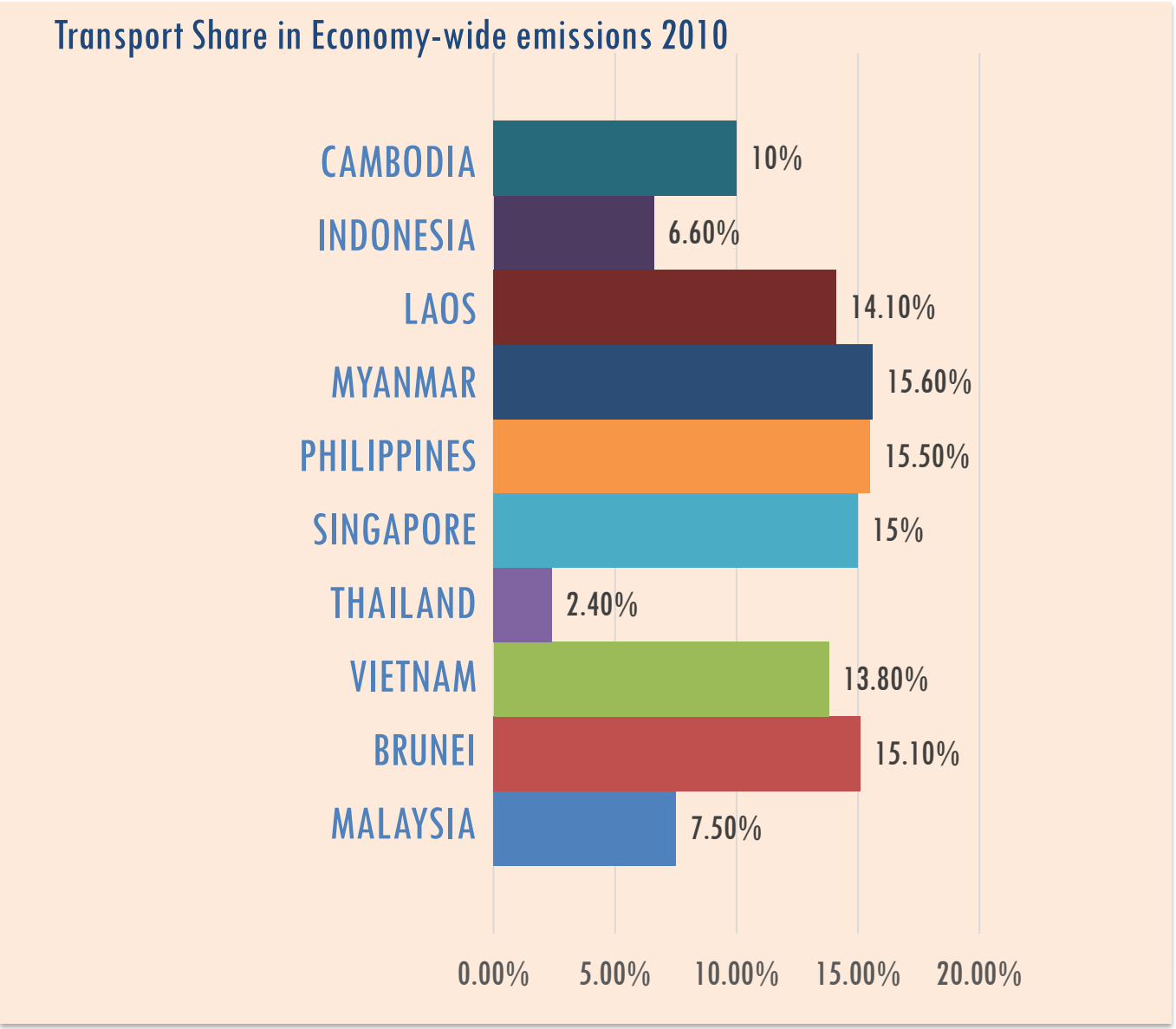
3.6: By 2020,
halve the number of global deaths and injuries related to **road traffic accidents**

7.3: By 2030,
double the global rate of improvement in **energy efficiency**

11.2 By 2030,
provide access to safe, affordable, accessible and **sustainable transport systems for all,** improving road safety, notably by **expanding public transport…….**

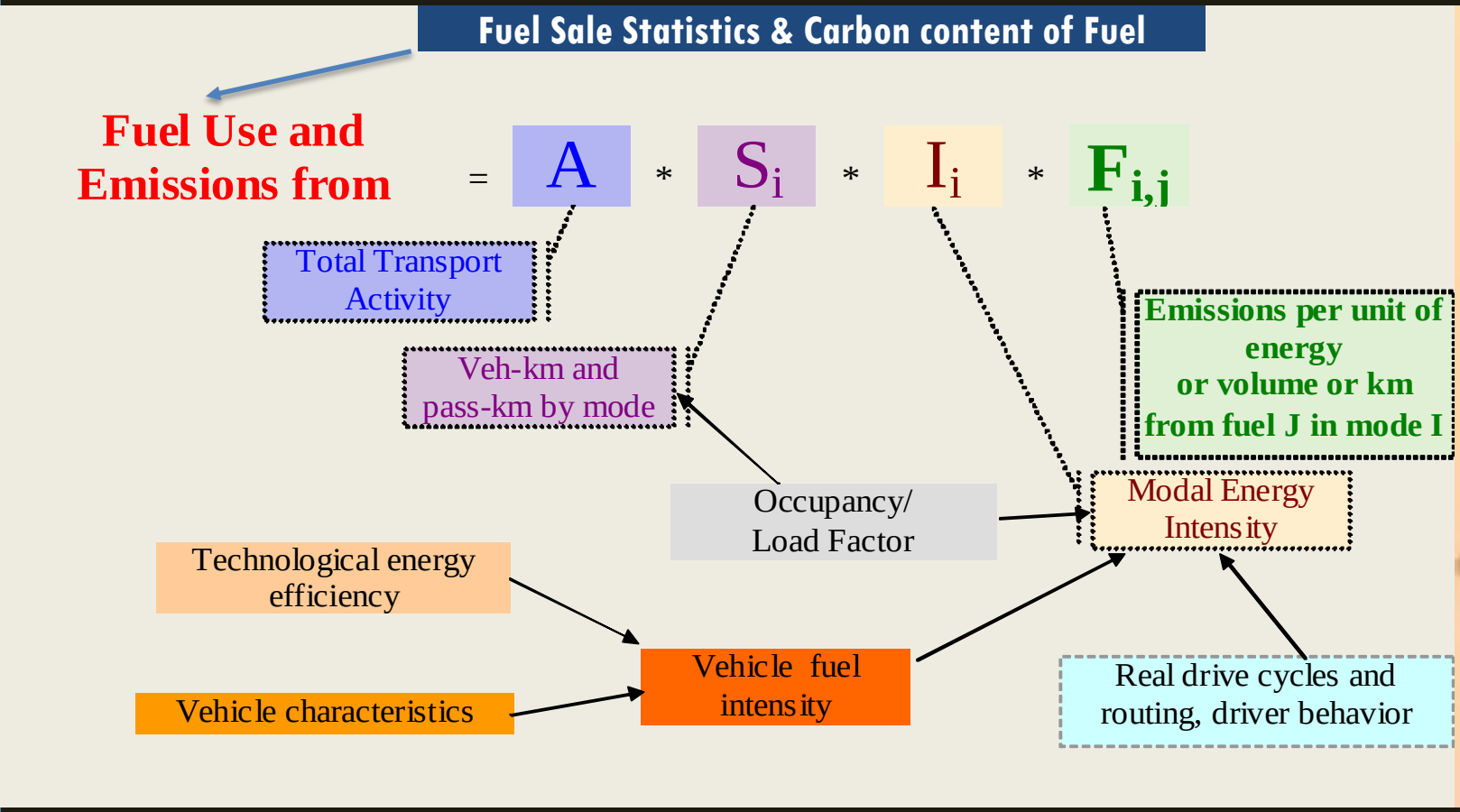
Source: Presentation from Sudhir Gota

TRANSPORT IN ASEAN SDGs

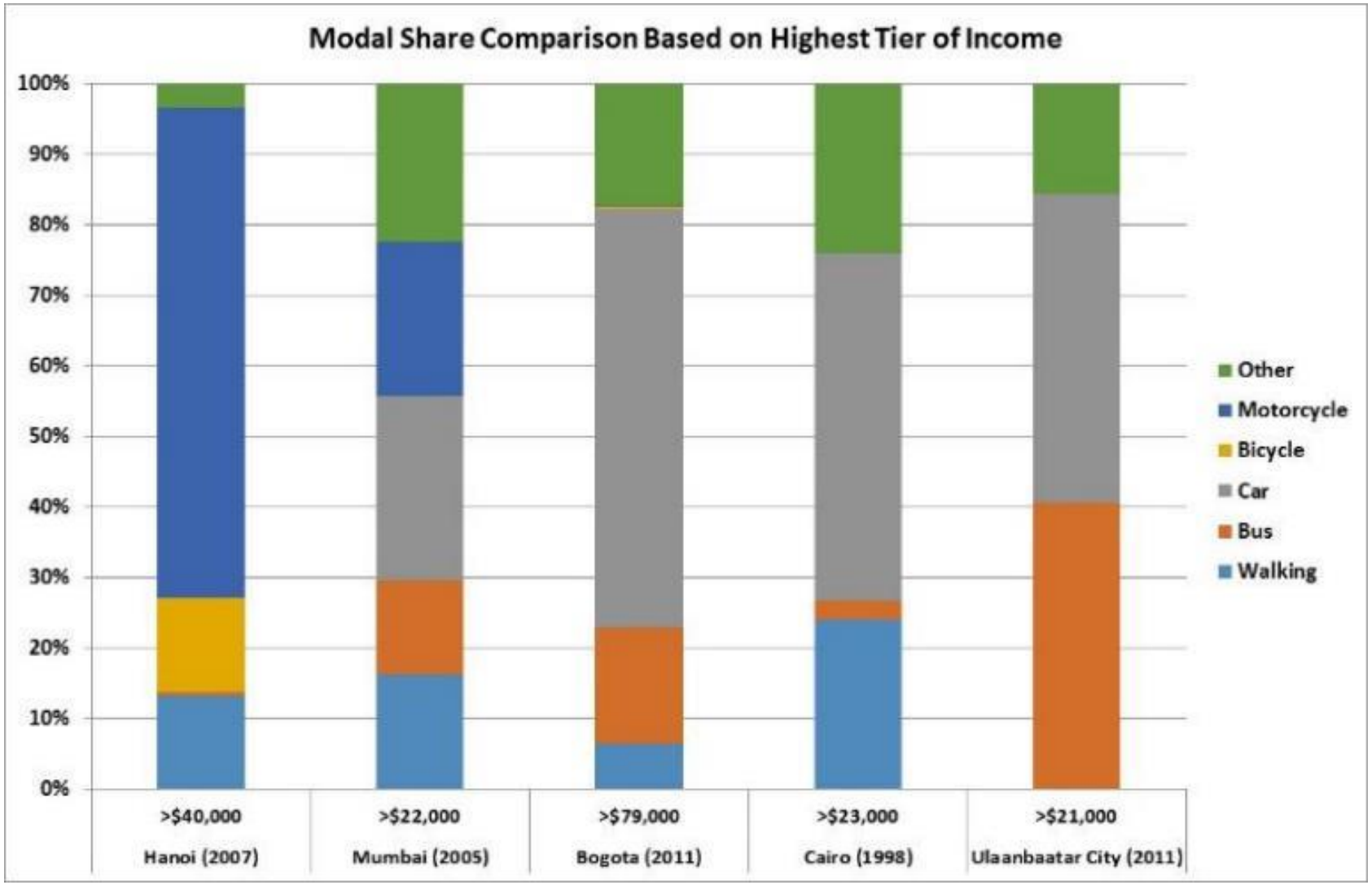


Coutnry	Transport sector target in NDC	Mitigation Actions Identified in NDC
Cambodia	No	Fuel efficiency, e-mobility, inspection-maintenance, public transport improvement
Indonesia	No	No
Laos	No	Public transport improvement, alternative fuel and development of road infrastructure
Myanmar	No	Development of transport plan
Philippines	No	No
Singapore	No	No
Thailand	No	Public transport improvement, fuel efficiency improvement and green freight
Vietnam	No	Inspection & maintenance, decarbonising fuel, fuel quality & vehicle emission standards, fuel subsidy removal, green freight & public transport improvement
Brunei Darussalam	Yes	Fuel economy, e-mobility, fuel Subsidy removal, intelligent transport system, landuse strategy, public transport improvement, parking reform, transport plan,
Malaysia	No	No

A – S – I – F (AS IF?!?)


Fuel Sale Statistics & Carbon content of Fuel
Fuel Use and Emissions from
=
A
*
S_i
*
I_i
*
$F_{i,j}$
Total Transport Activity
Veh-km and pass-km by mode
Occupancy/ Load Factor
Emissions per unit of energy or volume or km from fuel J in mode I
Modal Energy Intensity
Technological energy efficiency
Vehicle characteristics
Vehicle fuel intensity
Real drive cycles and routing, driver behavior

UNDERSTANDING MODE SHARES IS CRUCIAL

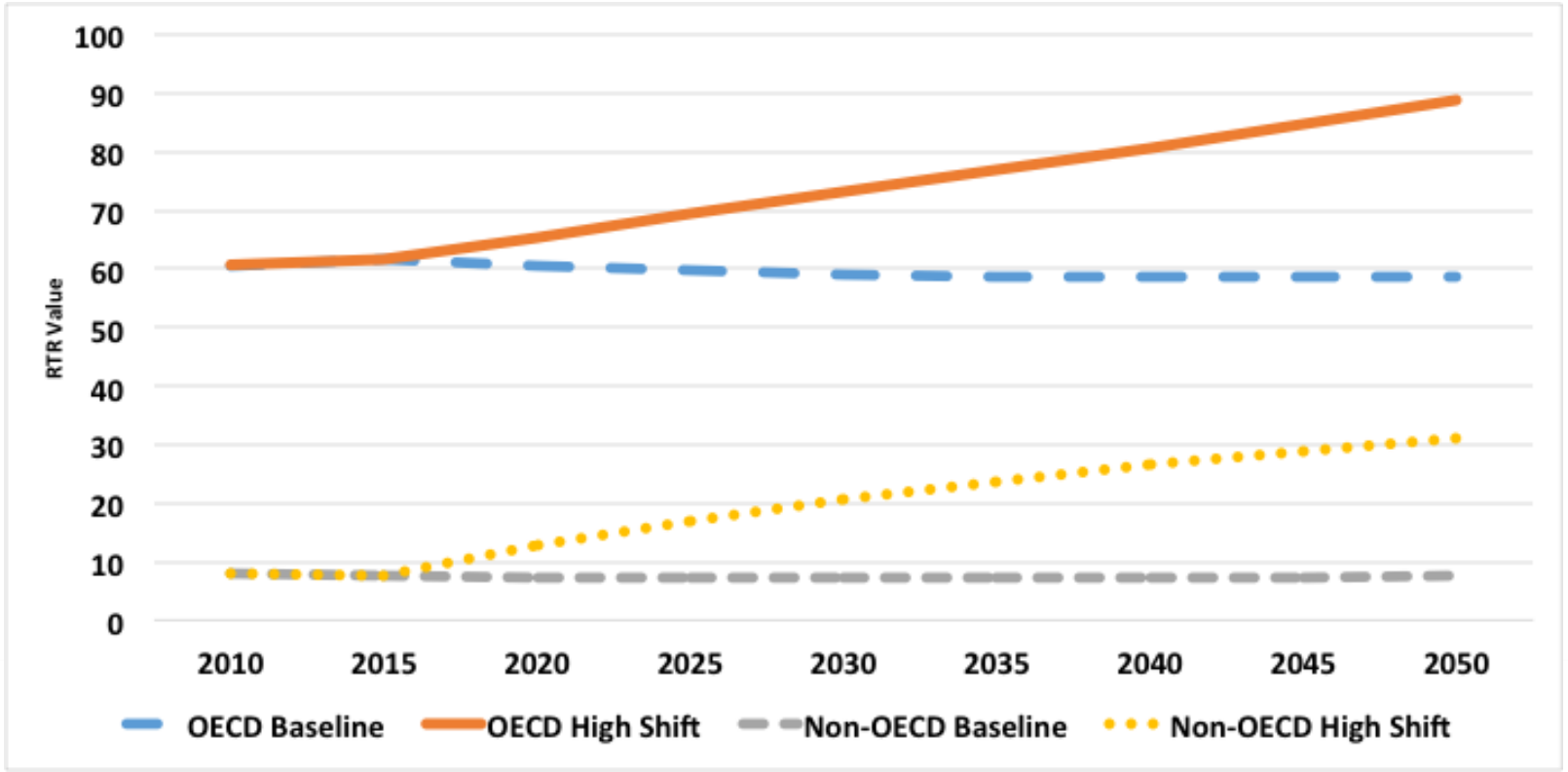


Insightful data:

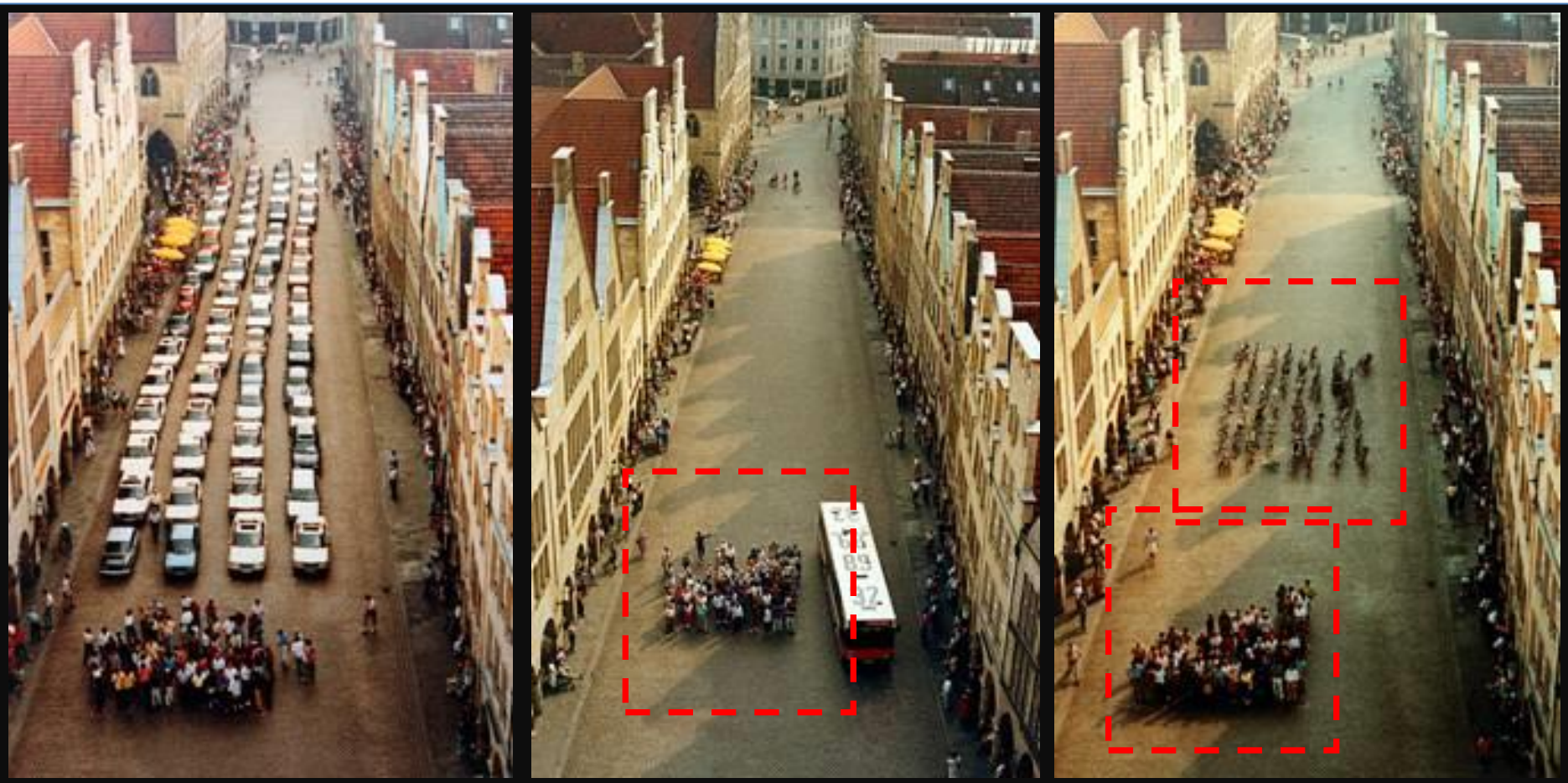
RAPID TRANSIT PER RESIDENT (RTR): now and targets for 2050 (ITDP/UC Davis High Shift, 2015)

Kilometers of system per million residents

	2010		4DS 2030		4DS 2050		High Shift 2030		High Shift 2050	
	OECD	non-OECD	OECD	non-OECD	OECD	non-OECD	OECD	non-OECD	OECD	non-OECD
Metro	7.1	1.8	6.8	1.5	6.9	1.4	8.8	4.8	10.7	6.4
BRT	0.6	0.7	0.8	1.0	1.0	1.1	4.6	9.0	8.1	13.5
Tram/LRT	11.5	3.0	10.9	2.5	11.1	2.3	13.2	4.0	15.2	4.6
Commuter rail	32.5	1.9	31.0	1.6	31.5	1.4	42.3	10.2	52.6	14.8



THE IMPORTANCE OF DATA VISUALIZATION



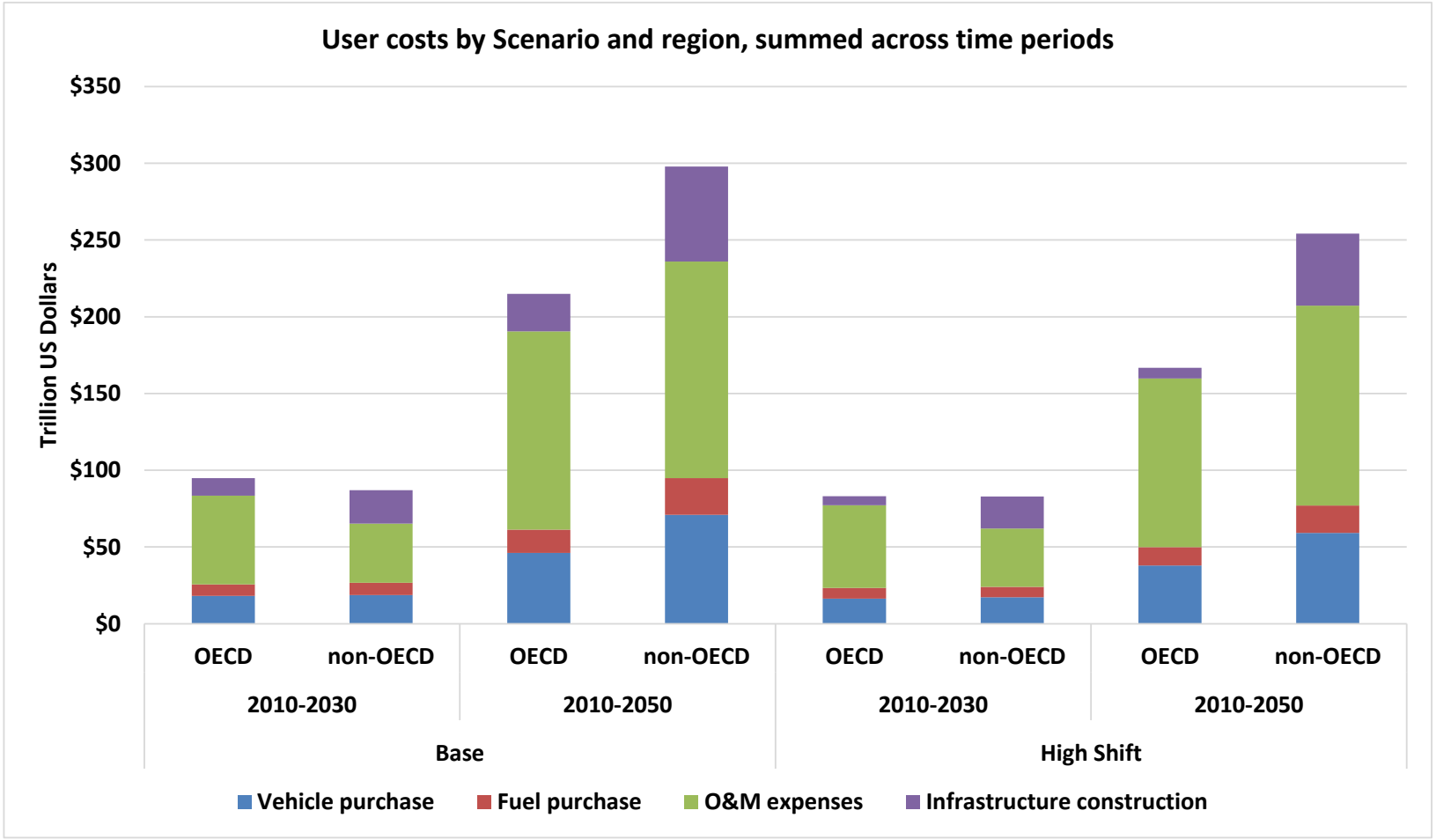
Slide from GIZ presentation. Image Source: City of Münster

- Traditional focus was given to **road design**
- **Unsustainable focus :** more infrastructure for cars, more space for motorized vehicles
- Question is, **how to use limited road space best**

PUBLIC AND PRIVATE DIRECT COSTS

UC Davis "High Shift" studies:

High Shift Scenario lowers total costs across major categories



- Vehicle purchase costs (all modes)
- System infrastructure costs (road, rail)
- Vehicle and system operating costs
- Fuel costs (liquid fuel, electricity)

Better Transport Data in Asia Project

To support the operationalization of the ADB Sustainable Transport Initiative Operational Plan

- *Transport database*
- *Transport models*
- *Knowledge products*

Database :
40 developing member countries
14 focus countries

- Socio-economic
- Transport activity
- Transport structure
- Emissions and energy
- Road safety
- Urban transport
- Workforce
- Infrastructure

DATA CONTRIBUTIONS ARE MUCH WELCOME!
PLEASE CONTACT

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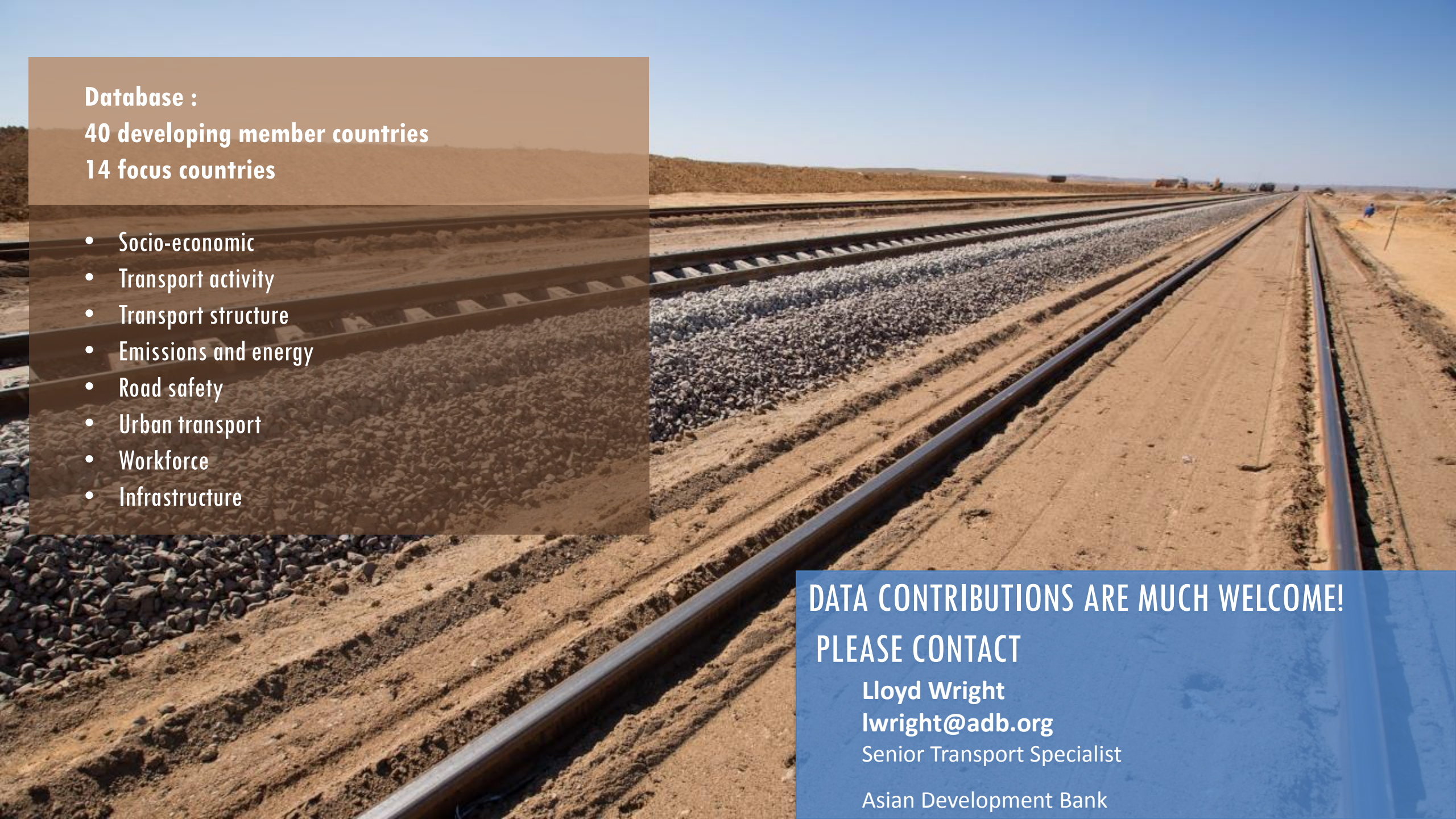
Asian Development Bank



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THE PRICE OF LIGHT IS LESS THAN THE COST OF DARKNESS

-Arthur Nielsen

Measuring TRANSPORT related Sustainable Development Goals and Indicators

Transport Trivia

Questions 1 & 2

What and where?

Tuktuks in Bangkok

11 SUSTAINABLE CITIES AND COMMUNITIES

By 2030, reduce the adverse per capita environmental impact of cities

http://dhakainsider.com/wp-content/uploads/2016/05/Dhaka.original.13480.jpg

Transport Trivia

Questions 3 & 4

Where is this and what is happening?

TransJakarta BRT alongside weekly car-free day


7 AFFORDABLE AND CLEAN ENERGY
By 2030, double the global rate of improvement in energy efficiency

Transport Trivia

Trucks drive from Kyrgyzstan to Dushanbe, along the newly rehabilitated road.
The improved road facilitates interstate trade in the region.
Photographer: Nozim Kalandarov

Questions 5 & 6

What and where?

World's largest bike sharing system — Hangzhou, PRC

Transport Trivia

Questions 7 & 8

https://portalexport.wordpress.com/tag/port-of-shanghai/

What and where?

Passenger buses in Samoa

11 SUSTAINABLE CITIES AND COMMUNITIES

By 2030, provide access to safe, affordable, accessible and **sustainable transport systems for all,** improving road safety, notably by **expanding public transport**

http://www.delhimetrorail.com/images/pm2.JPG

Transport Trivia

Questions 9 & 10

The Delhi Metro is the world's 12th largest metro system in terms of both length and number of stations, covering 213 km over 160 stations.

https://upload.wikimedia.org/wikipedia/commons/4/47/DelhiMetroBlueLineBombardier.jpg

What and where?

Kazakhstan railway

operated by Kazakhstan Temir Zholy

http://nb.kz/wp-content/uploads/2016/02/345g.jpg

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