



# Highways Workshop

22–23 May 2023 • Tbilisi, Georgia

## Семинар по автомобильным дорогам

22–23 мая 2023 года • Тбилиси, Грузия



# Mapping the future of Road User Charging for sustainable roads

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# Introduction

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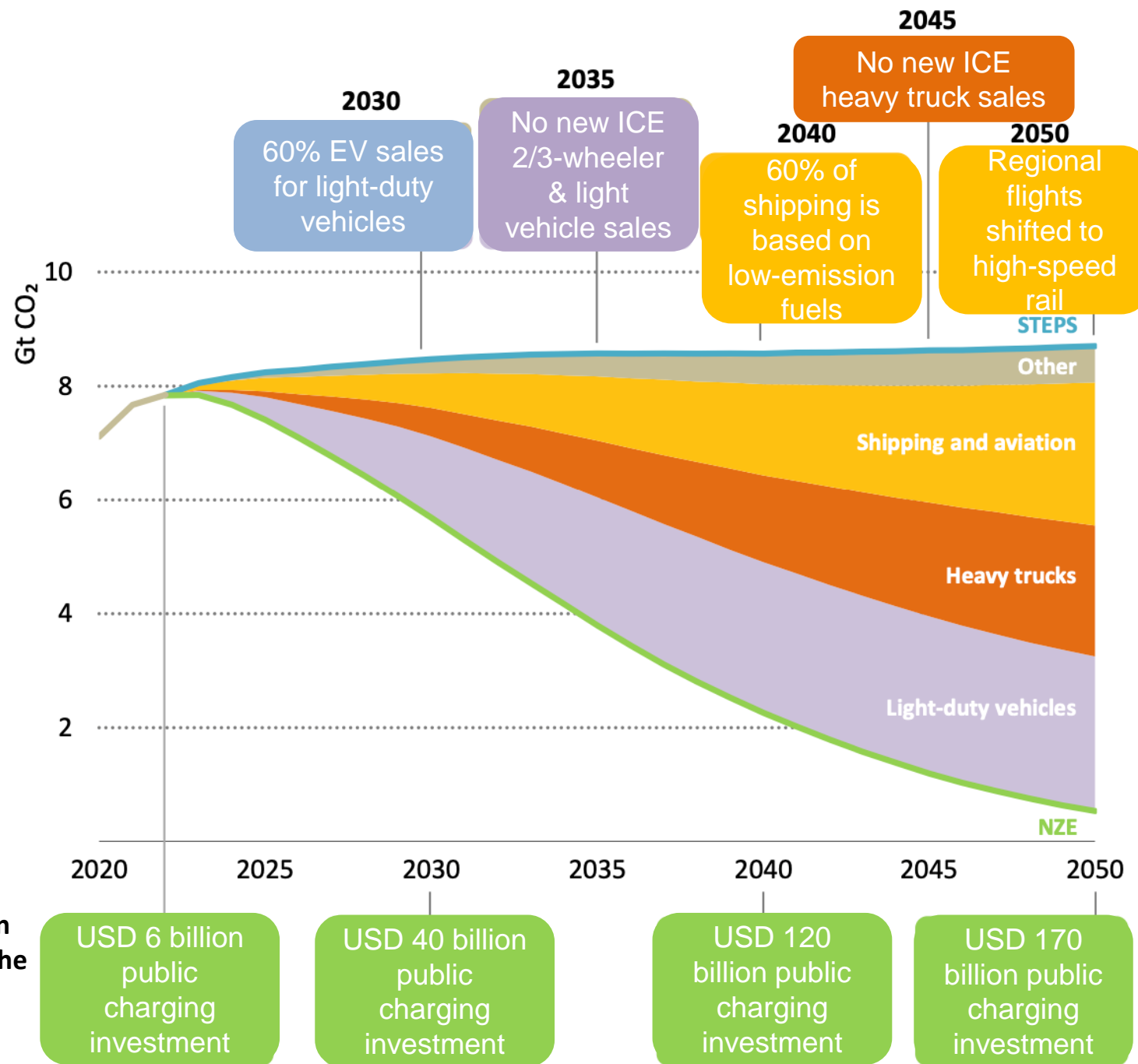




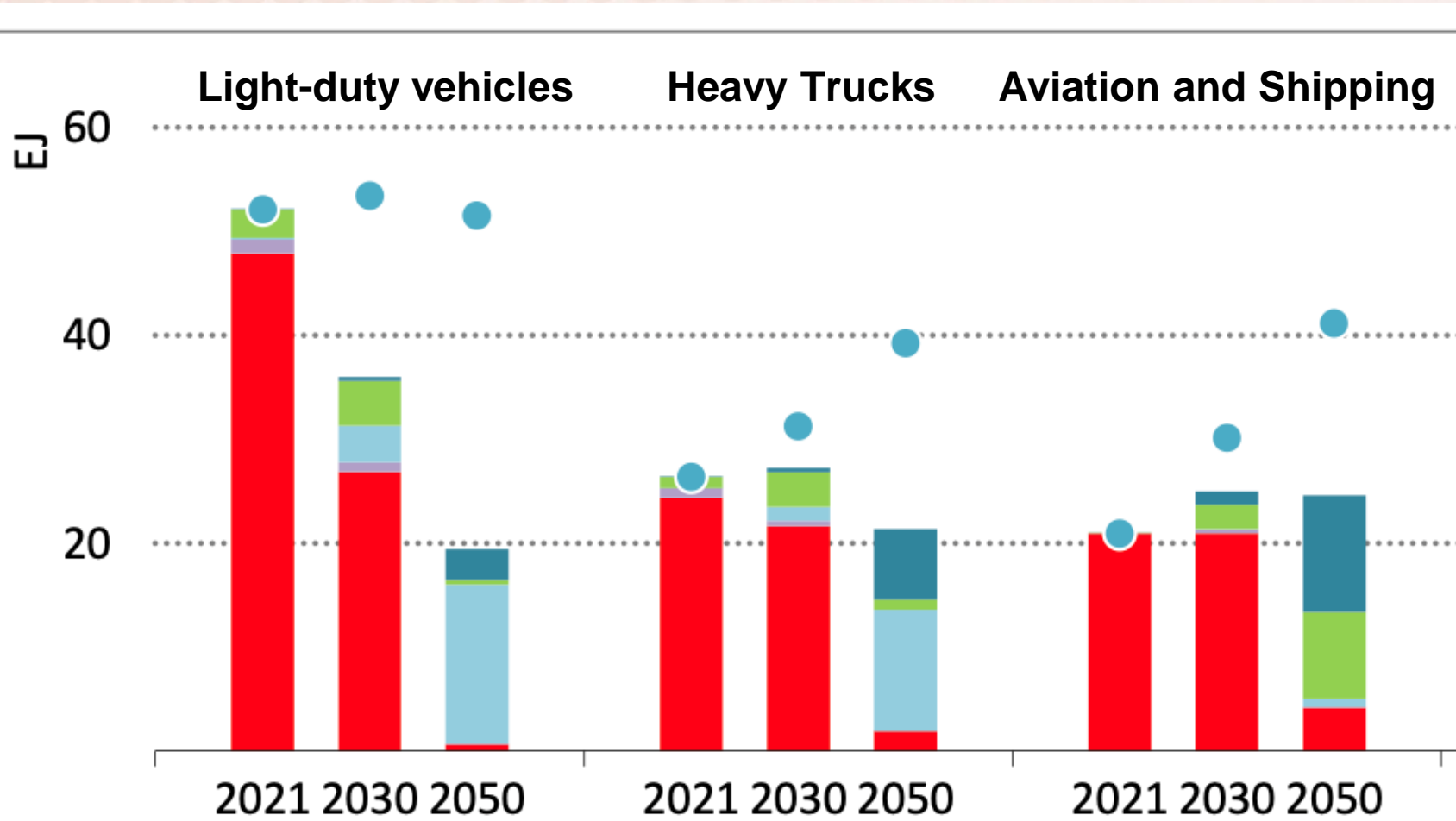
# Introduction

- Road investment needs in DMCs are significant.
- Transition to decarbonized transport presents opportunities and risks.
- Tax or levies on fossil fuel is an important source of road user charge revenues.

Figure shows Emissions reductions and key milestones in transport in the Net Emission Zero Scenario relative to the STEPS (Stated Policies Scenario). Source: IEA Outlook, 2022.



# Study Objectives



■ Oil   
 ■ Natural gas   
 ■ Electricity   
 ■ Bioenergy   
 ■ Hydrogen and hydrogen-based fuels  
● STEPS = Stated Policies Scenario

- 1. Current Funding Approaches** – identify main sources of road user charge revenues
- 2. Technology Options** – Review of existing and emerging technologies to collect road user charges and incentivize decarbonization
- 3. Transition Roadmap** – develop RUC transition roadmap for 10 countries covering Asia and the Pacific.



# Methodology and Approach

**Martin Horseling**

Legal Specialist

Dornier Consulting International GmbH





# The Action

- **General Information:**

- A component of the 'Improving Infrastructure Sustainability through Better Asset Management' technical assistance
- Financed by the Asian Development Bank
- Implemented by Dornier Consulting International GmbH (Germany)
- Duration of 12 Months
- Implemented by a team of 4 international specialists



# Rationale for the action

- Estimates of future infrastructure investment needs in the Asia Pacific Region are as high as US\$ 500 Billion per year for the foreseeable future,
- To ensure that these investments are sustainable (remain well maintained and in serviceable condition), a similar amount may be needed for regular maintenance,
- Experience shows that a fraction of this amount is available at present,
- Decarbonisation of transport will erode traditional sources of funding, hence it is time to consider alternatives.





# Project Components

- A. Review of **current funding approaches** across a selection of countries
- B. A review of **current and future technologies and systems** that could be applied
- C. Preparation of a **transition roadmap** from current approaches to one that is ready for a decarbonised future
- D. Publications and capacity building



# Countries that may be included for review

Group A – Concessional Assistance				
Central and West Asia	East Asia	South Asia	Southeast Asia	Pacific
<ul style="list-style-type: none"> <li>• Afghanistan</li> <li>• Kyrgyz Republic</li> <li>• Tajikistan</li> <li>• Pakistan</li> </ul>		<ul style="list-style-type: none"> <li>• Bhutan</li> <li>• Maldives</li> <li>• Nepal</li> </ul>	<ul style="list-style-type: none"> <li>• Cambodia</li> <li>• Lao People's Democratic Republic</li> <li>• Myanmar</li> </ul>	<ul style="list-style-type: none"> <li>• Kiribati</li> <li>• Federated States of Micronesia</li> <li>• Marshall Islands</li> <li>• Nauru</li> <li>• Samoa</li> <li>• Solomon Islands</li> <li>• Tonga</li> <li>• Tuvalu</li> <li>• Vanuatu</li> </ul>



# Countries that may be included for review

## Group B – Ordinary Capital Resource and Concessional Assistance

Central and West Asia	East Asia	South Asia	Southeast Asia	Pacific
<ul style="list-style-type: none"><li>Uzbekistan</li></ul>	<ul style="list-style-type: none"><li>Mongolia</li></ul>	<ul style="list-style-type: none"><li>Bangladesh</li></ul>	<ul style="list-style-type: none"><li>Timor Leste</li></ul>	<ul style="list-style-type: none"><li>Fiji</li><li>Niue</li><li>Palau</li><li>Papua New Guinea</li></ul>

- Of these countries, 10 will be selected for review





# Choices

- **No choice has been made as yet which country to include in the review, a choice will be made based on the need to achieve a mix of indicators:**
  - Classification in group A or B Geographical Coverage (Every region must be represented)
  - Size of the road network
  - Earmarking of road user charges for the road sector



# Final Criteria

- Considering the short duration of the assessment, ease of access to information is an important consideration,
- This means that familiarity of the team with the country may play a role in the proposed selection.



# Key tasks – Component A

1. Selection of Countries
2. Assessment of road user charges, revenue levels and application to road maintenance
3. Presence of or plans for road funds, institutional arrangements, funding sources and arrangements for use
4. Adequacy of past and current funding for road maintenance, road safety and climate change mitigation and adaptation





# Key tasks – Component A (continued)

5. Identification of electricity usage taxes, revenue and ratio per kwh to establish the possible revenue loss when EV's become more widespread
6. Assess the potential and any existing experience in compensating for revenue loss from transition to electricity
7. Assess for existing legislation and other means promoting low carbon and or low pollution transport
8. Assess the involvement and opportunities for the private sector in the collection of road user charges and the financing or road maintenance

# Key tasks – Component B

1. Identify current and emerging technologies that will not be affected by decarbonisation and can be used to encourage transition
2. Describe the most promising technologies for revenue collection and assess the feasibility of introduction
3. Estimate revenue and cost potential and legal and institutional obstacles of promising technologies as described



# Key tasks – Component C

1. Assess through modelling the potential change in fuel tax revenue due to change in fleet composition and accompanying transition to zero emission vehicles
2. Assess through modelling the potential change in electricity tax revenue is expected to change due to zero emission technology. Assess the potential for any revenue to be earmarked for the road sector
3. Describe possible transition roadmaps that will enable sufficient funds to be collected for road maintenance.





# Key tasks – Component D

1. Meetings and workshops in selected countries to increase data accuracy/quality
2. Publication 1 – Road Maintenance Financing and Cost Recovery Options in Asia and the Pacific
3. Publication 2 – Technology Options for Road User Charging Systems
4. Publication 3 – Mapping the Future of Road User Charging in Developing Asia and the Pacific
5. Presentations at international events



# Indicative Work Plan

	2023									2024			
	Q2			Q3			Q4			Q1		Q2	
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
<b>Task 0: Conduct virtual kick-off meeting with ADB representatives, prepare inception report</b>	24/04/2023 - 23/05/2023												
0.1: Prepare kick-off meeting and detailed project timeline	█												
0.2: Conduct kick-off meeting	◆												
0.3: Draft and finalize meeting minutes	█												
0.4: Draft, finalize and <i>submit and finalize inception report</i> to ADB	█	▲											
<b>Task 1: Identify and assess current funding approaches</b>	24/04/2023 - 23/09/2023												
1.1: Define and justify the selection of DMC countries	█												
1.2: Assess main road user charges (RUC), revenue levels, application to road maintenance incl. legal docs	█	◆											
1.3: Determine existence/planned establishment of road funds, funding sources, use arrangements		█											
1.4: Determine adequacy of budget allocations for road maintenance/safety, climate mitigation/adaptation		█											
1.5: Identify taxes (ratio) applied to electricity usage/the revenues collected from these (incl. legal docs)		█											
1.6: Assess potential/experiences w/ the use of electricity taxes transitioning away from fossil fuel vehicles		█											
1.7: Assess existence of any pertinent regulations promoting low carbon road transport		█											
1.8: Assess the private sector role in collecting RUC, financing road maintenance, identify barriers			█										
<b>Task 2: Identify and assess technology options</b>	29/05/2023 - 23/12/2023												
2.1: Identify and describe relevant systems and technologies to improve the collection of RUC			█										
2.2: Describe in detail a minimum of 5 systems and technologies incl. SWOT			█										
2.3: Estimate the expected revenue levels/collection costs for the countries incl. legal amendments				█									
<b>Task 3: Prepare transition roadmap</b>	23/08/2023 - 23/03/2024												
3.1: Model fuel tax revenue changes over time / Impact assessment					█								
3.2: Model electricity tax revenue change over time/ Potential assessment						█							
3.3: Describe road map(s) for transitioning to other RUC approaches/technologies							█						
<b>Task 4: Knowledge Products and Capacity Building</b>													
Subtask 4.1 Carry out meetings/workshops in at the selected countries ( <b>dates to be discussed</b> )		◆	◆	◆	◆								
Subtask 4.2: Prepare Publication 1 – Road Maintenance Financing and Cost Recovery Options in Asia and the Pacific					▲	◆	◆	◆	◆	◆	◆	◆	◆
Subtask 4.3: Prepare Publication 2 – Technology Options for Road User Charging Systems						▲	◆	◆	◆	◆	◆	◆	◆
Subtask 4.4: Prepare Publication 3 – Mapping the Future of Road User Charging in Developing Asia and the Pacific								▲	◆	◆	◆	◆	◆
Subtask 4.5: Present at least one publication/ initial findings in two ADB events (Tbilisi/May '23, Manila/Sep '23)		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
<b>Prepare monthly progress updates (due last week of each month)</b>		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<i>Legend</i>	Highways Workshop • 22-23 May 2023 • Tbilisi, Georgia █ Task time frame █ Subtask duration ◆ Meeting/Workshop ▲ Report/Publication ◆ Review period												

# Approach

- **Component A**

- Desk research on present approaches to revenue collection and financing using sources such as OECD, PIARC, IRF, IRU, WB, EBRD, ADB and local sources, including legislation
- Assessment and review of budget allocations through budget reviews and if needed, use of national support staff to collect additional information
- Review and consequences of transition zero emission vehicles and what this means for revenue through assessing differences of tax per kwh equivalents
- Legal review using national legal databases and other sources if needed.





# Approach

- **Component B**
  - The options analysis will review all technologies available and assess how they can be used to generate revenue and achieve inclusion of externalities in transport. This relies on the experience of the entire team
  - Once the most promising technologies have been identified, these will be described in a manner that allows policy makers to determine for themselves its feasibility in the national political and social context
  - Each of the five technologies will be assessed for revenue potential and ability, willingness to pay, using various techniques. A lot of this work will be performed by local researchers.



# Approach

- **Component C**
  - Development of three transition scenarios for transition to zero carbon use, accounting for low, medium and high levels of penetration of EV's
  - Estimating the speed and depth of the transition and how this will affect the use of alternative fuels
  - The scenarios will also consider political and social objectives related to the externalities of transport



# Challenges ahead

- Quality, Completeness and Adequacy of Data/Information available
- Uncertainty about the future, a new vehicle technology may come along tomorrow that upends everything
- Estimates of cost of different technologies may differ by location and condition, only broad estimates are possible
- The development of a transition scenarios in the environment is fraught with uncertainty and relies on a lot of assumptions that may or may not hold over time.





# Deliverables

- Inception Report
- Publication 1 – Road Maintenance Financing and Cost Recovery Options in Asia and the Pacific.
- Publication 2 – Technology Options for Road User Charging Systems.
- Publication 3 – Mapping the Future of Road User Charging in Developing Asia and the Pacific.
- In-country workshop reports
- Presentation and Major Workshops / Events



# Questions ?



# Thank you for your attention

