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Roll-out the e-buses!

Operational lessons learned from
public transport operators

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UITP

The voice of public transport worldwide

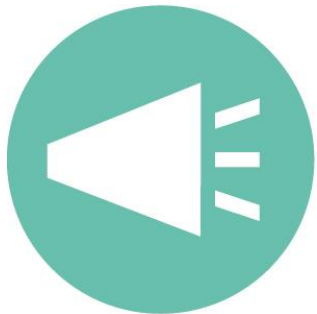


ABOUT UITP

 **+1,600** **MEMBER COMPANIES**

 **99**
FROM COUNTRIES

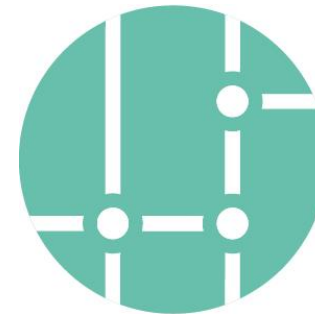
 **17**
OFFICES



ADVOCACY



KNOWLEDGE



NETWORKING



ELECTRIC MOBILITY & DEVELOPMENT

AN ENGAGEMENT PAPER FROM THE WORLD BANK AND UITP



Find the report on uitp.org!

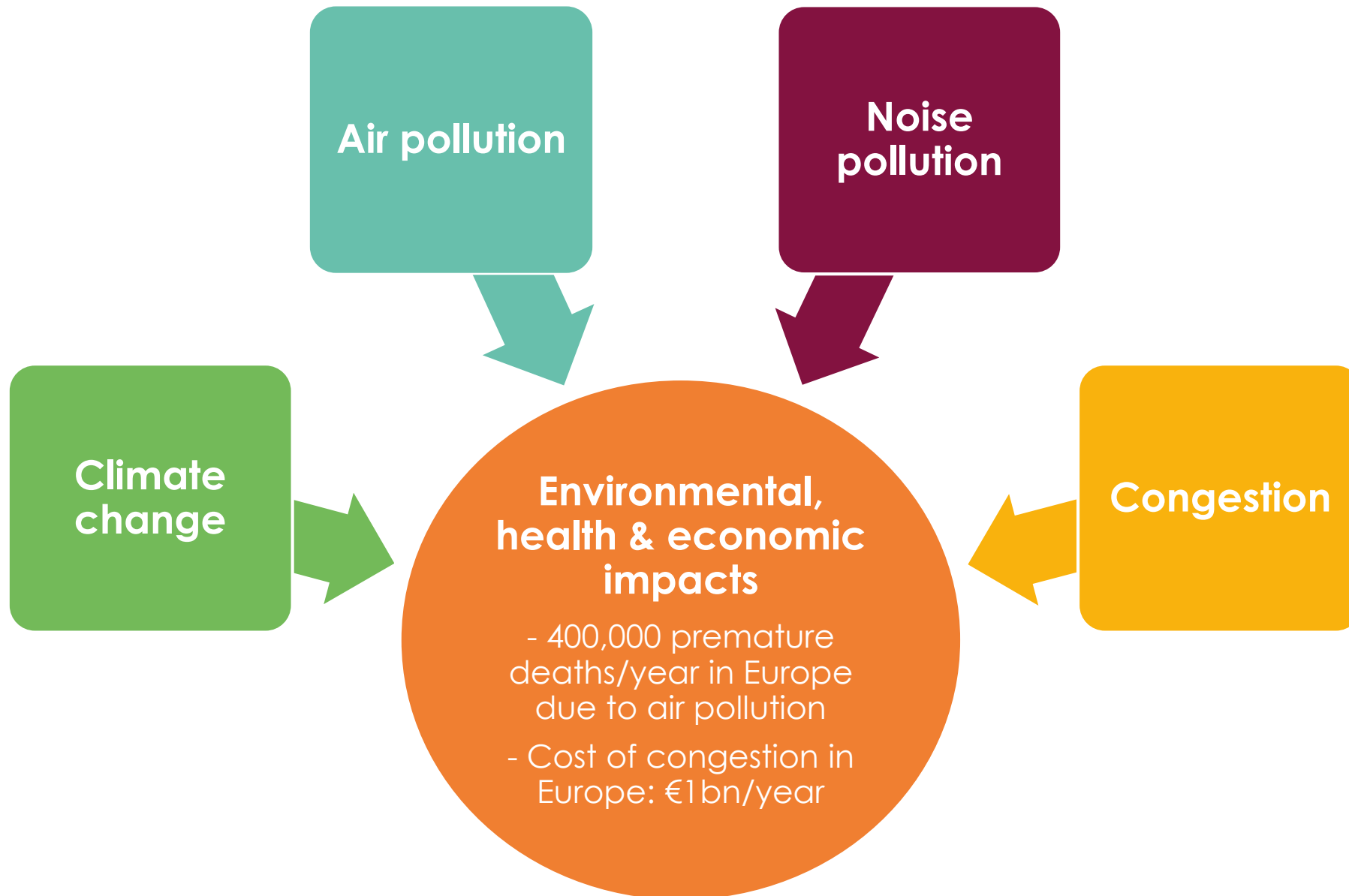




URBAN CHALLENGES

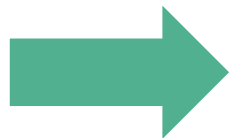


➤ URBAN CHALLENGES



URBAN CHALLENGES – THE ROLE OF URBAN TRANSPORT

- More than 50% of the world population lives in cities
- Cities generate 70% of global CO₂ emissions
- Transport sector CO₂ emissions are increasing
- Road transport: 72% of the EU's transport emissions
>50% of all NO_x emissions
- Public transport: 3-6% of transport emissions in cities



More clean urban transport

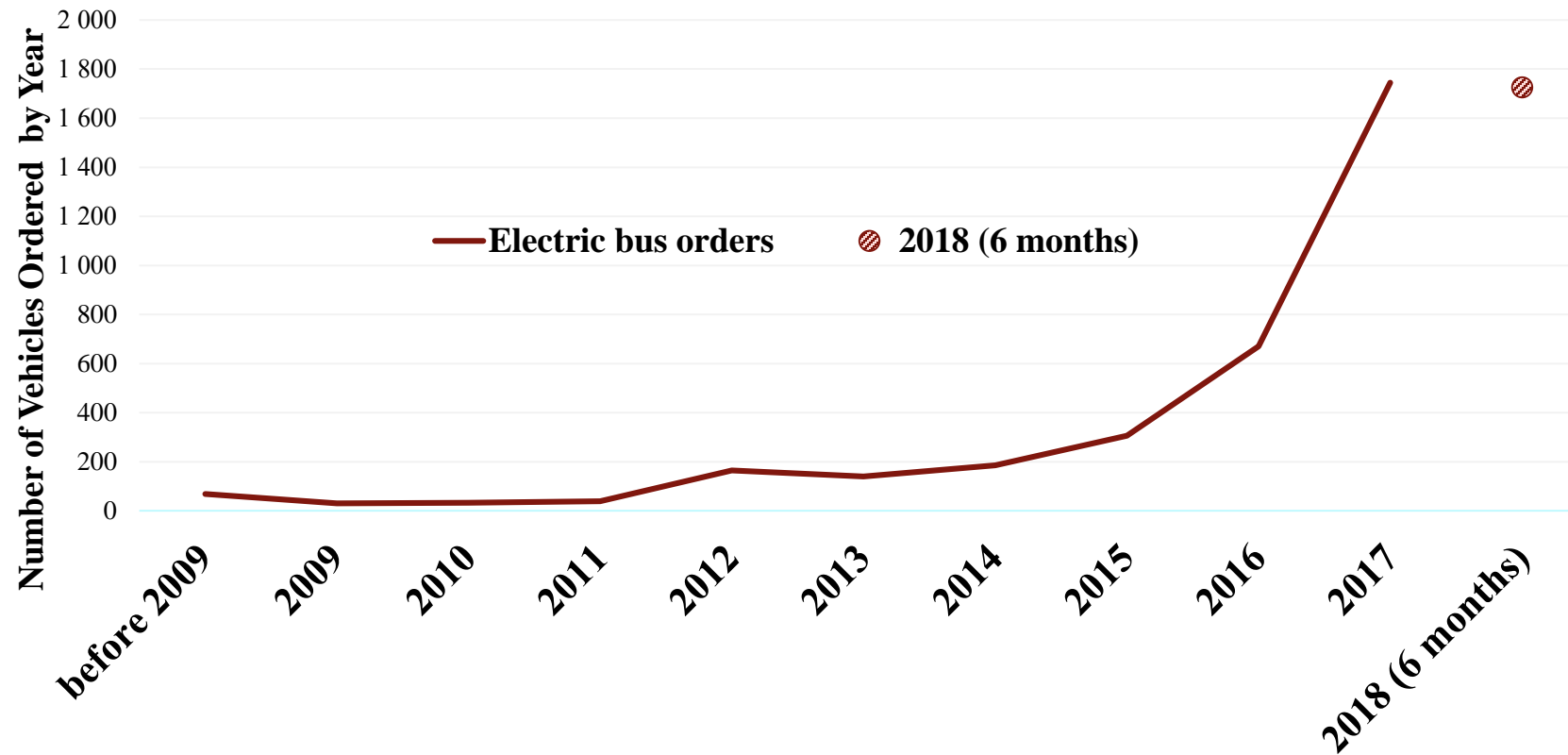


ELECTRIC BUSES

Market uptake, local commitments



> E-BUS ORDERS - EUROPE



Source: UITP-World Bank, 2018

➤ E-BUSES: LOCAL COMMITMENTS

- **Barcelona** – From 2025, all new buses procured will be ZE
- **Cluj-Napoca** – By 2025, the city's whole PT fleet will be ZE
- **Copenhagen** – From 2019, all new buses procured will be ZE
- **Warsaw** – As from 2025, 20% of the bus fleet ZE and growing
- **Paris** – Target of 4,700 zero/low emission buses by 2025
- **Amsterdam** – All bus fleet by GVB will become electric by 2025
- **Flanders** – By 2025, all De Lijn urban buses will be BEVs or PHEVs
- [...]



DEPLOYING E-BUSES

Lessons learned and recommendations

THE PANEL

CITY	BEVs	OTHER
Shenzhen	16,359	
London	135	10 FCEVs
Eindhoven-Arnhem	43	2 FCEVs
Warsaw	31	
West Covina	30	
Budapest	20	36 IMC trolley-buses
Moscow	19	IMC trolley-buses
Bratislava	18	
Campinas	15	
Geneva	12	33 IMC trolley-buses
Barcelona	10	346 PHEVs
Santiago	2	
Montevideo	1	

COMMON CHALLENGES

- High up-front costs
- Defining new partnerships
- Planning for new models of operation
- New maintenance profiles and a demand for new skills

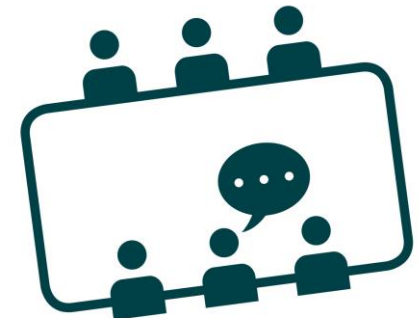
➤ HIGH UP-FRONT COSTS

- One e-bus = twice as much as a conventional bus
- Accessing the appropriate funding sources:
 - Operator's own funds
 - Lease agreements
 - Government subsidies
 - EU Funds



➤ DEFINING NEW PARTNERSHIPS

- Energy providers
 - Defining the operators' needs
 - Assessing the network's capacity
 - Importance of standardisation and interoperability
- Competent city authorities
 - Placement of charging infrastructure
- OEMs
 - Defining needs
 - Maintenance
 - Sharing responsibility



➤ PLANNING FOR NEW MODELS OF OPERATION

- Scheduling and operating tasks
 - Taking into account charging times
 - Battery range variations
- Depot management
 - Parking and release of vehicles



➤ NEW MAINTENANCE PROFILES AND A DEMAND FOR NEW SKILLS

- Maintenance of vehicles
 - Partnership with OEMs
- Maintenance and management of electric infrastructure
 - Technical staff with knowledge in electrical systems
- Drivers
 - Energy-efficient practices
 - Learning curve





PREREQUISITES TO THE SUCCESSFUL DEPLOYMENT OF E-BUSES

- Coherent political vision
- Appropriate funding
- Careful planning
- Successful partnerships





ARE E-BUSES THE ANSWER TO TODAY'S URBAN CHALLENGES?



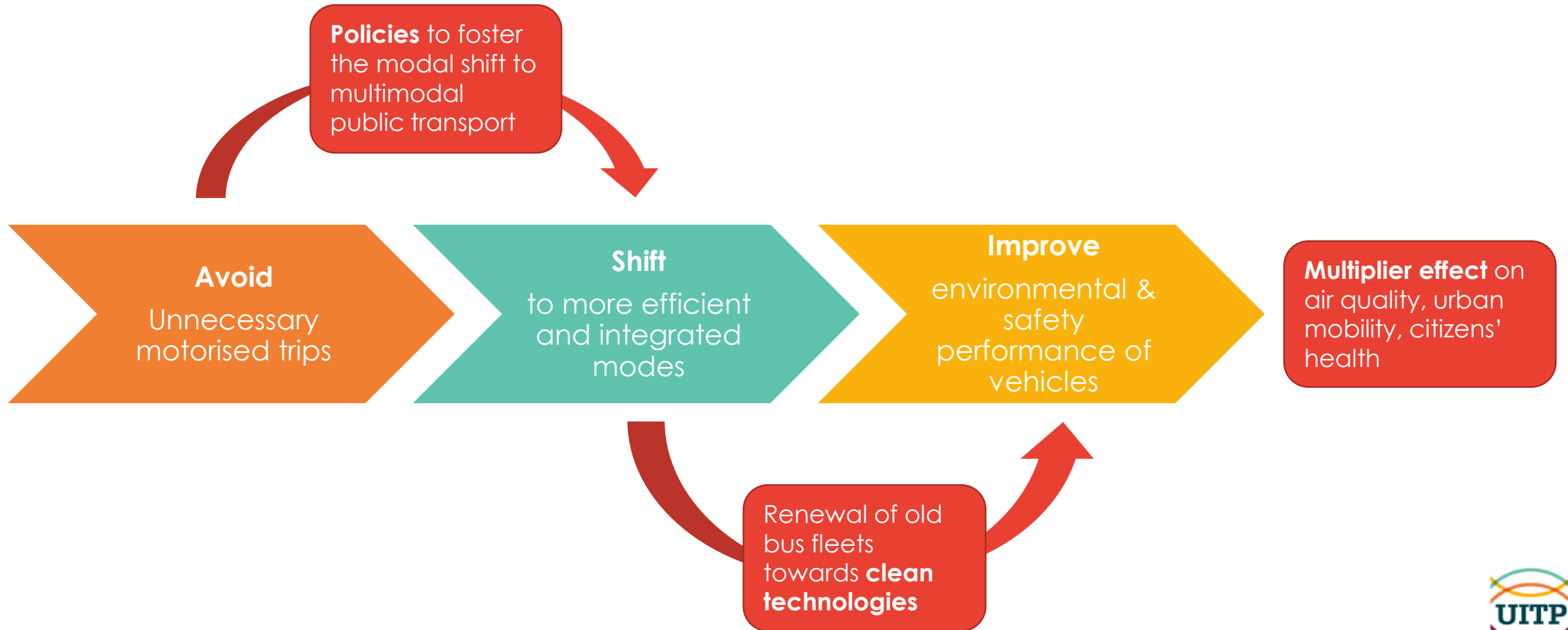


E-BUSES: THE ANSWER TO TODAY'S URBAN CHALLENGES?

- **Don't lose sight of the bigger picture**
 - Public transport emissions = 3-6% of EU city transport emissions
 - E-buses: zero **tailpipe** emissions
 - Environmental and social costs of battery & energy production
- **Part of the solution – the hummingbird's share**
 - Every little bit counts
 - Improving air quality **locally**
- **Is it the right choice for your city?**
 - Local context
 - Risk assessment

➤ E-BUSES: PART OF THE ANSWER TO URBAN CHALLENGES

- As part of a systemic approach





THANK YOU!

Meredith Baker

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Read the UITP-World Bank electromobility report here:

<http://www.esmap.org/emobility>

