Introduction to Electric Mobility

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In this video you will learn:

- A global overview: the sustainability challenge
- Getting e-mobility right: opportunities and requirements
  - Planning and policy framework: Sustainable Urban Mobility Planning
    - Case Study: Kisumu Sustainable Mobility Plan (Kenya)

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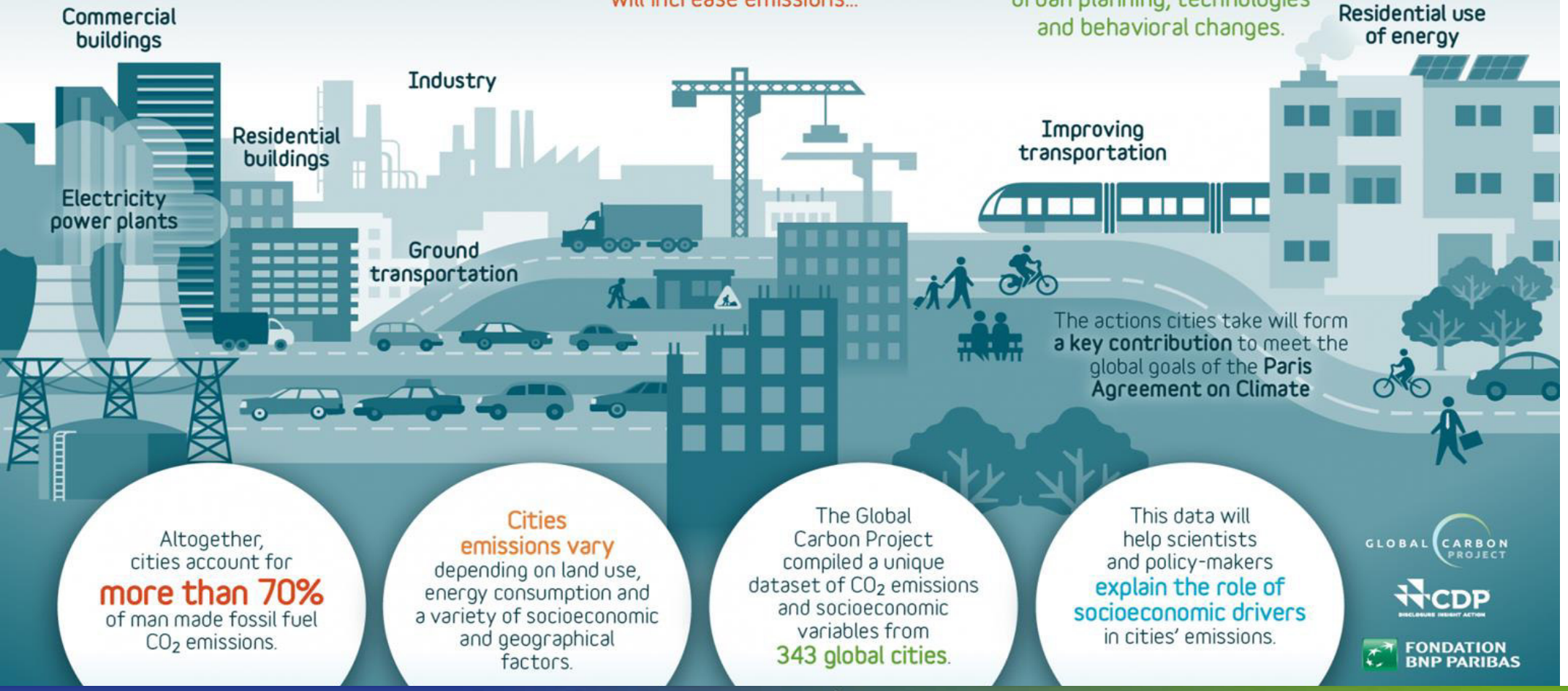
High energy use and dense populations – the city is a CO_2 hotspot

1 The main contributing sectors are:

2 Urbanization will continue in the future, and this process will increase emissions...

3 ...unless cities take actions to reduce emissions through urban planning, technologies and behavioral changes.



Altogether, cities account for **more than 70%** of man made fossil fuel CO_2 emissions.

Cities emissions vary depending on land use, energy consumption and a variety of socioeconomic and geographical factors.

The Global Carbon Project compiled a unique dataset of CO_2 emissions and socioeconomic variables from **343 global cities**.

This data will help scientists and policy-makers **explain the role of socioeconomic drivers** in cities' emissions.

GLOBAL CARBON PROJECT

CDP

FONDATION BNP PARIBAS

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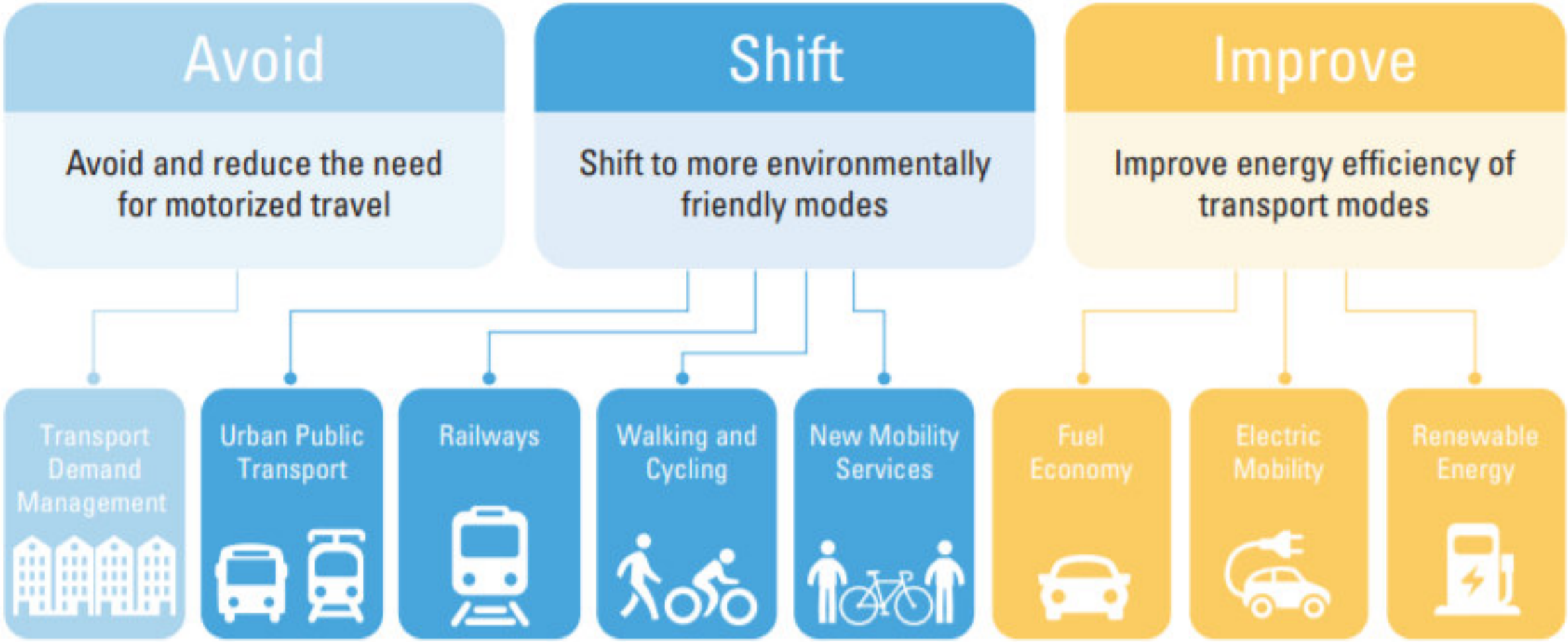
The Avoid-Shift-Improve framework



Accessibility- Bringing People and Places together

Source: SLoCaT, 2018

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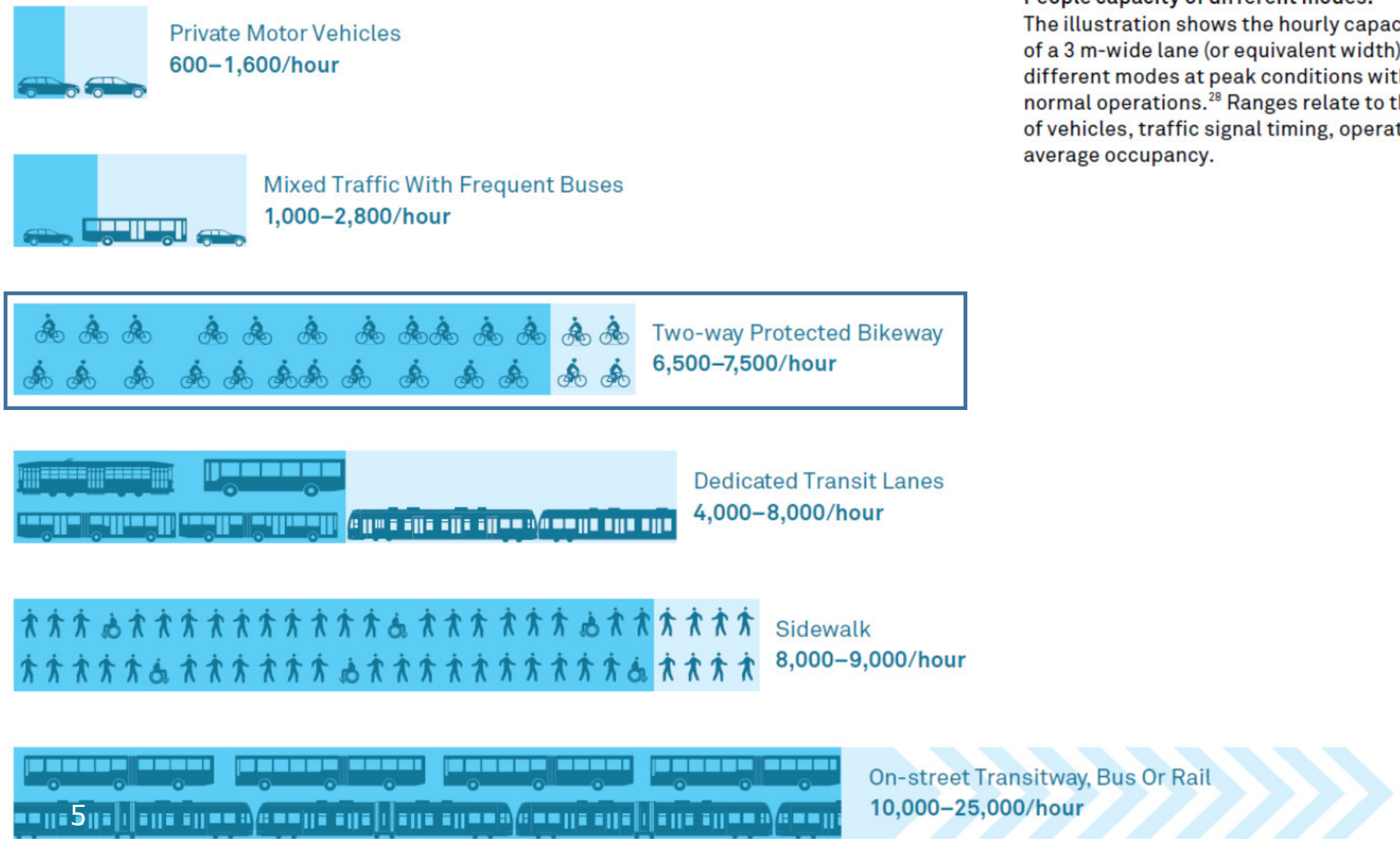
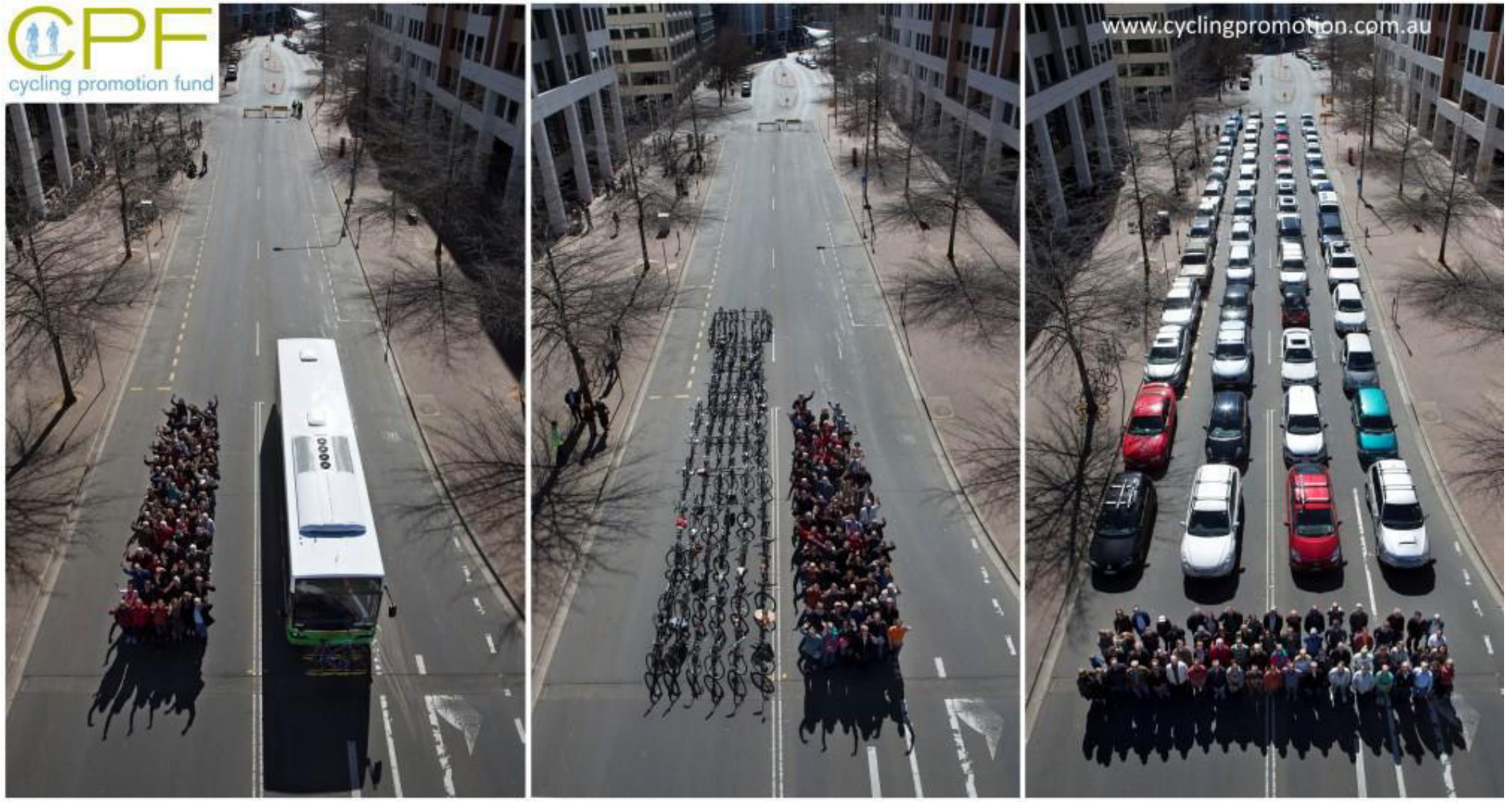
Alternative modes of transport by capacity



People capacity of different modes.
The illustration shows the hourly capacity of a 3 m-wide lane (or equivalent width) by different modes at peak conditions with normal operations.[28] Ranges relate to the type of vehicles, traffic signal timing, operation, and average occupancy.

E-mobility implementation: how to get it right?



What challenges can be tackled with E-mobility?

Policy domain	Policy goal	Specific policy targets
Public health (& environment	Air quality	Limit NOx, Sox, particulate emissions
Climate change	Limit global warming	Reduce greenhouse gas emissions, esp. CO_2
Energy	Energy security/affordability	Renewable energy sources, energy efficiency and decarbonisation
Transport	Mobility/accessibility	Reduce congestion and ensure an efficient decarbonised transport system
Economy	Increase social welfare	Ensure competitive technology/industry, create jobs

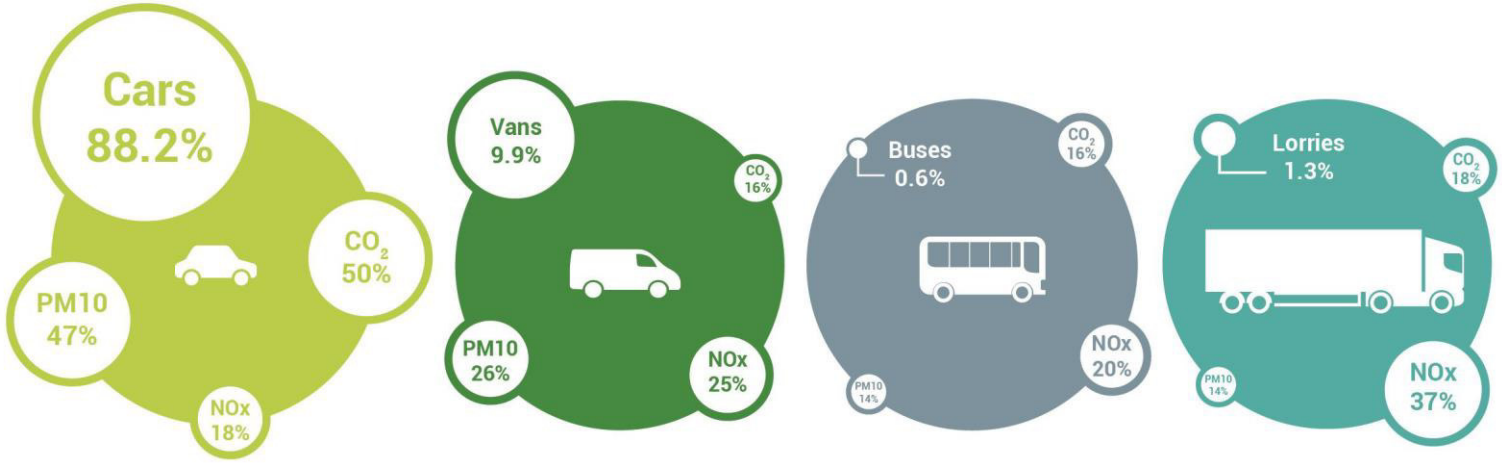
An opportunity to transform the mobility system

- E-mobility can steer changes in travel behaviour and contribute to more efficient use of resources
- Potential to enhance multimodality and resilience of the network
- Chance to give priority to sustainable modes
- Provide alternatives and new mobility services to more effectively address user needs
- Improve the cost-effectiveness of new mobility solutions by exploiting synergies and service integration

Maximise impact and efficiency

Focus on heavy-duty vehicles:

- Fleets that are the most polluting ones (buses, trucks)
- Fleets which cover long distances per day
- Direct decision by the public local authorities
- Big impact of the electrification of these fleets (compared to cars)



Source: Transport Decarbonisation Alliance

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E-mobility support schemes

Strategic, financial and regulatory incentives

- **Vision statement and a set of targets**
- **Procurement programmes** to kick-start demand and stimulate innovators to increase the availability of EVs on the market
- **Policy measures** that increase the value proposition of EVs (e.g. electricity tariffs for EV charging , establish green and industrial park , …)
- Requirements regarding **interoperability** and minimum availability levels for publicly accessible charging infrastructure
- **Regulatory measures** related to charging infrastructure include minimum requirements to ensure “EV readiness” in new or refurbished buildings/ parking lots
- **Deployment** of publicly accessible chargers in cities and on highway networks

Challenges of urban transport planning in emerging economies

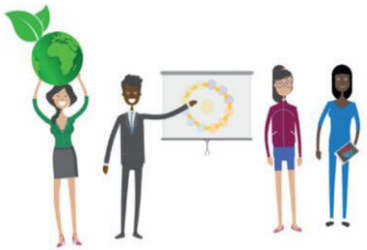
- Urban planning is a **complex task**. Planners are confronted with often **contradictory demands**.
- It is noted that urban form, once built, is hard to change. It is best to design for integrated urban design and transport outcomes in the first place
- Urban form designed around transit and mixed use centres will reduce the need for travel
- Requires integration of land use planning, transport and financing.

What is a SUMP?

An integrated, strategic, long-term transport plan with clear goals designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life

© Source: Rupprecht Consult (editor), Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, Second Edition, 2019.

Essence of SUMP: The eight principles



1. Plan for sustainable mobility in the "functional urban area"

2. Cooperate across institutional boundaries

3. Involve citizens and stakeholders

4. Assess current and future performance

5. Define a long-term vision and a clear implementation plan

6. Develop all transport modes in an integrated manner

7. Arrange for monitoring and evaluation

8. Assure quality

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Kisumu Sustainable Mobility Plan (KSMP)

- The City of Kisumu is experiencing rapid economic and population growth, resulting in high rates of urbanization and motorization.
- Conventional planning solutions have focused more on addressing the needs of motorists, neglecting the needs of pedestrians, cyclists and public transport
- The KSMP recognizes that integration of land use and transport planning is fundamental to improving the quality of life for Kisumu residents.
- The KSMP has the provision for better public transport and NMT facilities, within its 10-year goals for mobility, all public transport vehicles are Euro 4 or better, introduction of electric vehicles

Additional References

- Integration is key: the role of electric mobility for low-carbon and sustainable cities: https://unhabitat.org/integration-is-key-the-role-of-electric-mobility-for-low-carbon-and-sustainable-cities
- Kisumu Sustainable Mobility Plan: https://www.itdp.org/wp-content/uploads/2021/03/Kisumu-Sustainable-Mobility-Plan-210216.pdf
- https://wetu.co.ke/wemobility/

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