

# 4. Urban Transport 2

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#### 3. Urban transport 2

**Scenario:** Demand for mobility in your city/municipality is increasing

**Question:** What are the ways to improve the efficiency of transport in your city?



#### **Training Overview**

#### **1. Improving Efficiency**

• Potential of improving efficiency (fuel economy, electric vehicles)

#### 2. 'Improve' Policies

- Policy case studies on 'improve'
- Technology support policies: EV support; charging infrastructure rollout; mobility as a service

#### 3. Activity

10 mins

15 mins

15 mins



- After explaining "avoid" in urban planning, and "shift" in urban transport, we now cover "improve" which is increasing the energy efficiency of vehicles
- We explain this in the first section, by explaining what we mean by "energy efficient transport". This is to avoid confusion from more efficient "modes" which was covered in the previous session
- The remaining section explains how policies improve transport efficiency. Again classified into "regulatory", "economic", and "information". This gives policymakers an idea of the degree of intervention they can/should make. For instance, if there is market failure (e.g. fuels are taxed to

reflect environmental damage, but people still buy and use them) then a regulatory intervention is warranted. This is not just an exercise of economic theory. In many countries, proving market failure is a requirement when proposing legislation. Understanding the degree of intervention helps policymakers be strategic in choosing how to deliver change.

 The policies under each classification are also categorised based on how they are delivered in reality. This helps the participant to see everything in one picture to aid decision-making

# 1. Improving energy efficiency



#### Improving energy efficiency in transport



Transport activity is rising and behaviours are shifting to less efficient practices. Energy efficiency improvements have prevented energy use equivalent to 120 million cars.



#### **Opportunity in IEA's Efficient World Scenario (EWS)**

#### **Key policy actions**



- Energy demand could stay flat, despite doubling activity levels.
- Passenger cars and trucks offer twothirds of potential savings.

#### NATIONAL

- Improve coverage and strength of transport policies for cars and trucks and non-road modes.
- Provide incentives to support uptake and sustainable use of efficient vehicles.
- Information to support efficient vehicle uptake and mode shift.

#### NATIONAL & LOCAL



## What do we mean by improving energy efficiency in transport?



#### Consume Less Fuel

#### More efficient vehicles...





# Transport more people



## What do we mean by improving energy efficiency in vehicles?



 Increasing the fuel economy of engines and vehicles directly "improves" the efficiency. This is done on a national level.

#### ICE potential, through hybridisation and light-weighting





### What do we mean by improving energy efficiency in transport?



Passenger cars WTW GHG Emissions and Energy Demand changes from 2010 to 2020 all power trains (solid dots 2020 hollow dots 2010)



energy

Department: Energy REPUBLIC OF SOUTH AFR



## What do we mean by energy efficiency in transport?



#### Use more efficient powertrains

• Electric mobility not limited to cars. More efficient powertrain also exist **for other types of vehicles** 



**Electric 2-wheelers** China: 250 million stocks, 30 million sales/yr



Low Speed EVs China: ~4 million stocks, >1 million sales/yr



Low Speed EVs China: ~4 million stocks, >1 million sales/yr



### What do we mean by improving energy efficiency in transport?



Transport more people

• Car sharing brings modest but important benefits in transport efficiency by increasing occupancy rates



Between 2% and 5% of the service's members sold a car due to their use of carsharing



Users report a 13% increase in cycling and 19% increase in walking



7% to 10% of the respondants did not buy a vehicle thanks to carsharing



A 4% to 18% (average 10%) reduction in greenhouse gas (GHG) emission across the study population



Each vehicle of the service removed 7 to 11 vehicles from city roads. In total, it could represent as much as 28.000 vehicles off the road



A 6% to 16% (in average 11%) reduction in vehicle miles traveled (VMT)





#### Make more efficient vehicles...





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Regulatory / Institutional

- Mandatoryto-buy/sell
- Mandatory-touse

- Fuel economy standards (**National Level**)
- Phase-out of older and polluting vehicles (**Local/National Level**)
- Sales quota for dealerships (Local/National Level)



Regulatory / Institutional

- Mandatory-tobuy/sell
- Mandatoryto-use

• Differentiated access for vehicles in the city

- Low Emissions Zone (LEZ)
  - ICE of high emissions standard, alternative fuel vehicles, hybrid vehicles, electric vehicles

• Zero Emissions Zone (ZEZ)

• Strictly all-electric vehicles



Regulatory / Institutional

- Mandatory-tobuy/sell
- Mandatoryto-use

Case Study: Differentiated access for electric vehicles, Paris
Visible stickers related to emissions are placed on the windshield



Source: https://www.toi.no/getfile.php?mmfileid=49204



Regulatory / Institutional

- Mandatory-tobuy/sell
- Mandatoryto-use

# Case Study: Differentiated access for electric vehicles, Paris Reduced NOx, and more modern fleet composition



Source: https://www.toi.no/getfile.php?mmfileid=49204



•	Purchase	incentive	es (often	National	Level)

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- Differentiated taxation or subsidies
- Fee-bates

• VAT exemptions

- Cheaper / easier-tobuy/sell
- Cheaper / easier-to-use

**Economic** 



Economic

 Cheaper / easier-tobuy/sell

 Cheaper / easier-to-use • Fuel taxes (often National Level)

Circulation incentives

- Emissions-based road pricing
- Free / dedicated parking
- Access to special lanes (e.g. bus lanes)
- Roll-out of support infrastructure (e.g. charging for EV and/or hydrogen vehicles)



Economic

- Cheaper / easier-tobuy/sell
- Cheaper / easier-to-use

- Circulation incentives
  - Free / dedicated parking: Sweden found net positive impacts on EV use and circulation caused by free parking for EV only, delivered along other EV incentives



Source https://www.nordicenergy.org/wp-content/uploads/2017/10/gupea 2077 53160 1.pdf



Economic

- Cheaper / easier-tobuy/sell
- Cheaper / easier-to-use

 Roll-out of support infrastructure (e.g. charging for EV and/or hydrogen vehicles)







Charging Infrastructure rollout

Parking Spots For Ev Charging SUCCESSFUL GRID INTEGRATION



#### Economic

- Cheaper / easier-tobuy/sell
- Cheaper / easier-to-use

• Roll-out of support infrastructure (e.g. charging for EV and/or hydrogen vehicles)

#### **Costly Affair**

- O Govt fails to choose between Japanese and Chinese charging technologies for EVs
- Charging stations have to install both technologies which will increase their costs substantially
- Plugs and communication protocols to link batteries to chargers need to be limited to keep costs down
- Current international standards used by most vehicle manufacturers globally are CCS and CHAdeMO
- Power Ministry guidelines specify technical parameters for slow and fast varieties of CCS, CHAdeMO and Bharat platforms



CHAdeMO is a charging platform used by Japanese car makers like Suzuki and Toyota, while Combined Charging System (CCS) is promoted by 15 out of 20 major OEMs across the globe

#### Early efforts on standardisation reduces system costs for everyone involved

Source https://economictimes.indiatimes.com/industry/auto/auto-news/ev-charging-stations-asked-to-install-both-japanese-chinese-technologies/articleshow/67120981.cms?from=mdr



Information / Capacity

- Known
- Popular
- Easy to understand

• Fuel economy labelling (National Level)

• Open data and apps to show public transport (shift policy) and carsharing options (improve policy) for point-to-point travel





Open data and apps >> mobility as a service (MaaS)

Source: https://transportknowledgehub.org.uk/case-studies/mobility-service-west-midlands-elsewhere/



Information / Capacity

- Known
- Popular
- Easy to understand

• **Case study:** Accessibility to jobs in Lisbon before (left) and after (right) the introduction of shared mobility solutions



Source https://www.itf-oecd.org/shared-mobility-innovation-liveable-cities



Information / Capacity

- Known
- Popular
- Easy to understand

• **Case study:** Grab starting to organise MaaS through its app. Singapore, Bangkok, Kuala Lumpur as testbed due to open data and organized public transport

#### SHARING ECONOMY

#### Grab to integrate public transport data in Southeast Asian mega cities

Ride-hailer eyes train and bus fare payments

KENTARO IWAMOTO, Nikkei staff writer APRIL 22, 2019 12:27 JST



Grab will integrate public transport information to the ride-hailing app in Singapore. (Photo by Kentaro Iwamoto)

Source https://asia.nikkei.com/Spotlight/Sharing-Economy/Grab-to-integrate-public-transport-data-in-Southeast-Asian-mega-cities



# 3. Activity



#### Activity

• What urban transport policies can you think of? Classify the post-its by colour (regulatory, economic, information) and label with A, S, and I (avoid, shift, improve)

	Regulatory	Economic	Information
avoid (a)			
SHIFT (S)			
IMPROVE (I)			



#### E-BIKES AND E-SCOOTERS: DRIVERS OF CLIMATE ACTION

are not required to ride.



addition to pedal cyclists.

Choosing an e-bike or scooter over a car translates to measurable emissions reductions:

are well-maintained



A 5% increase in trips made by bicycle and electric Electric bikes and scooters are more than a convenient micromobility modes instead of cars globally would first-last mile solution in cities. They also reduce emissions reduce CO2 emissions by 7% the equivalent of taking more than 134 million cars off the road, by 2030. while catalyzing a broader shift toward sustainable transport. OUIET STREETS E-bikes and scooters are quieter than cars and motorcycles, making streets and public spaces more pleasant for pedestrians and cyclists CONVENIENT ALTERNATIVES E-bikes are competitive with cars on travel time, especially for trips up to 10km. SAFE STREETS ex. As the number of -bike and scooter riders, EOUITABLE cyclists, and pedestrians ACCESS ncreases, streets become E-bikes and e-scooters safer for all users. are attractive to-and increasingly used by—women, older adults, and other groups who have not felt comfortable on traditional bicycles. E-bikes and scooters fill gaps in the transport network, making a combination of cycling, walking, and public What cities can do: transit the easy choice over LEGALIZE STANDARDIZE DESIGN MANAGE MONITOR cars for more trips: Make low-speed e-bikes and Clearly define and enforce Ensure cycle lanes are protected Enforce rules for bike- and Collect and analyze data on trip speed maximums for e-bikes and length, frequency of use, and scooters legal in cities. Regulate and form a complete network, scooter-share operators to In Portland, Oregon, 6% of e-scooter users reported them as bicycles, not motor e-scooters to distinguish where safely accommodating low-speed ensure that sidewalks are clear, destinations to better quantify getting rid of a car due to the availability of they can safely share cycle lanes vehicles, so license and insurance e-bike and e-scooter riders in and shared bicycles and scooters personal e-mobility use, and scale

with pedal bicycles.

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and improve shared systems.



micromobility options.

# Resources



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#### Resources

• Government-to-government forum comprising 13 countries





- Currently co-chaired by Canada, China and the United States\*, and coordinated by the IEA
- Released several analytical publications (Global EV Outlook, City casebook)



- Engaged stakeholders in high-level roundtables (CEM8 and Pilot City Forum in Beijing, June 2017)
- Instrumental to mobilize action and commitments (<u>Paris Declaration on Electro-Mobility and Climate</u> <u>Change</u> at COP21, <u>Government Fleet Declaration</u> at COP22)
- > Just launched the EV30@30 Campaign, aiming to achieve a 30% market share for EVs by 2030



• The Global Fuel Economy Initiative (GFEI) works to secure real improvements in fuel economy, and the maximum deployment of vehicle efficiency technologies across the world.





Launched in 2009, now recognized as leading vehicle efficiency initiative in energy and climate reports and discussions



#### Resources



https://www.itfoecd.org/sites/default/files/docs/data-driventransport-policy.pdf



https://www.itfoecd.org/sites/default/files/docs/15cpb\_bigdat a\_0.pdf







Energy REPUBLIC OF SOUTH AFRICA