



4. Urban Transport – improving efficiency

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IEA #energyefficientworld

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Trainer(s): John Dulac

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

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

4. Urban Transport – improving efficiency

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

- Avoid-Shift-Improve vs Regulatory-Economic-Information Grid
- Map out stakeholders

10 mins

20 mins

40 mins

1. Improving efficiency

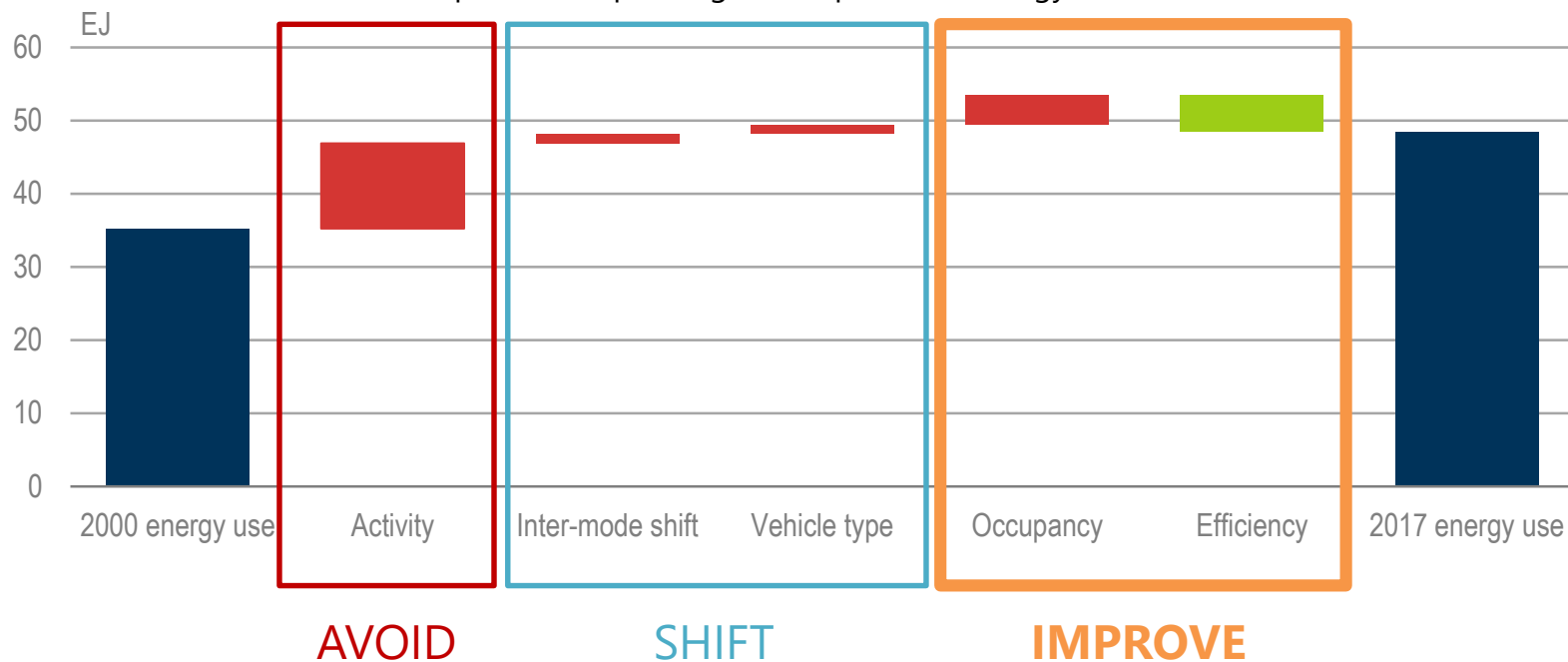
1. Improving efficiency

Where to start?

Tools

What are the steps?

Decomposition of passenger transport final energy use, 2000-17



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

1. Improving efficiency. Potential to improve

Where to start?

Tools

What are the steps?

Opportunity in IEA's Efficient World Scenario (EWS)



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

Key policy actions

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

1. Improving efficiency. More efficient vehicles



Where to start?

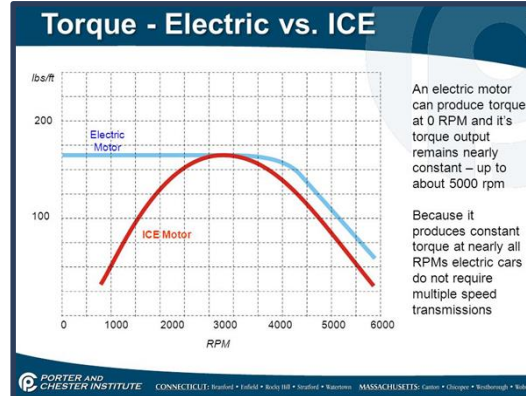
Tools

What are the steps?

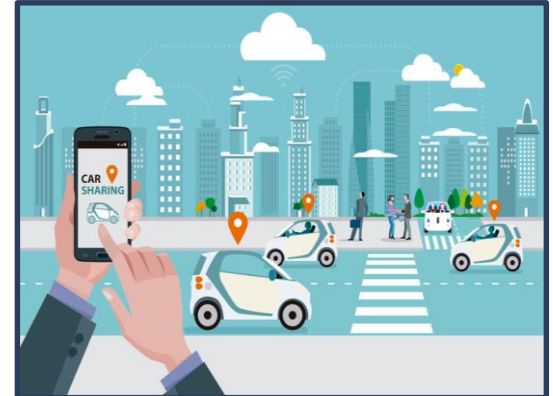
More efficient vehicles...



Consume Less Fuel



Use more efficient powertrains



Transport more people

1. Improving efficiency. More efficient vehicles



Where to start?

Tools

What are the steps?

- Increasing the fuel economy of engines and vehicles directly “improve” the efficiency. This is done on a national level.



ICE potential, through hybridization and light-weighting

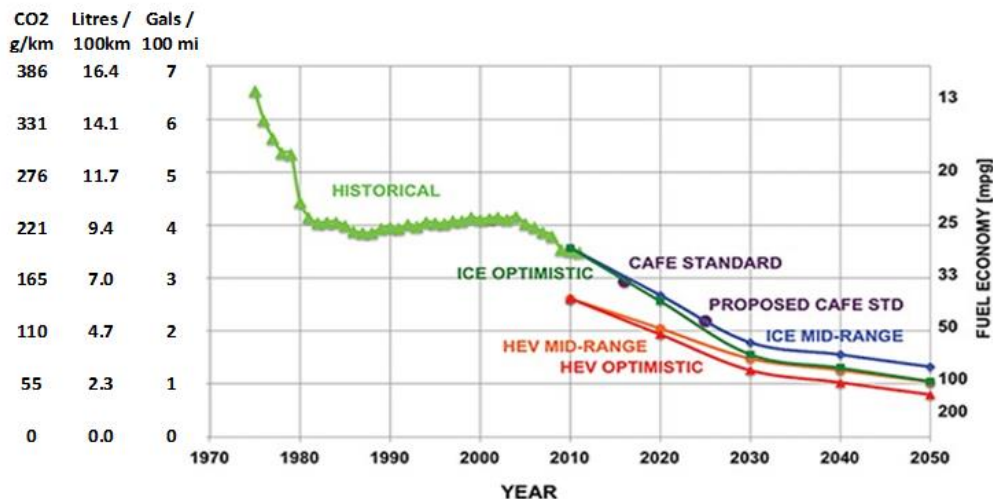


FIGURE 2.1 Historical and projected light-duty vehicle fuel economy.

NOTE: All data is new fleet only using unadjusted test values, not in-use fuel consumption.

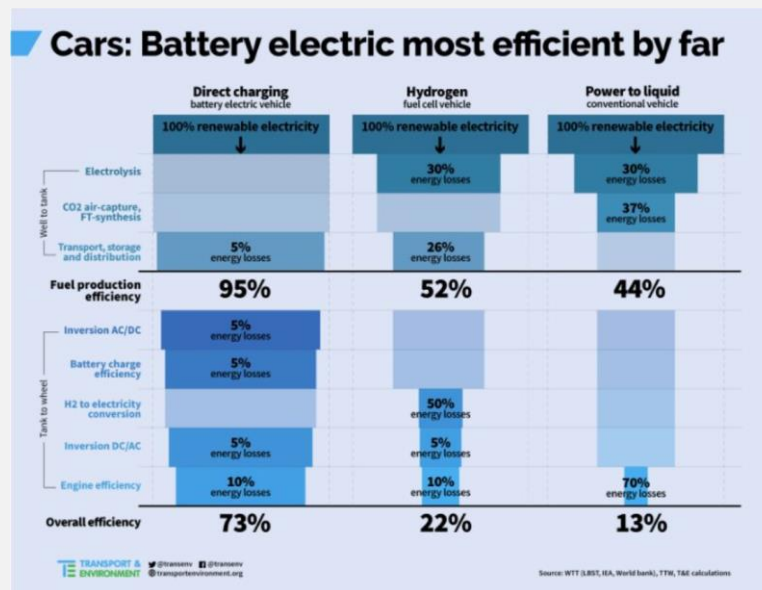
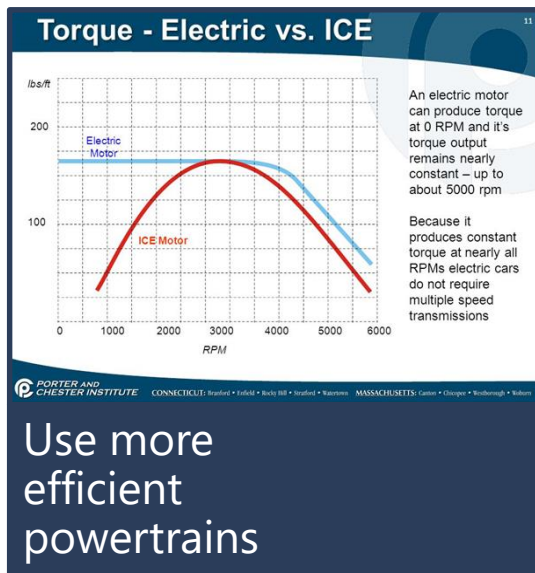
1. Improving efficiency. More efficient powertrains

Where to start?

Tools

What are the steps?

- **Well-to-wheel efficiency** of battery electric vehicles outweigh conventional internal combustion engines by **5-6 times** especially if coming from renewable resources



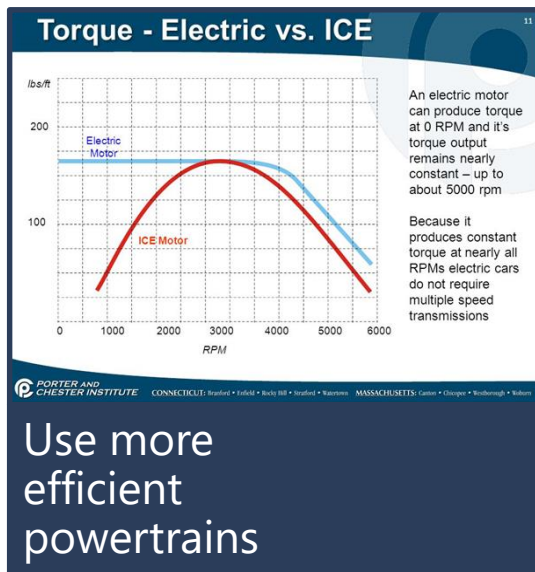
1. Improving efficiency. More efficient powertrains

Where to start?

Tools

What are the steps?

- 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

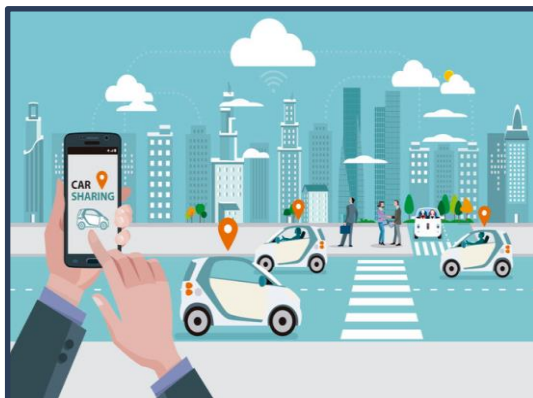
China: ~4 million stocks,
> 1 million sales/yr

1. Improving efficiency. Higher occupancy

Where to start?

Tools

What are the steps?



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



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



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**



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



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



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

2. 'Improve' Policies

What are the policies to encourage the uptake of more efficient vehicles?

2. 'Improve' Policies

Where to start?

Tools

What are the steps?

Make more efficient vehicles...

Regulatory / Institutional

- Mandatory-to-buy/sell
- Mandatory-to-use

Economic

- Cheaper / easier-to-buy/sell
- Cheaper / easier-to-use

Information / Capacity

- Known
- Popular
- Easy to understand

2. 'Improve' Policies. Regulatory/Institutional



Where to start?

Tools

What are the steps?

Regulatory / Institutional

- **Mandatory-to-buy/sell**
- Mandatory-to-use

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

2. 'Improve' Policies. Regulatory/Institutional



Where to start?

Tools

What are the steps?

Regulatory / Institutional

- Mandatory-to-buy/sell
- **Mandatory-to-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

2. 'Improve' Policies. Regulatory/Institutional

Where to start?

Tools

What are the steps?

Regulatory / Institutional

- Mandatory-to-buy/sell
- **Mandatory-to-use**

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



2. 'Improve' Policies. Regulatory/Institutional

Where to start?

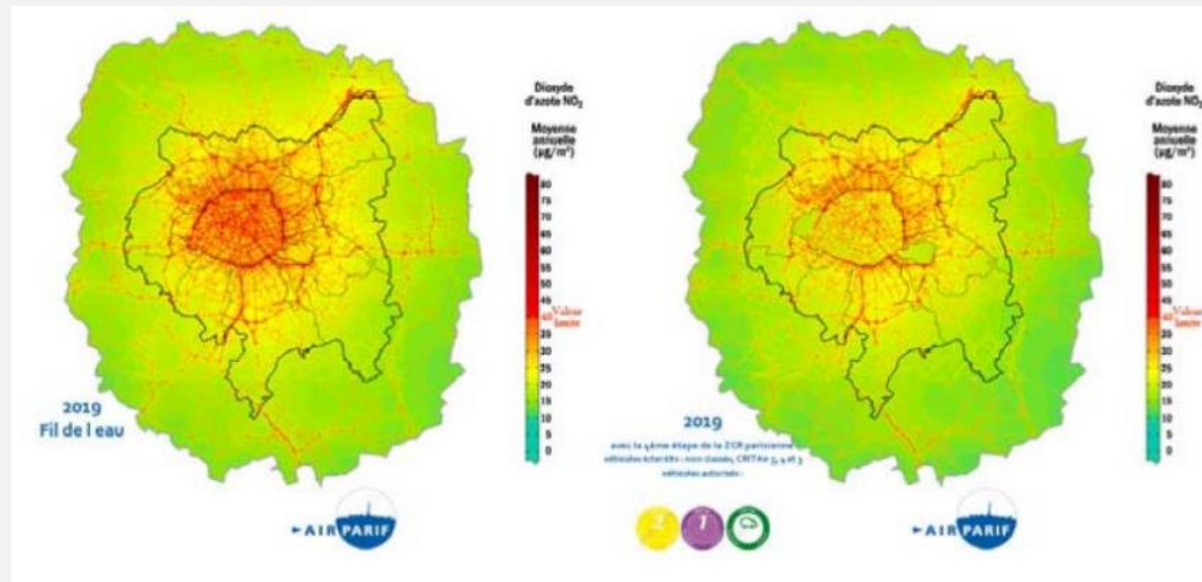
Tools

What are the steps?

Regulatory / Institutional

- Mandatory-to-buy/sell
- **Mandatory-to-use**

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



2. 'Improve' Policies. Regulatory/Institutional

Where to start?

Tools

What are the steps?

Regulatory / Institutional

- Mandatory-to-buy/sell
- **Mandatory-to-use**

- **Case Study:** Differentiated access for vehicles in Metro Manila
 - Freight trucks banned between 6AM-10AM and 5PM-10PM everyday except Sunday and holidays

- Reduced congestion and improved overall throughput



2. 'Improve' Policies. Economic

Where to start?

Tools

What are the steps?

Economic

- **Cheaper / easier-to-buy/sell**
 - Cheaper / easier-to-use
- Purchase incentives (often National Level)
 - Differentiated taxation or subsidies
 - Fee-bates
 - VAT exemptions

2. 'Improve' Policies. Economic

Where to start?

Tools

What are the steps?

Economic

- Cheaper / easier-to-buy/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)

2. 'Improve' Policies. Economic

Where to start?

Tools

What are the steps?

Economic

- Cheaper / easier-to-buy/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



2. 'Improve' Policies. Economic

Where to start?

Tools

What are the steps?

Economic

- Cheaper / easier-to-buy/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

2. 'Improve' Policies. Economic

Where to start?

Tools

What are the steps?


Economic

- Cheaper / easier-to-buy/sell
- **Cheaper / easier-to-use**


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

Costly Affair

- ▷ **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



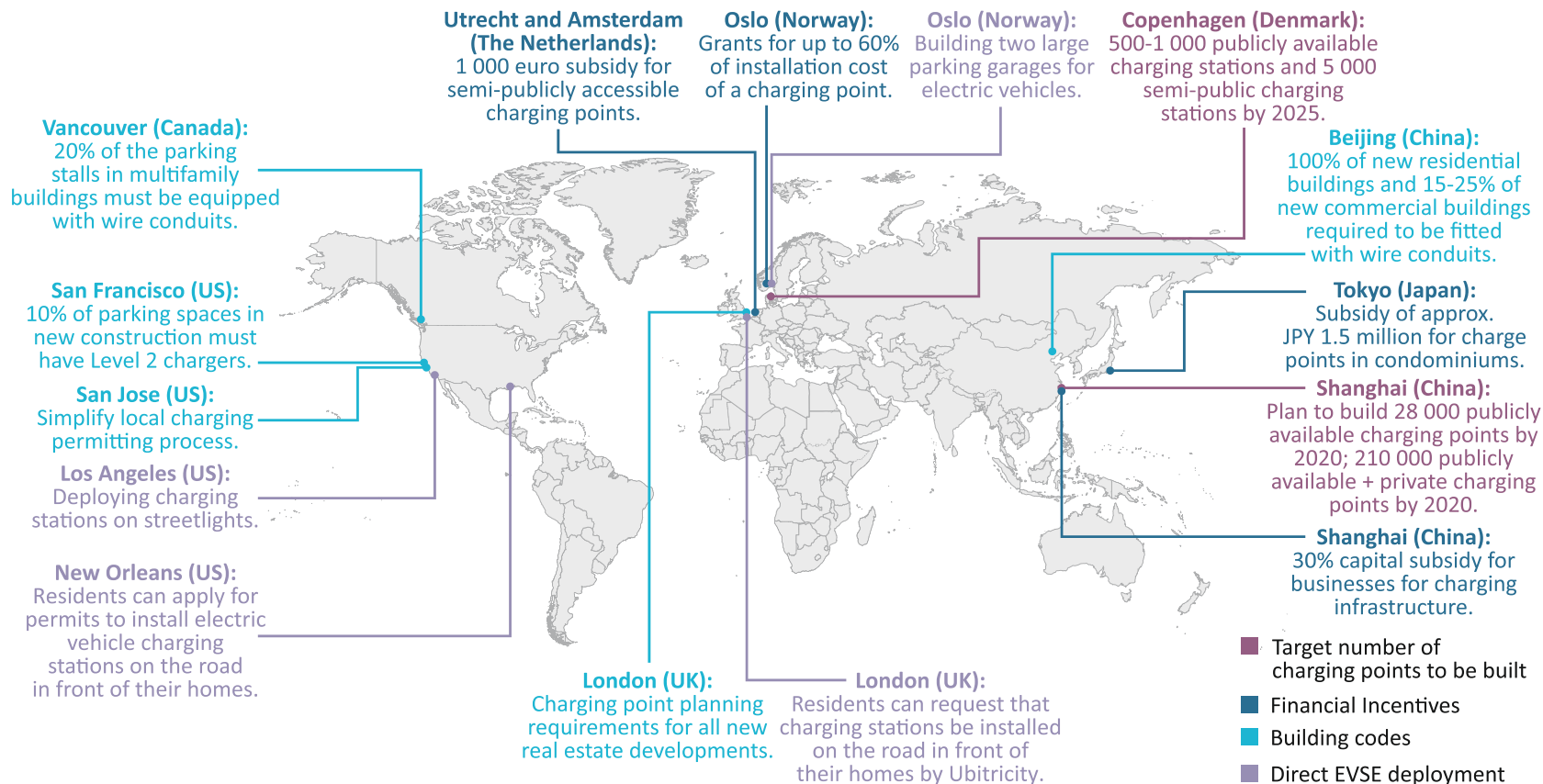
Early efforts on standardisation reduces system costs for everyone involved

2. 'Improve' Policies. Economic

Where to start?

Tools

What are the steps?



2. 'Improve' Policies. Information / Capacity



Where to start?

Tools

What are the steps?

Information / Capacity

- Known
- Popular
- Easy to understand

- Fuel economy labeling (National Level)
- Open data and apps to show public transport (shift policy) and car-sharing options (improve policy) for point-to-point travel

2. 'Improve' Policies. Information / Capacity

Where to start?

Tools

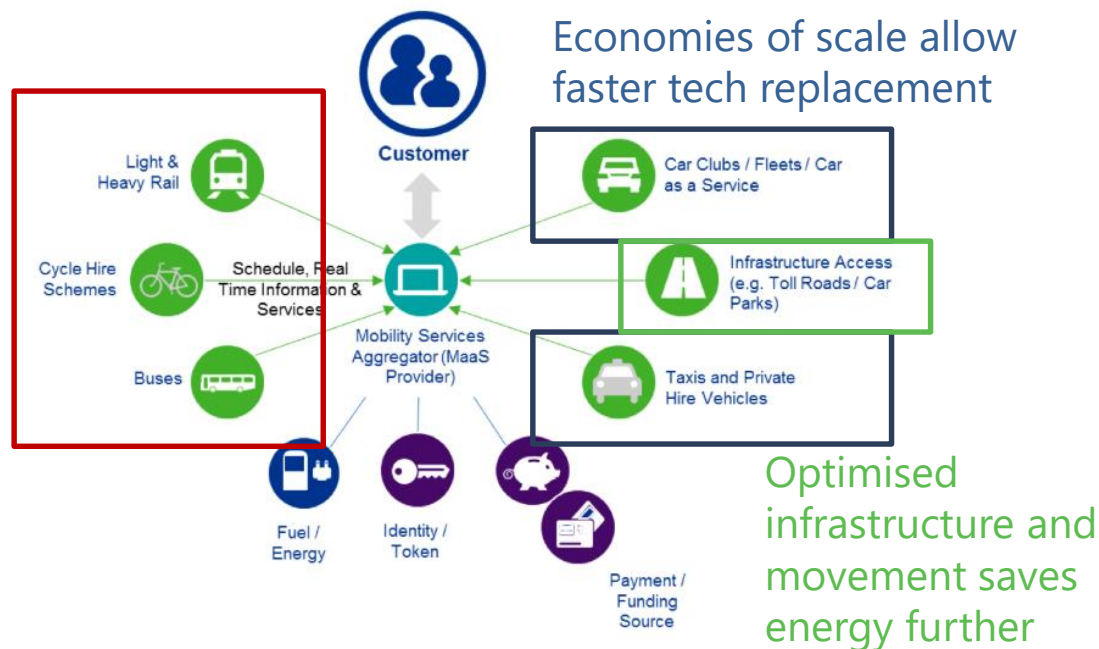
What are the steps?

Information / Capacity

- Known
- Popular
- Easy to understand

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

Greater integration with more sustainable transport



2. 'Improve' Policies. Information / Capacity

Where to start?

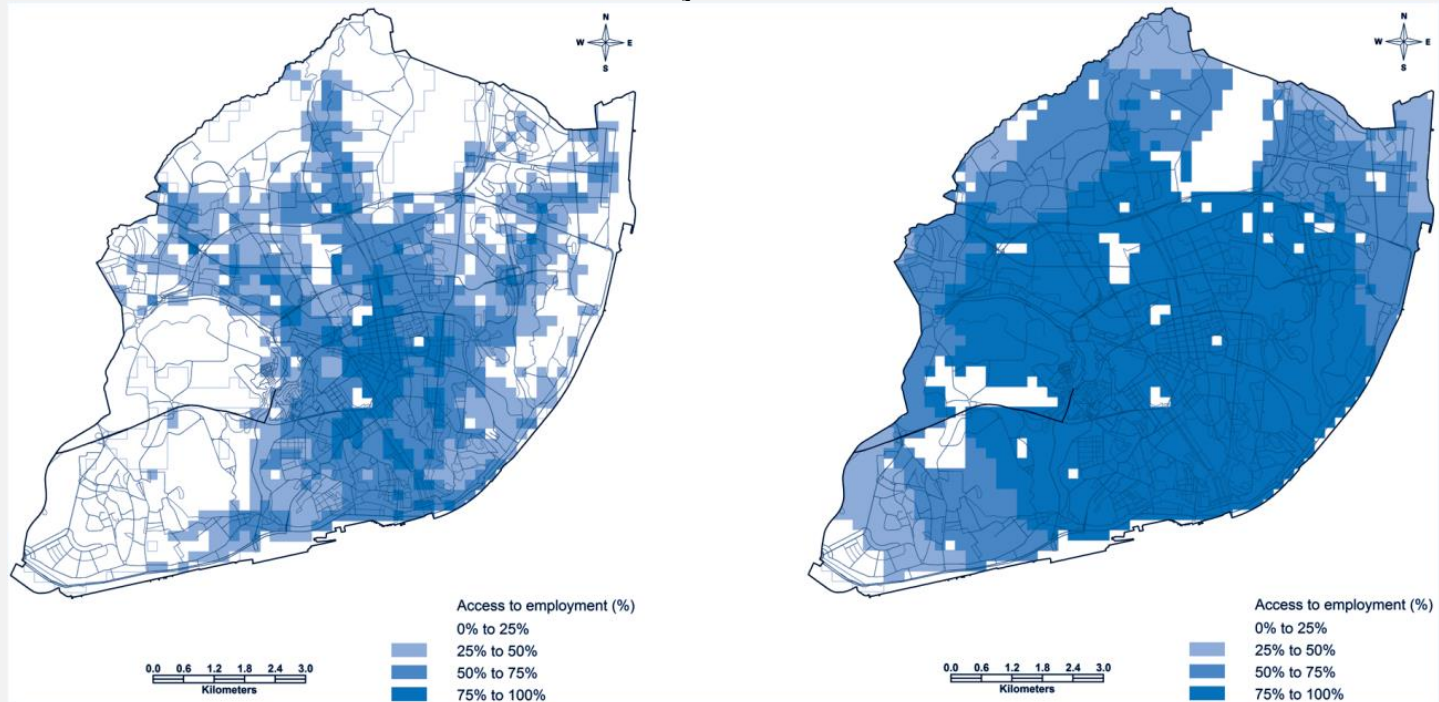
Tools

What are the steps?

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



2. Activity

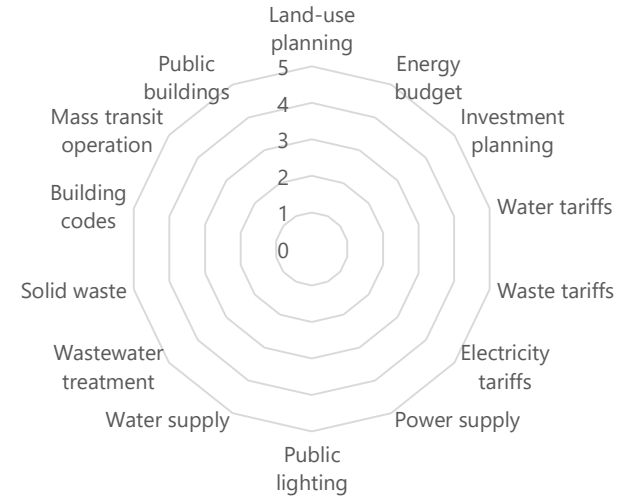
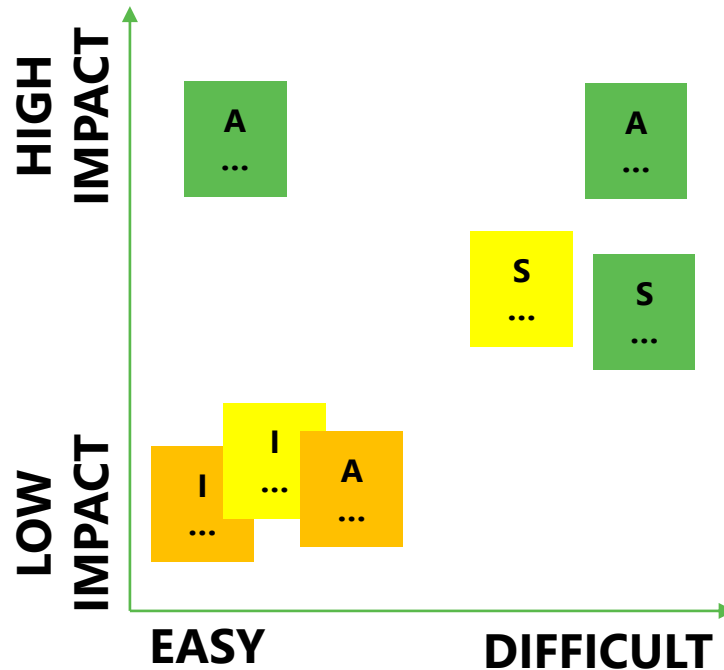
2. Activity. Part 1

- **(15 mins)** 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)			

2. Activity. Part 2

- **(20 mins)** Considering your power and influence (Session 1), and what we learned for the urban transport session (Session 2, 3, and 4), prioritise the policies based on ease and importance





- 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 ([Paris Declaration on Electro-Mobility and Climate Change](#) at COP21, [Government Fleet Declaration](#) at COP22)
- **Just launched the [EV30@30 Campaign](#)**, aiming to achieve a 30% market share for EVs by 2030

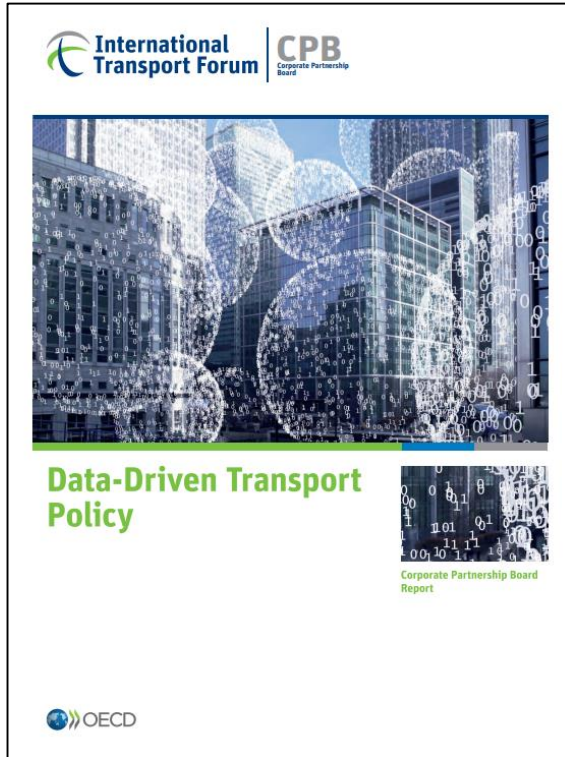
- The Global Fuel Economy Initiative (GFEI) works to secure real improvements in fuel economy, and the maximum deployment of vehicle efficiency technologies across the world.



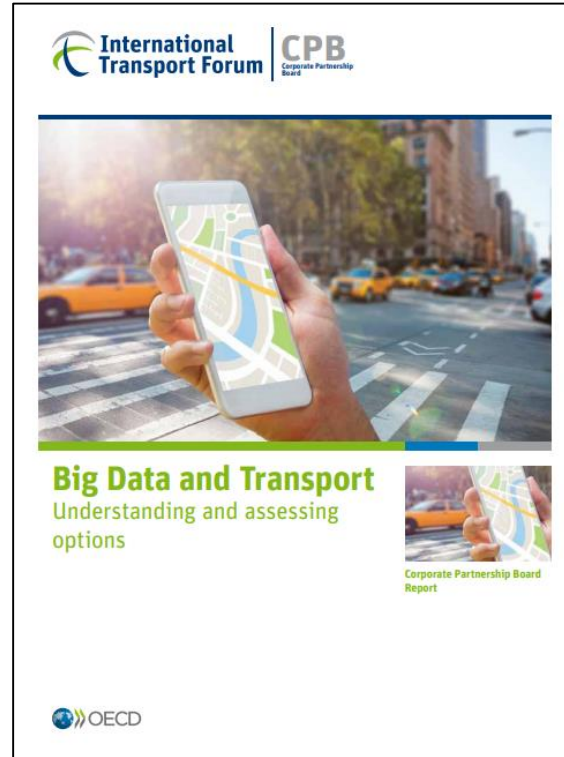
Core partners



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



<https://www.itf-oecd.org/sites/default/files/docs/data-driven-transport-policy.pdf>



https://www.itf-oecd.org/sites/default/files/docs/15cpb_bigdata_0.pdf



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