Deep emission reduction for transportation sector

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Currently foreseeable policies to mitigate transport CO₂ are not sufficient to achieve climate ambitions.

Transport will emit c. 7.5 giga-tonnes of CO₂ in 2050, roughly the same as in 2015 – even if all known tools are applied.
Transport in (I)NDCs

Out of the 194 parties which have submitted either INDCs or NDCs

- 86% provide an economy-wide, quantified CO₂ reduction target
- 81% mention the transport sector
- 60% provide transport mitigation "measures"
- 10% provide a quantified CO₂ reduction target for transport
The right policies can significantly cut transport CO₂ emissions in cities.

CO₂ from urban passenger transport

Baseline | Low carbon
---|---
2015 | 2050
2050 | 2050

60% technology
40% behavior
CO₂ from urban passenger transport

But are not sufficient to achieve climate ambitions

Accelerated innovation and radical policy choices – such as shared mobility are required
disruption
data
Urban Mobility: System Upgrade

What we did

What we found

Why commute
City of Stockholm

10% of 18 years old

have a driver’s licence

Aretun & Nordbakke, 2014
Future obsolescence of the drivers license
mobility in the city

- walk
- cycle
- public transport
- car
mobility in the city

walk
public transport
cycle
bike share
car share
on-demand public transport
car
ride-sourcing
50 min.
what if?
real city
real* trips
same quality
Shared "taxis"

simultaneous ride-sharing
Door-to-Door Service

8 seat Minivan reconfigured for 6 pax, easy and quick entry and exit

Max waiting time variable with distance: 5 min (\(\leq 3\) km) to 10 min (\(\geq 12\) km)

Max total lost time (wait+detour) variable with distance: 7 min (\(\leq 3\) km) to 15 min (\(\geq 12\) km)
TaxiBus
optimised on-demand bus
Street-corner to street-corner service.

Max walking distance 400m

Microbuses with 8 and 16 pax capacity (all seated)

Requests with 30 min notice (or pre-registration for regular service).

Acceptable tolerance of 10 min after desired time. Information to client about boarding point and time 10 min. before boarding

All direct rides, no transfers
high-capacity public transport
Scenario: 24 hours

number of cars required to provide the same trips as before:
number of cars required to provide the same trips as before: 3%
car fleet

-97%  -93%  -97%  -96%
CO$_2$ emissions

-31%
-54%
-62%
-34%
EV recharging/range constraints = 2% more cars.
public transport

+54%  +681%  +47%  +30%
eliminate all on-street parking
+20% kerb-to-kerb street space
Urban Mobility: System Upgrade

What we did
What we found
Why
Understanding user preferences

Focus group for each city

Stated preference survey
Shared mode in stated preference survey

Helsinki
- Non-motorised: 9%
- PT: 17%
- Car: 11%
- Shared Mode: 63%

Auckland
- Walk: 12%
- Bicycle: 6%
- Bus: 9%
- Rail: 2%
- Car: 44%
- Shared Transport: 9%

Dublin
- Walk: 6%
- Bicycle: 5%
- Bus: 5%
- Rail: 7%
- Car: 58%
- Shared Transport: 1%
CO$_2$ emissions (20%)

-22%  -15%  -19%  -4%
Recommendations

Consider integrating shared mobility into transport offer

Use shared services as feeder to increase use of public transport

Ensure sufficient scale for services

Target potential early adopters (car users)
Transition

Integrate land use and transport policies

Part of other policy instruments

Policies to manage changes to parking space

Legal and regulatory framework

Business models
Thank you!

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