Urban Pathways

Low Carbon Urban Mobility in Action

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Webinar Series 2018: Transport and Climate Change
Overview

- Urban mobility – trends and drivers
- The New Urban Agenda and urban mobility
- Low carbon mobility solutions
- Integrated policy measures and approach
- Urban Pathways – urban mobility in action
Cities today occupy only about 2% of the total land, but:

- 70% Economy (GDP)
- Over 60% Global Energy Consumption
- 70% Greenhouse Gas Emissions
- 70% Global Waste

Transport represents 24% of global energy-related greenhouse gas emissions.

Growing urbanisation and increase in mobility demand – lock in effect.

LOW-CARBON DEVELOPMENT PATHWAYS – is essential

Developed countries,
Decarbonize transport
-80% by 2050

Developing and emerging countries,
Curb growth
+70% by 2050
New Urban Agenda and urban mobility
Low carbon stabilization pathways

Safe, accessible, efficient, affordable and sustainable infrastructure
Mechanisms and frameworks on transport
Strengthen institutional arrangement
Develop and expand financing instruments

LOW CARBON STABILIZATION PATHWAYS

Direct Benefits
Saving USD 50-100 trillion
Reduced vehicle purchase
Fuel costs

Indirect Benefits
Synergies with key policy objectives
Air Quality
Safety
Travel time
Health improvements

Image: Dylan Parmore | flickr | CC BY-NC-ND
Low carbon mobility solutions

Avoid: Compact cities and mixed use

**POTENTIAL IMPACT**

Potential to reduce energy consumption by 10–30%

**POTENTIAL CO-BENEFIT**

Reduced travel times
Public Health
Safety and more equitable access

### Road User Charging

*London’s congestion charging*
- 25% CO2 reduction
- Travel time reduction
- Social costs reduction: EUR 144 million/year
- Funds can be re-invested in e.g. public transport
Low carbon mobility solutions: Avoid Prioritising NMT in Santiago, Chile

- Improvement of pedestrian space, cycling, and public transit
- Investment 2.2 million USD
- Public space improvements
- Calle Placer- Pedestrian street (closed to cars on the weekends)

Image: Mobilize Santiago (http://mobilizesummit.org/explore-santiago/)

Improved road in Santiago
Low carbon mobility solutions: Avoid Prioritising NMT in Santiago, Chile

- Growth of cycling from 150 trips per day to 5000
- Cycling doubled since 2006, 6%
- User increase 50% with Bike sharing program- BikeSantiago
- BMov Trici -Free bicycle taxi in historic city center- encourage user

Image: Open City Projects (http://opencityprojects.com/bike-lanes-in-santiago)
Image: BMov Trici
Low carbon mobility solutions: Avoid Urban access in Belo Horizonte, Brazil

- Cycling initiatives- Pedal BH and Belo Horizonte’s Bike Angel program
- 70 km (43 miles) of bike paths
- 360 km cycling network is planned
- 400 public bicycles at 40 stations more than 10,000 members
Urban mobility solutions: Avoid Pedestrian infrastructure

- Improves the safety and comfort
- Helps reduce traffic speed
- Optically narrowing carriageways
- Suppressing long views of roads
- Setting the greenery
- Reduce accidents

Reducing heavy traffic in Luzice (Czech Republic)
Urban mobility solutions: Avoid Parking management

- Reduces cars entrance in the city
- Encourage use of alternative means of transport
- Park-and-ride facilities along commuter routes
- Require changing zoning and planning practices
- Cut congestion

- Blue zone: Park any time of day up to 4 hours
- Green zone: For residents with a permit or with a valid pay-and-display ticket
- Green exclusive zones: Only residents with permits can park in the spaces
- Parking payment apps
- Improved traffic flow

Image: Micah Modell/ Flickr/ CC BY-NC-SA 2.0
Blue parking place Barcelona, Spain
Low carbon mobility solutions
Shift to more energy efficient modes

POTENTIAL IMPACT
Potential for energy efficiency varies greatly, 10 – 30% 

POTENTIAL CO-BENEFIT
Reduced urban congestion
more equitable access
Reduced maintenance costs for roads

Bus Rapid Transit
Trans Milenio Bogotá, Columbia
- Reduction of CO₂ emissions by 500,000 tons (in 3 years)
- Rationalized bus system, 32% commuting time reduction
- Access for disabled and poor
- 90% lower accidents in BRT systems
- Air quality improvements

Image: Claudio Olivares Medina/ flickr/ CC BY-NC-ND 2.0
Low carbon mobility solutions: Shift
DART – Dar es Salaam Bus Rapid Transit, Tanzania

- Operated 2016, Length of 20.9 km; 1 Depot, 27 BRT Stations (4 Categories)
- Dedicated concrete road and pathways for Pedestrians & NMV Users
- Time saved from 2-4 hr trip to 45 minutes
- Disability access

- Daily passenger 160,000
- Single fare US$ 0.30
- Fare payment with smart cards
- Not yet real-time information on bus arrivals
Urban mobility solutions in action: Shift Public bicycle systems

- Point-to-point trips
- Stations at 300 meters
- Automated locking
- Tracking system
- Station occupancy real-time monitoring
- Introduced in over 600 cities

452 stations in 42 neighbourhoods
220,000 users, 6,000 bicycles
Connects to 35 metro and 54 BRT stations
Reduced CO2 by 2,400 tonnes
16% users stopped using cars
Urban mobility solutions in action: Shift

Car-sharing

- Floating car-sharing (e.g. car2go, DriveNow)
- Stationary car sharing (e.g. Cambio)
- Offer by the established transport operators (e.g. Flinkster by Deutsche Bahn)
- Eliminate the need for a car
- Reduce the need for parking spaces

Bremen’s car-sharing scheme (Germany)
- Goal 20,000 car sharing users by 2020
- Online booking and smartcard access
- Car-sharing operators (e-cars, e-bikes)
- 8-10 private cars replaced by 1 shared car
- Reduce parking space and free up street space
Low carbon mobility solutions

Improve: Fuel switch and intensity

POTENTIAL IMPACT

Increased efficiency 40-60% by 2030 feasible at low or negative costs
Changing the structure of the energy consumption

POTENTIAL CO-BENEFIT

Diversification of fuels used
Contributes to climate, air quality and/or energy security objectives

Fuel switch options for public vehicles
- Public Transport fuels switch to e.g. hybrid/electric bus
- Medium to high potential for CO₂ savings
- Emission reductions (greenhouse gas and air pollutants)
- CO₂ emission reduction potential depends on the electricity mix
- SO₂, NOₓ emissions will be reduced significantly if switched to hybrid/electric

Low carbon mobility solutions: Improve E-Rickshaw for first/last-mile connectivity in India

- Smart Electric Transport System (Smart-E), since October 2015
- Begin 10 minutes before and after departure of the first and last Metro train
- Increased rides per day (3,000 to 15,000) in 6 months
- Reduced CO2 emission 82,198 tonnes annually (baseline 50,000 e-rickshaws travel 70km a day), expected 821,980 tonnes in 2025
- Priority for women drivers
- Cost: 2,100 EUR - Driver can save up to 500 Ruppie per day

Image: Sindhu MV (https://yourstory.com/2016/05/e_rickshaws-delhi-ncr/)

Image: Kamal Narang

Smart e-rickshaws in New Delhi
Low carbon mobility solutions: Improve E-BRT in San Joaquin, California

- Converting existing BRT to E-BRT in San Joaquin Regional Transit District (RTD) in Express Route 44 in 2017
- Benefits: Cleaner air, quieter operation and reduced maintenance cost
- Travel approx. 40km, 2 hours on a charge
- 10 minutes to completely recharge a bus
- Each bus costs approx. $850,000
Low carbon mobility solutions: Improve
Light Rail

- Higher capacity than BRT (almost double)
- Investment cost 60% than BRT (conventional diesel)
- Higher operational costs than BRT (depends on the demand)
- LRT attracts more discretionary riders
- Zero emissions during operation
- Low noise
- Positive land-use effects

- Inflexible routes
- Tracks need to be constructed – additional costs
Low carbon mobility solutions
Implementation

Technical Cooperation
- Stakeholder dialogue
- Coalition building
- Identification of potential synergies

Financial Cooperation
- Consideration of wider benefits
- Support for complementary measures
- Linkages between policy and infrastructure

Stakeholder dialogue
Coalition building
Identification of potential synergies
Low carbon mobility solutions
Risk of isolated measure implementation

Rebound Effect
12-32% for road transport due to isolated policy measures implementation

Uncertainty of a policy’s cost-effectiveness and its effect on energy efficiency

INTEGRATED POLICY MEASURES
Integrated policy measures

Policy integration

Modal shifts
Non-motorized transport and public transit services
National measures
Fuel pricing, vehicle fuel efficiency regulation, taxation
Transport and land use planning

Benefits
More compact, mixed and better connected communities
Less need to travel
Reduced rebound effect
Effectiveness!

Image: Pharis-Flax
Integrated policy measures
Political commitment

**Political Environment** – vary by country and change over time

**Stable politics** – long term investment decisions by industry and consumer

**Institutions** – coordination with key political actors
Integrated policy measures
Decarbonising transport

**Transformational change**
1.5 - 2°C

Integrated policies, incl. planning, modal shift, effective technology, and efficient fuels

**Incremental change**
2.5 - 3°C

Singular measures at local and/or national level

Source: Lah 2018 (Sustainable Urban Mobility Pathways)
Urban Pathways project

Objective: Support low carbon plans for urban basic services and contribute to the implementation of the New Urban Agenda, Paris Agreement and the Sustainable Development Goals

Sustainable mobility activities: Capacity building, assessment on mobility at country/city level, city to city partnership, exchange good practices and standards, local implementation concepts (develop bankable projects)
Inform decision makers and stakeholders about the mitigation and sustainable development potential of sustainable urban mobility.

In the area of urban mobility the Urban Pathways project benefits from direct linkages to the Urban Electric Mobility Initiative and the FUTURE RADAR project.
Capacity building and Change maker programme by bringing together all the stakeholders (policy makers, city officials, investors and implementation actors)

City-city partnership

CITY PARTNERSHIP IN SEOUL

CONNECTIVE CITIES BELO HORIZONTE: DISCUSSING ZONES 30 AND A VAILABLE CITY FOR ALL

ECO DISTRICT WEBINAR: DISCUSSING URBAN INFRASTRUCTURE PROJECTS
Cities' policy environment study, Project scoping in the partner cities and provide funding solutions
Create synergies with other related projects

Steps to Action

**Belo Horizonte, Brazil:**
Zone 30 and bike lanes
Concept: BH and the city of Bremen
Budget: 120,000 Euros

**Kochi, India:**
E-Rickshaws
Focal point: C-HED and Kochi municipality
Budget: 145,000 Euros

**Kathmandu, Nepal:**
Upgrading SAFA tempo
Implementation: Sajha Yatayat
Budget: 100,000 Euros
Urban Pathways Implement

Kenya:
Cycling and walking street, and Bike share

Focal point: City county

Hanoi/Hai Phong, Vietnam:
E-Scooter sharing

Focal point: Planning Department in Hanoi
Department for Energy and resources in Hai Phong
Thank you for your attention

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