INNOVATING FOR EFFICIENT TRANSPORTATION:
LESSONS FROM AROUND THE WORLD

Sebastian Castellanos, Vehicle Efficiency Lead, WRI Ross Center for Sustainable Cities

Source: WRI India
About the World Resources Institute (WRI)
Mobility is changing

...drivers will no longer be needed
Mobility is changing

...we will no longer own cars
Mobility is changing

...automobiles will no longer pollute
Or will they?

Much depends on how we manage and direct these transitions.
Cities are not on track, and we need to **bend the curve**
THE CURRENT GLOBAL VEHICLE STOCK IS CLOSE TO 1.7 BILLION

AND COULD INCREASE TO 3.87 BILLION BY 2050

Sitty and Taft, “What will the global light-duty vehicle fleet look like through 2050?”, 2016

Photo: Whitehotpix
WITH MOST GROWTH HAPPENING IN DEVELOPING ECONOMIES
TO HALT CLIMATE CHANGE, THE TRANSPORT SECTOR MUST BE COMPLETELY DECARBONIZED BY 2060

[Right] IEA, authors with data from “CO₂ Emissions from fuel combustion: Highlights”, 2015
VEHICLE ELECTRIFICATION

A NEW HOPE
CURRENT PENETRATION OF EV’S IS BUT A DROP IN THE OCEAN, HOWEVER IT’S EXPECTED TO INCREASE IN THE COMING YEARS.

Fossil fueled vehicle stock: 1.7 billion

Current stock: 2 million

ELECTRIC VEHICLE BATTERY PRICES ARE FALLING FAST

1. Nykvist and Nilsson “Rapidly falling costs of battery packs for electric vehicles”, 2015,
THE MARKET IS GEARING UP FOR THE CHALLENGE

All Volvo cars to be electric or hybrid from 2019

Landmark move as first big manufacturer says it will stop making vehicles solely powered by internal combustion engine.

In Pivotal Moment, Tesla Unveils Its First Mass-Market Sedan

Sales of Volvo's hybrid XC90 have been stronger than expected. Photograph: Volvo
AND SO ARE SOME GOVERNMENTS

France to ban sales of petrol and diesel cars by 2040

Move by Emmanuel Macron’s government comes a day after Volvo said it would only make fully electric or hybrid cars from 2019.

Britain to ban sale of all diesel and petrol cars and vans from 2040

Plans follow French commitment to take polluting vehicles off the road owing to effect of poor air quality on people’s health.

© Renault's Zoe electric car will escape France's ban after 2040. Photograph: Renault

© Ministers believe poor air quality poses urgent environmental risk to public health in UK. Photograph: Peter Macdiarmid/Getty Images
ALREADY OVER 300 CITIES HAVE IMPLEMENTED ELECTRIC OR HYBRID BUSES AS PART OF THEIR FLEETS

Source: authors
ELECTRIC VEHICLES ARE INHERENTLY MORE EFFICIENT THAN DIESEL VEHICLES, SO IT (ALMOST ALWAYS) MAKES SENSE FROM AN ENERGY AND CLIMATE PERSPECTIVE

Source: authors with information from IEA
However, it’s not just about the technology
IF WE ARE TO ENSURE AN ENERGY EFFICIENT MOBILITY FUTURE WE NEED TO UNDERSTAND WHERE THE BARRIERS ARE.

- More expensive vehicles and infrastructure
- Fear of change and lack of knowledge
- Technology readiness (e.g. range)
- Outdated procurement models
WE CONDUCTED RESEARCH TO UNDERSTAND WHAT 25 CITIES AROUND THE WORLD HAVE BEEN DOING TO ACHIEVE IMPLEMENTATION OF ELECTRIC BUSES

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WE IDENTIFIED SOME KEY TRENDS IN THE RESEARCH WE CONDUCTED

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NEW STAKEHOLDERS: SANTIAGO, CHILE

Utilities investing in transportation
CHANGES IN PROCUREMENT MODELS: SHENZHEN, CHINA

Bus companies and third parties purchase buses and lease them to operators.
NEW OPERATION MODES: BEIJING, CHINA

Battery depots and swapping machines
The Clean Technology Fund provided a $40M loan to purchase buses.

City and national government gave tax incentives that reduce CapEx.
YES

EV’S HAVE HIGHER CAPEX

EV’S HAVE OPERATIONAL LIMITATIONS

EV’S BRING UPON A CULTURE SHOCK
BUT

MANY INNOVATIONS ACROSS THE WORLD THAT ALLOW CITIES TO OVERCOME THESE BARRIERS THE MOMENT IS NOW!
Thank you

WRIRossCities.org

TheCityFix.com