

Electric Vehicles Powered by Renewable Energy
Briefing Note for Climate Parliament
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Background

Electric vehicles (EVs) are making increasing headway in terms of market deployment. In the beginning of the 2010s, the first commercially available passenger car EVs were sold, and today all 20 of the world's top 20 automakers have electric models available. However, this commercialisation of EVs is not limited to passenger cars, but now includes such modes as ferries and small airplanes, but in terms of numbers, electric two- and three-wheelers as well as electric buses are by far the biggest numbers, share, and displacers of oil and bad air pollution worldwide.

A wide range of trends coalesce around EVs, and it can be hard to separate exciting news bits from actual change-making trends, but here are some important points to be aware of:

- Prices of lithium-ion (the most common chemistry) battery for electric vehicles as well as solar photovoltaic (PV) panels have both come down approximately 90% in the last decade and continue to drop
- While battery recycling and sourcing of critical materials got off to a rocky start – something common in any new supply chain – the increased attention has led to much stricter recycling standards as well as improved sourcing of raw materials
- COVID-19 and other crises have made it clear the potential benefits of having a country's vehicle fleet be more resilient, with lower local air pollutants, and perhaps even produced locally through renewable energy
- 80% of the world's population live in cities that do not meet the World Health Organisation's air quality standards. With EVs, there are zero pollutants emitted at the vehicle level, which has significant local air and noise pollutant benefits versus conventional vehicles.
- EVs are part of the puzzle to solving climate change thanks to their increased efficiency and zero emissions (at the tailpipe)
- While EVs have rural applications, the urban freight sector benefits vastly from shorter distances and higher densities found in cities, as well as bus services, and the implication is that electrifying these fleets are an opportunity worth considering seriously

Best Practices / Case Studies

The list of EVs being deployed was once short but is now so comprehensive that almost all countries worldwide have some experience. As countries move to zero emission vehicle fleets, it is prudent to look at countries with higher vehicle electrification rates and to learn from best practices as well as "bumps" along the road, but again, all countries and especially cities have stories to tell and worth considering as electric mobility laboratories. In short, this is a marathon, not a sprint. Here follow a few pertinent examples to consider for replication in your country:

Country	Vehicle Mode	Type	Description	Success Factor	More Info
Cabo Verde	Electric passenger cars and buses	Climate finance	Succeeded in attracting climate finance for EVs	Strong support from relevant ministry, high renewable energy share	ⁱ
India	Electric buses	Procurement	Kolkata has bought 80 electric buses and aims to electrify full fleet by 2030	Government support for funding procurement of electric buses and charging equipment	ⁱⁱ
Thailand	Electric bikes	Business model	Pairing solar PV with e-bikes	Batteries can be used for low-income households for energy	ⁱⁱⁱ
Colombia	Electric bikes	Urban plan	E-bikes with underpinning urban planning	Participatory planning and mapping	^{iv}
India	Electric buses	Procurement	Electric bus pilot	Part of a long-term comprehensive bus reform plan	^v

A Menu of Actions for Implementation Today:

1. Think about energy and mobility together from the outset
2. Start mapping out electrification of all vehicles, bringing in civil society organisations, private sector, utilities, and ministry of finance to map out potential purchase incentives
3. Identify barriers and go through the following exercise: what if EVs cost the same?
4. Charging infrastructure, consider this not only from a national level, but down to sub-stations
5. Quantify costs and benefits, taking local air and noise pollution into account, as well as potential GHG savings
6. Do regulatory “drills”, imagining a procurement of for example 500 electric buses next year, what needs to be in place? What could go wrong? Or, imagine the popularity of electric two-wheelers skyrockets, how to not turn a blind eye, what can be done to incorporate modes of mobility that exist to meet a demand?
7. Consider vehicle electrification for post-COVID-19 recovery funds to ensure there is a “green” lining to the post-pandemic world e.g. through experimentation

ⁱ <https://www.nama-facility.org/projects/cabo-verde-promotion-of-electric-mobility/>

ⁱⁱ <https://m.economictimes.com/news/politics-and-nation/west-bengal-govt-plans-to-switch-to-electric-mode-in-public-transportation-in-kolkata-by-2030/articleshow/71688298.cms>

ⁱⁱⁱ <https://www.unenvironment.org/news-and-stories/story/unep-start-challenge-winners-show-how-business-can-build-back-better-covid>

^{iv} https://www.urban-pathways.org/uploads/4/8/9/5/48950199/up_scoping_paper_ibague-small.pdf

^v <https://odishabytes.com/electric-bus-trial-run-in-bhubaneswar/>