



Compact Cities Electrified: India

BRIEF FOR POLICYMAKERS



UC DAVIS
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COVER PHOTO:

Two women access a BRT station in the city of Pimpri-Chinchwad in the metropolitan area of Pune.

SOURCE: ITDP India

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Executive Summary

New research from ITDP and UC Davis shows that achieving India's Paris Agreement commitments will require both electric vehicles and modal shift. Electrifying vehicles and shifting toward compact cities built on walking, cycling, and public transport will each have profound positive impacts. However, even if both electrification and modal shift occur at the fastest possible rate, it is only by combining them that India can reduce emissions to a level consistent with holding global warming below 1.5°C (the blue shaded area in Figure A).

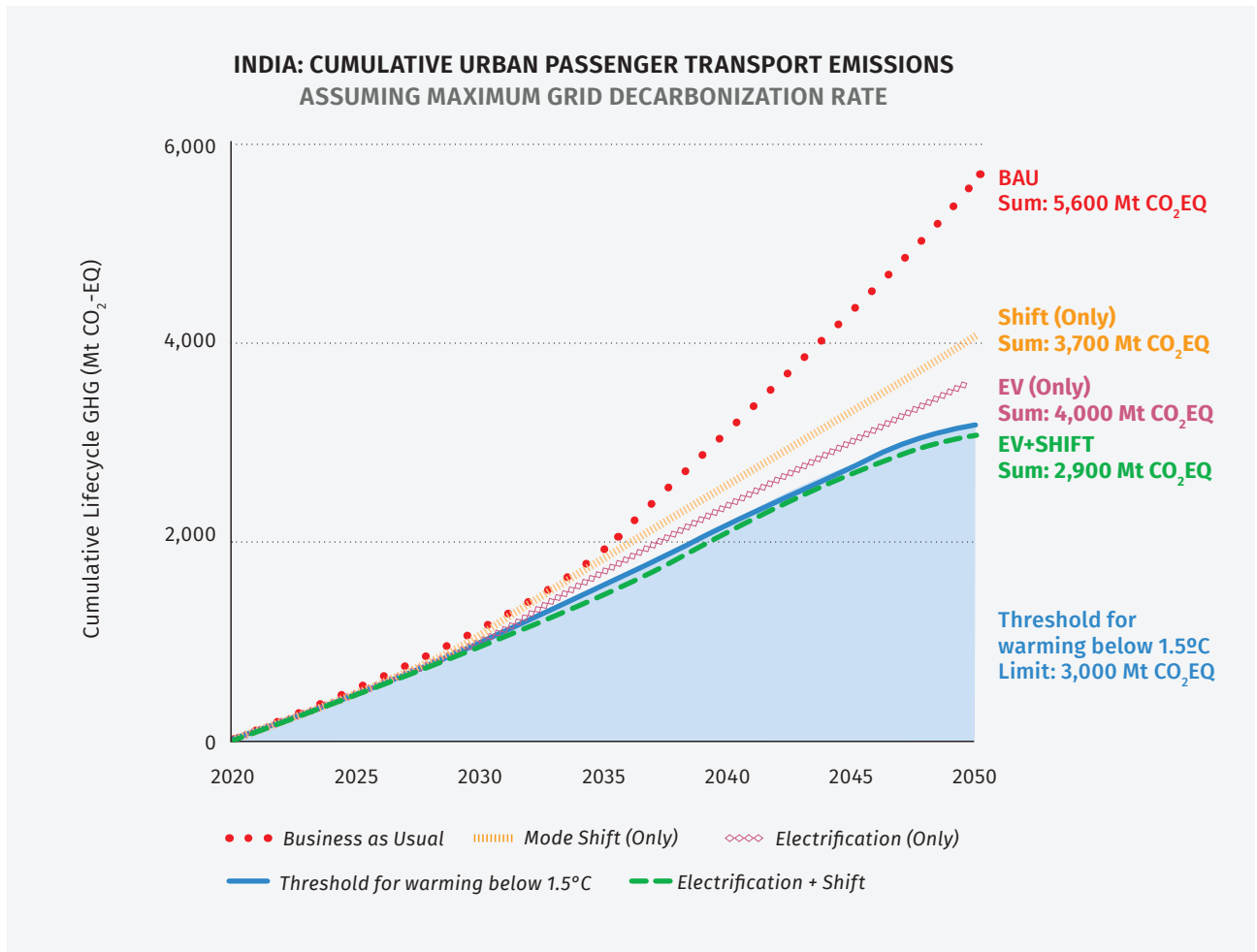


FIGURE A

This study investigates four possible scenarios for the next 30 years of urban passenger transport (not including intercity or freight transport) in India:

- Business as Usual:** India's current trajectory toward a car-oriented society powered by fossil fuels.
- Mode Shift (Only):** A society-wide transformation of city planning priorities in favor of public transport, walking, and bicycling.
- Electrification + Shift:** The combination of the Electrification and Mode Shift scenarios.
- Electrification (Only):** The fastest feasible replacement of internal-combustion vehicles with electric ones.

In addition to meeting climate commitments, the study finds that the Indian government could save over INR 150 lakh crore (in 2023 INR, or USD 1.8 trillion) over the next 30 years. By investing in compact electrified cities rather than continuing the car-centric trend, India would greatly reduce the expense of road construction and maintenance. Figures B1 and B2 show the specific investments that would be required. This change in policy would reduce travel costs for residents of Indian cities while facilitating economic inclusion, reducing air pollution, minimizing road fatalities, and lowering energy demands.

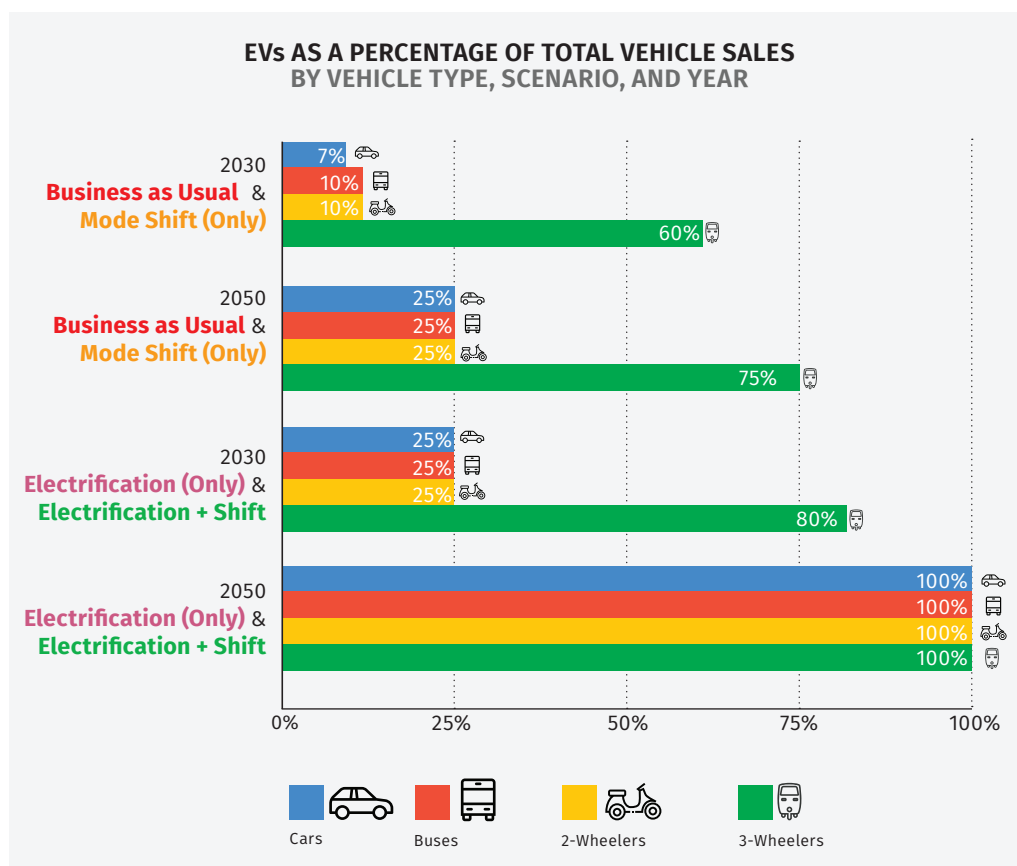


FIGURE B1

Total new infrastructure and vehicles required through 2030							
	Road, two-way km	BRT, two-way km	Railway, two-way km	Physically protected bicycle lanes, two-way km	Buses (total urban buses and minibuses)	Train cars	Total cost to governments (lakh crore 2023 INR)
Business as Usual & Electrification (Only)	110,000	100	550	1,000	630,000	7,500	149
Mode Shift (Only) & Electrification + Shift	71,000	2,200	700	19,000	660,000	8,500	141
Total new infrastructure and vehicles required through 2050							
	Road, two-way km	BRT, two-way km	Railway, two-way km	Physically protected bicycle lanes, two-way km	Buses (total urban buses and minibuses)	Train cars	Total cost to governments (lakh crore 2023 INR)
Business as Usual & Electrification (Only)	460,000	350	900	2,500	1,600,000	20,000	573
Mode Shift (Only) & Electrification + Shift	120,000	12,000	1,800	39,000	2,000,000	28,000	423

FIGURE B2

To achieve this future, India must enact national, state, and city-level policies to reallocate both street space and transportation funding from private motorized vehicles to walking, cycling, and public transport. Simultaneously, the country must encourage rapid electrification through policies including fee-rebate systems, public charging infrastructure, and emissions regulation.



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