Integral role of Public Transport in decarbonising the Indian transport sector

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Impacting sustainable development at scale with data, integrated analysis, and strategic outreach

TRANSFORMATIONS

- Low-carbon Economy
- Energy Transitions
- Power Markets
- Industrial Sustainability
- Sustainable Livelihoods

QUALITY OF LIFE

- Clean Air
- Sustainable Water
- Sustainable Food Systems
- Sustainable Cooling
- Sustainable Mobility

ENABLERS

- Sustainable Finance
- Technology Futures
- Circular Economy
- Climate Resilience
- International Cooperation

SPECIAL INITIATIVES

- CEEW Centre for Energy Finance
- Powering Livelihoods
- Emerging Economies
- UP State Office

200+
Multidisciplinary team

320+
Peer-reviewed publications

160+
Instances of increased data transparency

460+
Roundtables & conferences

22
Indian states engaged

110+
Bilateral & multilateral initiatives promoted

India walks and uses PT in good measure

Current weekly travel pattern in India

63% of the urban population walks (at least 500 m)

51% rides personal motorbikes

37% uses public transport

Barriers

Frequency of service

Quality of infrastructure

Lack of seamless travel

Source: Soman, Abhinav, Harsimran Kaur, and Karthik Ganesan. 2019. *How Urban India Moves: Sustainable Mobility and Citizen Preferences.*

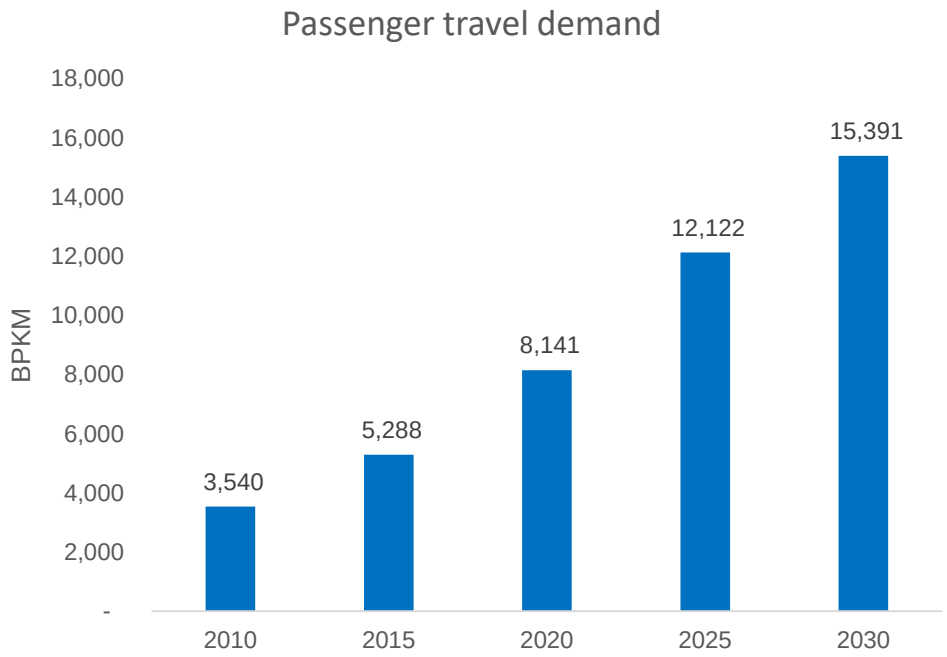
Jobs , Growth and Sustainability at the heart of transforming our energy system

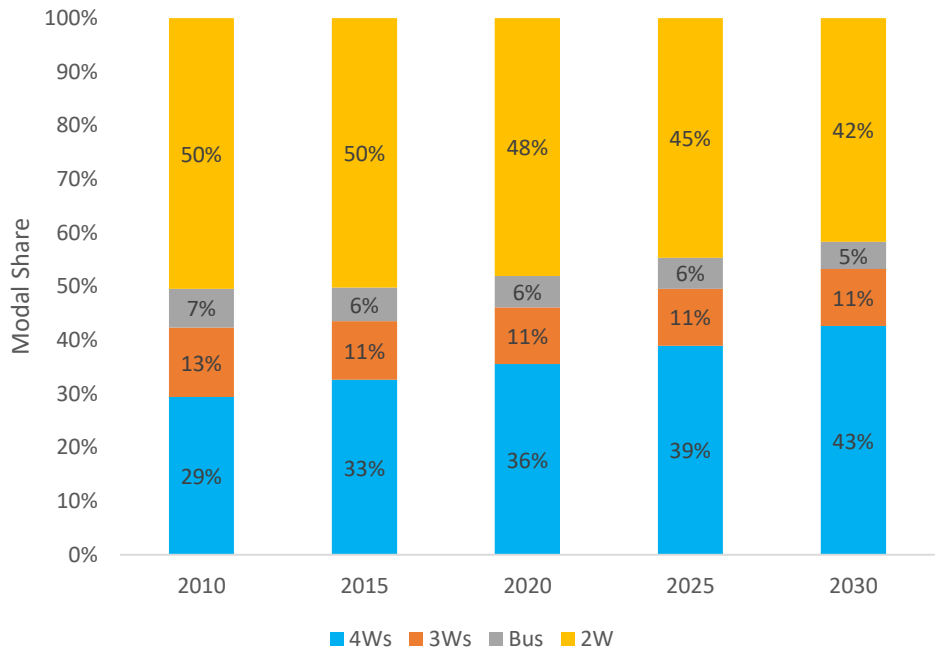
Projecting vehicle stock and energy demand from road passenger transport in 2030 under different mode-share scenarios

Mapping and quantifying the impact of electric mobility transition on jobs, growth and sustainability

Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

BAU scenario will see a doubling of passenger travel demand between 2020 and 2030

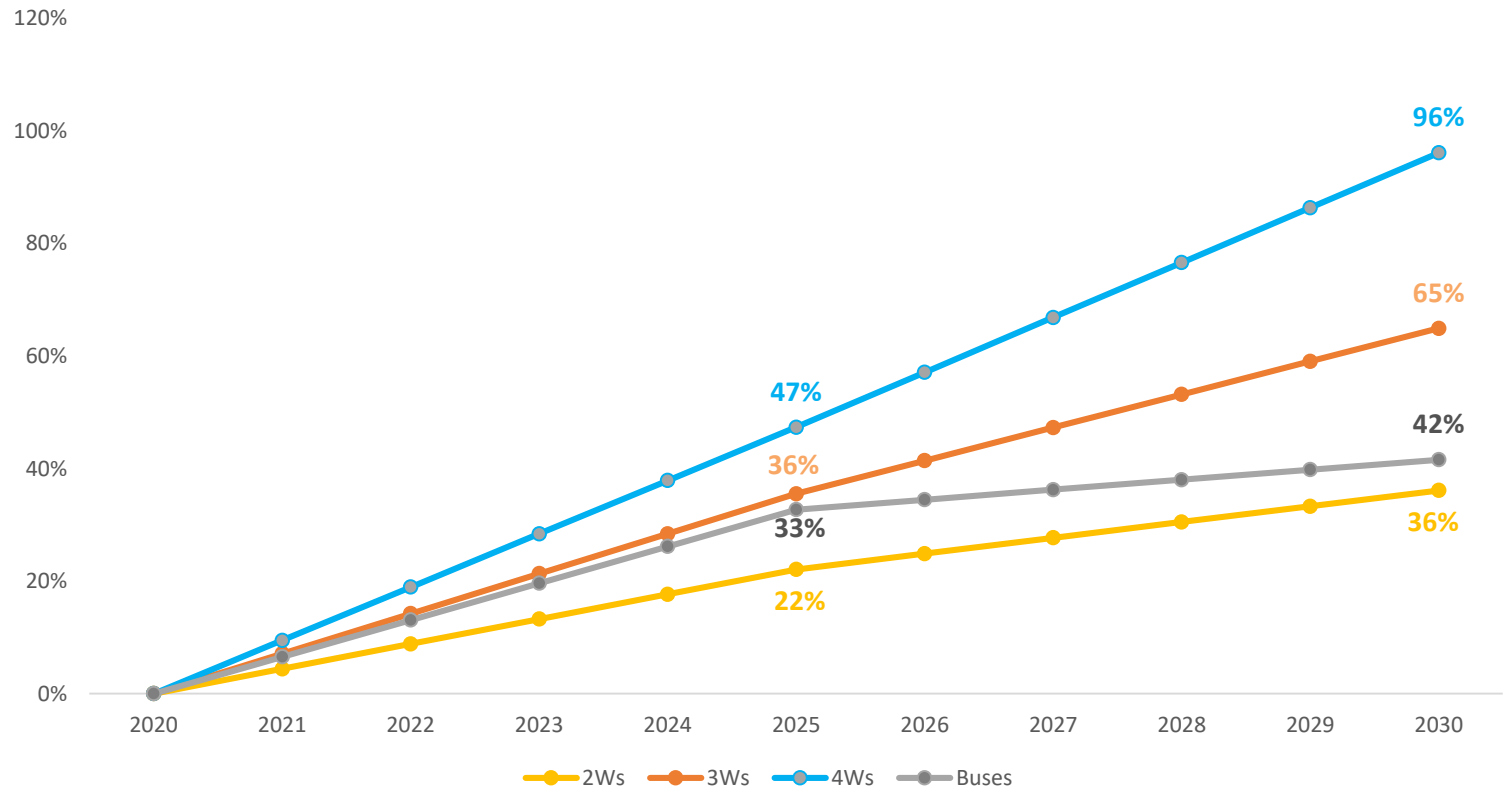




The increase in the passenger demand will skew the modal share towards four-wheelers

Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

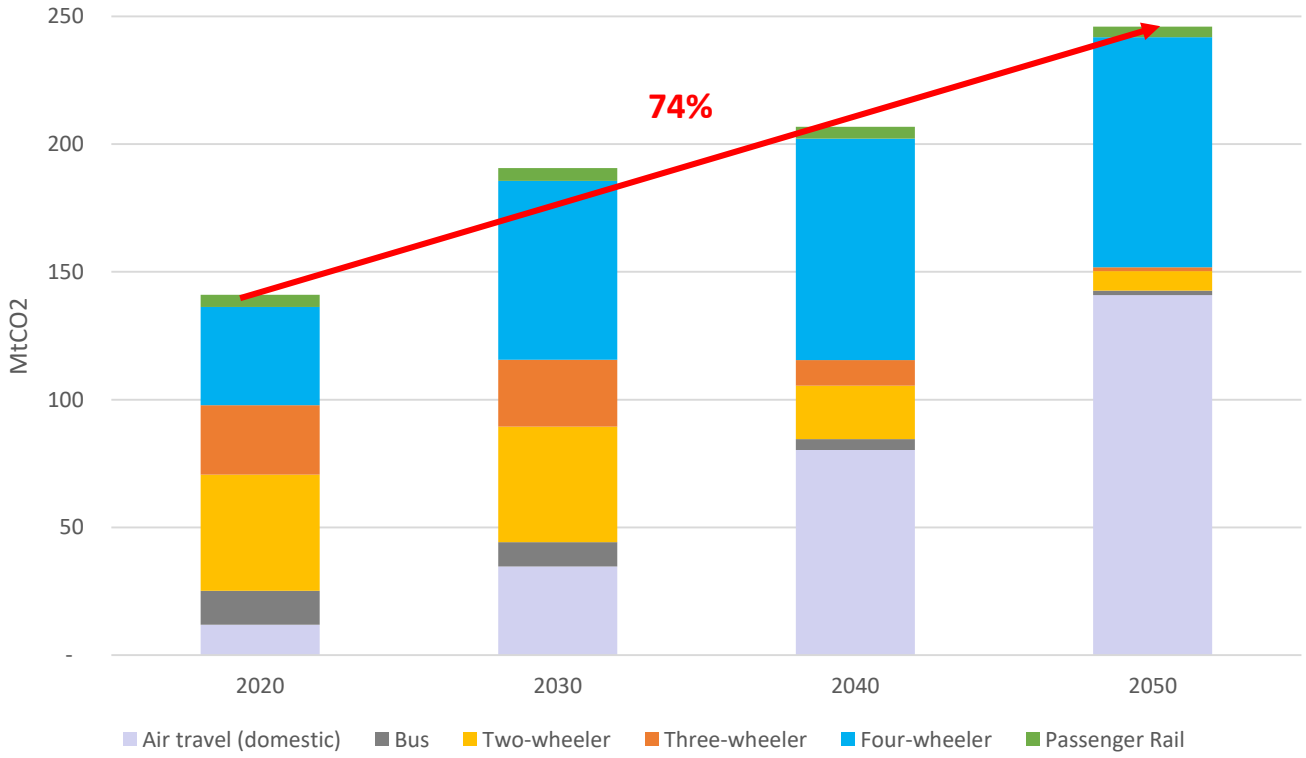
Private vehicles contribute the lions share of emissions by 2030



The emissions in four-wheelers is estimated to increase by **2 times** by the end of this decade

Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

Emissions are estimated to get worse by 2050



Long-term analysis from CEEW-GCAM model estimates the emissions to increase by **74%** in 2050 when compared to 2020

Source: Kamboj, Puneet, Ankur Malyan, Harsimran Kaur, Himani Jain and Vaibhav Chaturvedi. 2022. *India Transport Energy Outlook.*

The EV transition has its share of challenges

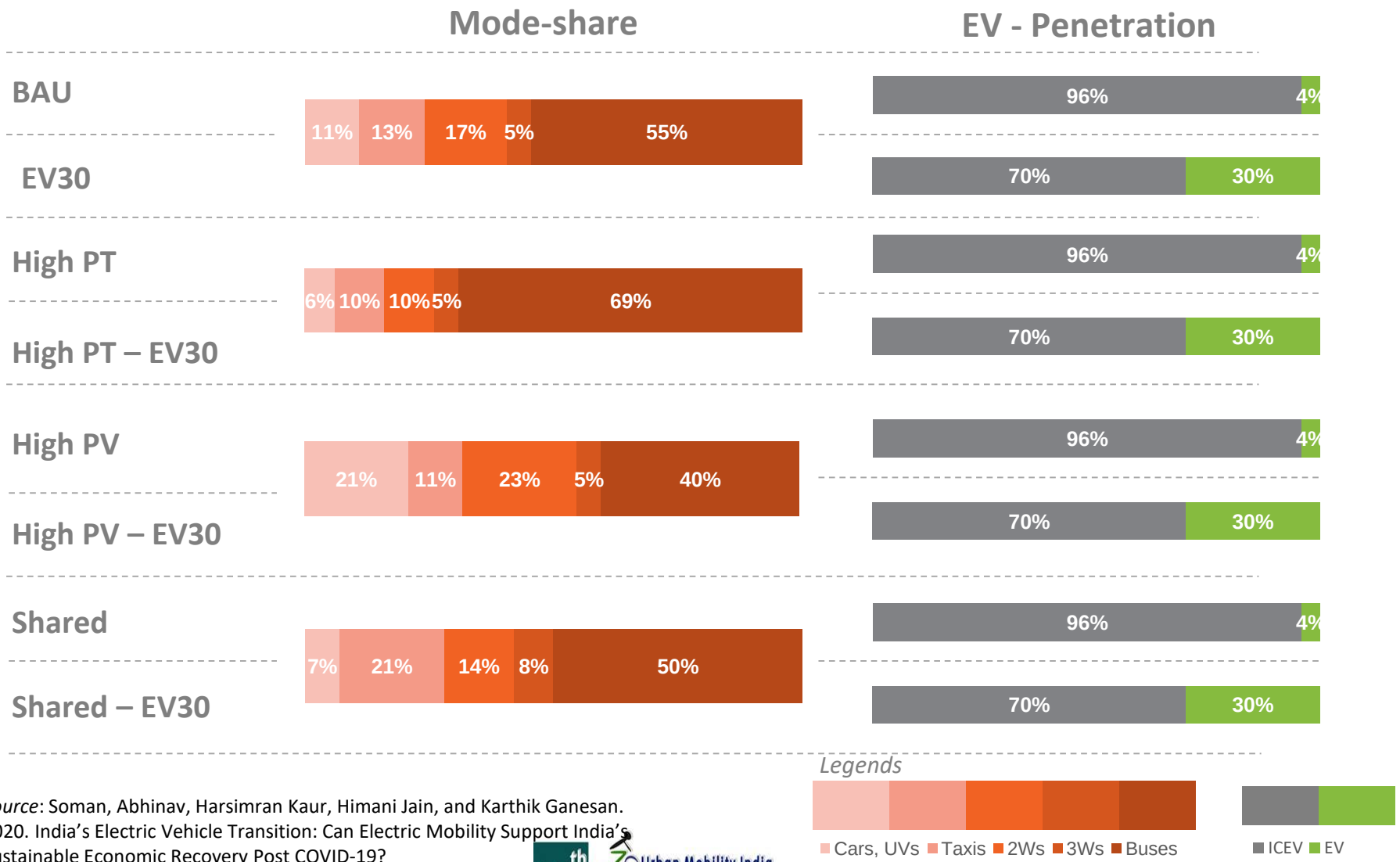
Charging infrastructure network

Limited space, parking, roads and other relevant infrastructure

Increased energy demand

Criticality of minerals

Creating an alternate view of the future



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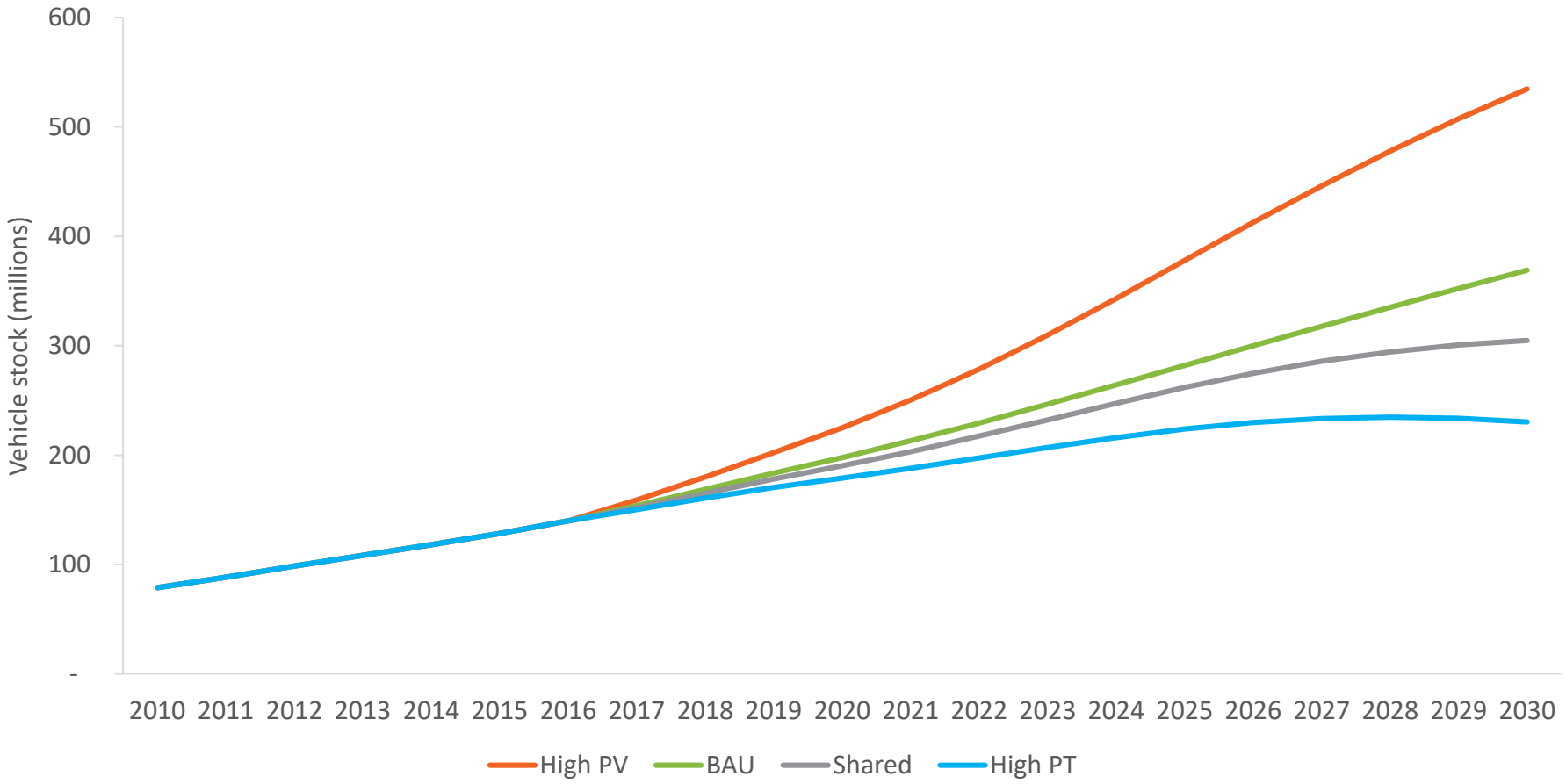
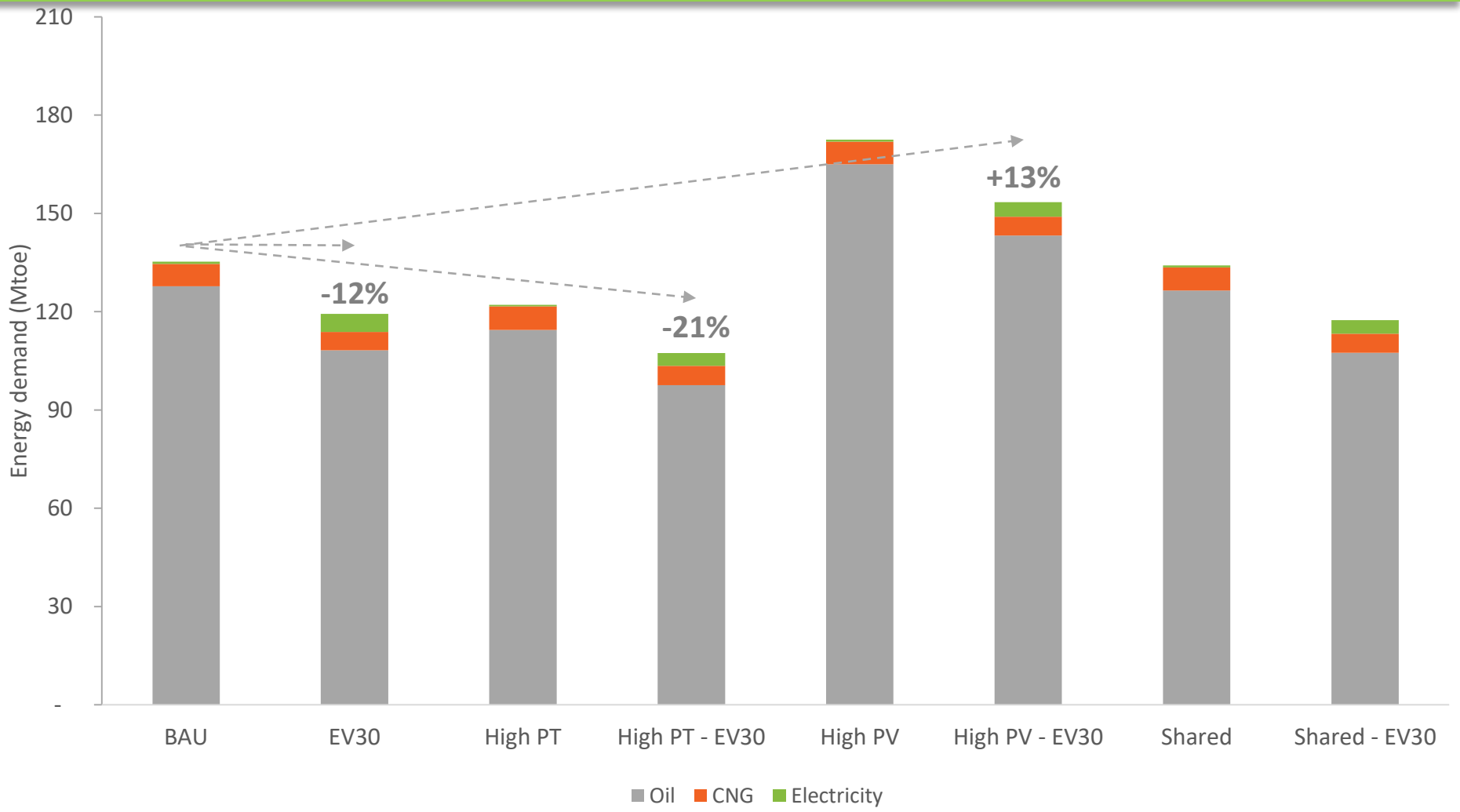
Vehicle stock in a high PT scenario can be halved



Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

21% savings in energy input to the transport



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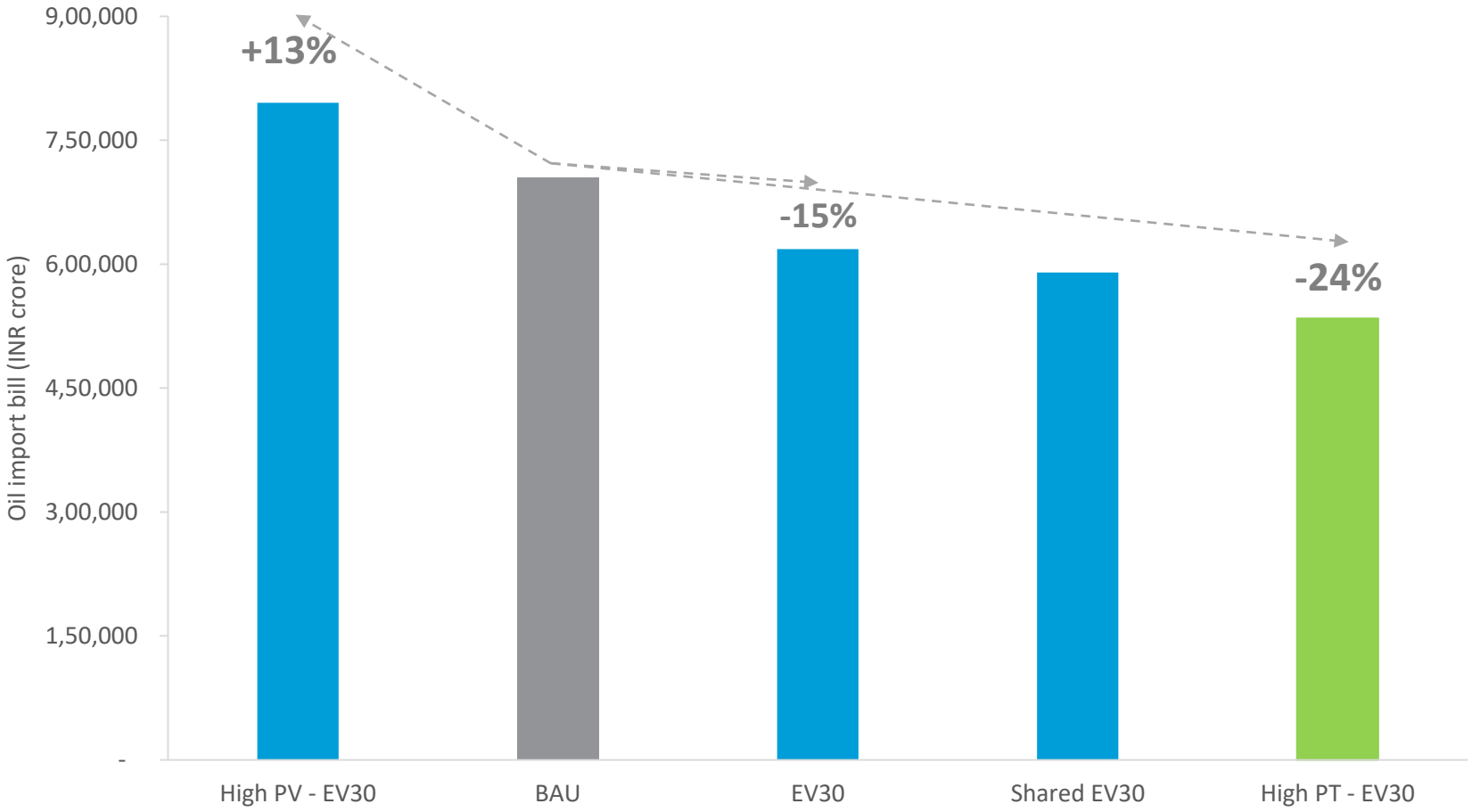
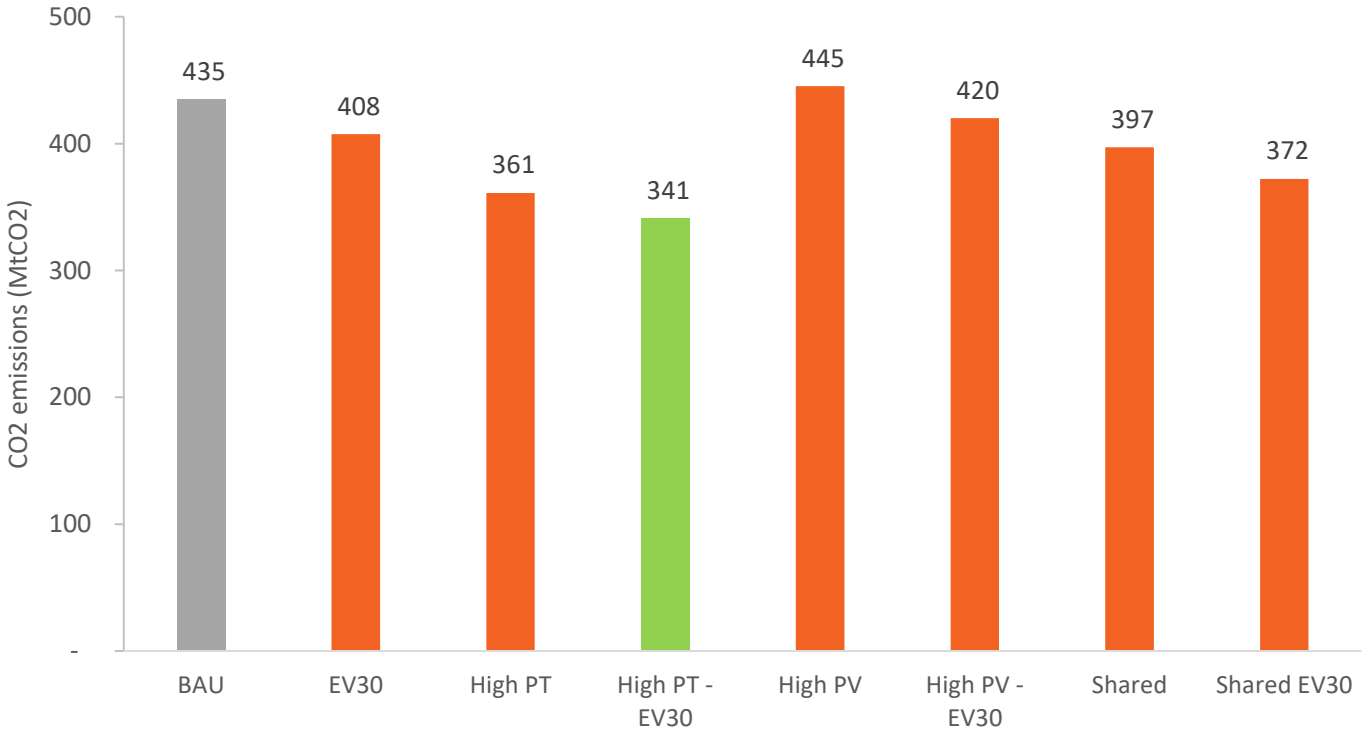
Stress on imports is also significantly reduced



Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

EV 30 along with PT adoption will result in maximum emission abatement

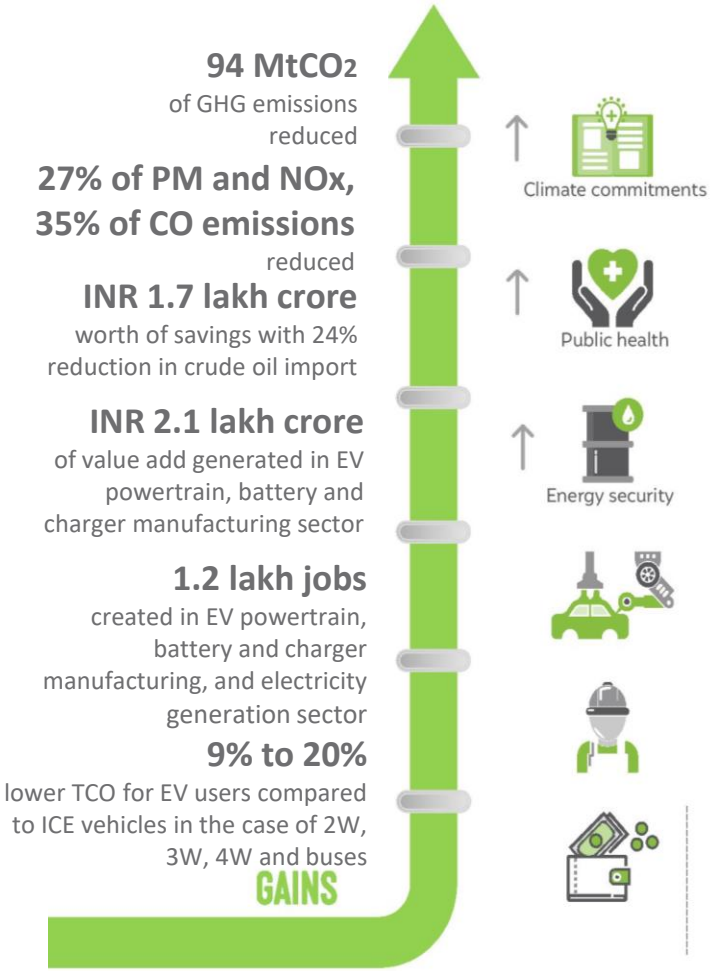


27% reduction in **PM and NO_X emissions**

35% reduction in **CO emissions**

Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

PT adoption with EV 30 scenario would result in a slew of gains

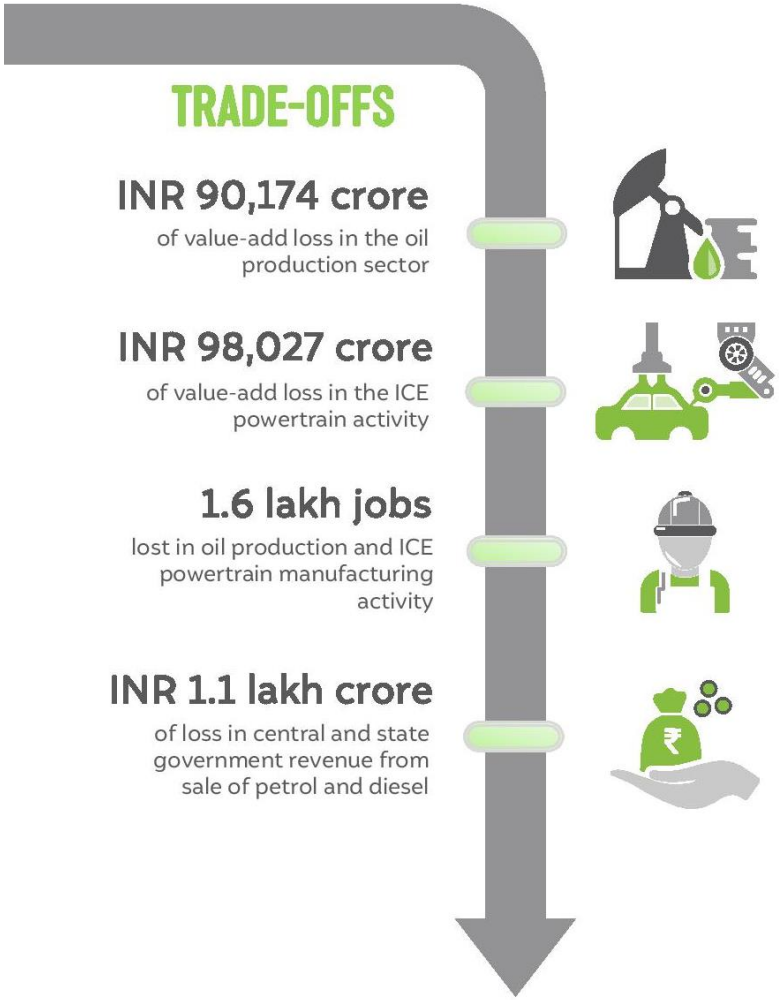


Smart Mobility Zones:

- Effectively integrate PT and EVs

Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

Trade-offs are real, but alternatives exist



Abating impact on government revenues via:

- **Usage-based taxation** (distance based tax)

Source: Soman, Abhinav, Harsimran Kaur, Himani Jain, and Karthik Ganesan. 2020. India's Electric Vehicle Transition: Can Electric Mobility Support India's Sustainable Economic Recovery Post COVID-19?

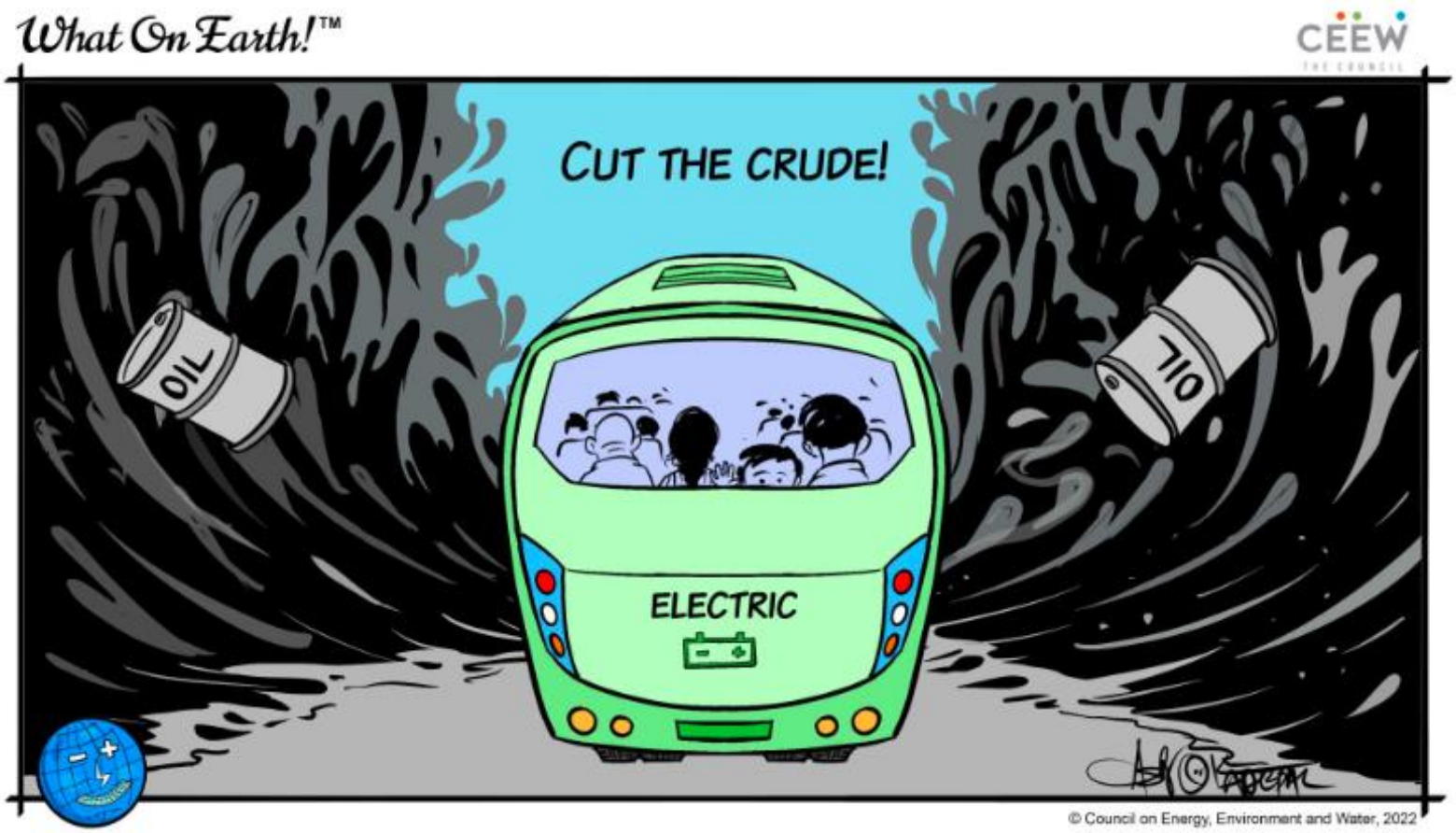
Conclusion

Passenger demand will grow in this decade significantly ensuing a shift towards private modes

To bend the curve for the total emissions of 1.6x by 2030, EVs are not enough -

- **Transport demand management** -
  - Adoption of public transport
  - Area based planning to restrict the movement of private vehicles
- **Avoid vehicle kilometres -**
  - **15 minute cities**: Out of 8000+ cities in India, 7700+ small and medium cities must aim to remain compact
  - Maintain and enhance the share of non-motorised trips in the Indian cities

As oil continues to roil in troubled waters, EV and PT will carve the way forward



Thank you

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Measures required to disincentivise private modes

Low-Emission zones-

Phase 1 (2022-23)

- Creation of **Smart Mobility Zone**
- Delineate the boundary of the smart mobility zone
- No restrictions over the entrance of vehicle

Phase 2 (2023-26)

- **Light Low emission zone**
- Provision of parking meters in the influx magnets
- The ICE passenger and IPT vehicles will be allowed with higher parking charges/ entrée fee

Phase 3 (2026-30)

- **Heavy Low Emission Zone**
- Installation of charging infrastructure at strategic places
- ICE vehicles allowed but at 3-4 times parking charges or entry fees

Phase 4 (2030 onwards)

- **Zero emission Zone**
- Necessary infrastructure to make the area as a zero emission zone
- Only electric vehicles to be allowed inside the zone

Measures required to disincentivise private modes

Usage based taxation-

	Can recover revenue	Does not disrupt EV TCO	Is easily implement able	Is equitable/ just	Can reduce emissions	Can reduce congestion	Can promote public transport	Can improve fuel efficiency
Distance-based tax	High	High	Low	Medium	High	Medium	Medium	High
Increase existing fuel tax rates	High	High	High	Low	High	Medium	High	High
Annual fee on EVs	High	Low	Medium	Low	Low	Low	Medium	Low
Increase tax on electricity	Medium	Medium	Medium	Low	Low	Low	Low	Medium
Increase GST on EVs	Low	Low	High	Low	Low	Low	Low	Low
Increase toll tax	Low	Medium	High	Low	Low	Low	Low	Low

Source: Authors' analysis

Potential: High, Medium, Low