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IKI





Paving the Path: Decarbonising Transport in India and the Region

INTERNATIONAL CLIMATE

INITIATIVE

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Intergovernmental Organisation

linked to OECD 66 member countries

Think Tank

Policy analysis and research Modelling, data and statistics

Annual Summit

Forum for Ministers, industry, research





ITF Decarbonising Transport (DT) Initiative





The DT initiative provides decision makers with tools to identify CO₂ mitigation measures that deliver on their climate commitment



- Launched in 2016 after the Paris agreement
- **Provides targeted analytical assistance** for countries and partners
- Gathers and shares evidence for best practices
- Shapes the climate change debate by building a global policy dialogue



The case of Decarbonising Transport in India: DTEE + NDC-TIA





Decarbonising Transport in Emerging Economies: India

Project objective

- Help countries identify effective measures and pathways to reduce transport CO₂ emissions
- Funding
 - International Climate Initiative ("IKI") of the German Ministry of Economic Affairs and Climate Action
- Partners
 - NITI Aayog in India
 - ITF main implementing partner
 - Wuppertal Institute, Germany focus on work in cities

Project countries

- Azerbaijan, Argentina, India, Morocco

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NDC Transport Initiative for Asia: India

- Project objective
 - Promote a comprehensive approach on decarbonizing transport, i.e. a coherent strategy of effective policies that are coordinated among various sector ministries, academia, civil society and the private sector.
- Funding
 - International Climate Initiative ("IKI") of the German Ministry of Economic Affairs and Climate Action
- Partners
 - NITI Aayog in India
 - GIZ, **ITF**, ICCT, WRI, SLoCaT, REN21 and Agora Verkehrswende
- Project countries
 - India, China, Vietnam

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on the basis of a decision by the German Bundestag



Reviewing existing transport policy and modelling in India



See: <u>https://www.itf-oecd.org/decarbonising-india-</u> transport-system

Life cycle analysis for decarbonising transport in India



See: https://www.itf-oecd.org/decarbonising-transportindia-learning-life-cycle-assessment



The ITF Transport Life Cycle Analysis Tool for India

- It helps understand holistically, the implications of changes in transport modes, vehicles and fuels in the Indian transport sector.
- It provides insights on how these different choices impact transport emissions from a holistic perspective.





The ITF Transport Life Cycle Analysis Tool for India

- For a given vehicle (mode, powertrain, fuel type) and use case, determines the energy use and green house gas emissions at each phase of the lifecycle
- Phases: vehicle manufacturing and material disposal, transport, use, operational services, and transport infrastructure (construction and maintenance).





The passenger tool includes 32 vehicle types

Mode	Application	Vehicle technology
Car	Private	Petrol/ EV
	Ride-hailing	Diesel/ EV
	Scooter-Private Petrol/ 8	Petrol/ EV
2W	Scooter-Shared	Petrol/ EV
	Motorcycle-Private	Petrol/ EV
	Motorcycle-Shared	Petrol/ EV
3W	Commercial	Diesel/ CNG/ EV
Urban Bus	12m AC	Diesel/ CNG/ EV
	12m Non-AC	Diesel/ CNG/ EV
	9m AC	Diesel/ CNG/ EV
	9m Non-AC	Diesel/ CNG/ EV
Intercity Bus	12m AC	Diesel/ CNG/ EV/FCEV
Metro	Metro rail	EV



Open access tool

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User Manual ITF Transport Life-cycle Assessment Tool for India (v1.0)



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Download the tool here:



C International Transport Forum	Respond by: for the sector of
ITF Transport Life-cycle Assessment Tool for India	on the basis of a decision by the German Bundestag
v1.0 (August 2023)	
Disclaimer: The Tool and corresponding manual are supplied without a warranty. The ITF, nor its partners, the input data, calculations, results or methodology of the Tool, nor any decisions made on the	nor the individuals acknowledged assume responsibility for the accuracy of basis of its outputs.
Acknowledgments	
The Tool was developed by the ITF through a number of collaborations.	
Pierpaolo Cazzola (formerly ITF) developed an initial version of the Tool. Leeza Malik and Subra data sourced by Ravi Gadepalli (Independent consultant, World Bank), Amar Shinde (IIT Pune),	eet Sengupta (IIT(ISM) Dhanbad) further improved the Tool, incorporating and Technology Information Forecasting and Assessment Council (TIFAC) .
Tool development was managed by Malithi Fernando (ITF), with valuable input from Vatsalya S	ohu (ITF) and Ravi Gadepalli.
The Tool also benefited from the feedback of NITI Aayog, the NDC-TIA consortium members ICI review workshop was held in January 2023 with representation from academia, international experts. The feedback from this event and following was incorporated into the Tool and manua (World Bank), N Mohan (Government of Delhi), Sudhamhu Mishra, and Minal Chandra (UC Da	T, WRI, GIZ, Agora, and REN21, in addition to the World Bank. A peer rganisations, and transport practicitioners in India as well as international I. In particular, they benefitted from the detailed review of Gerald Ollivier is).
The Tool is based on the GREET Model (2018) of the Argonne National Laboratory, developed b though the authors are grateful to the Argonne National Laboratory and Michael Wang for sup material properties are based on GREET Model results. The ITF Tool assumes the same system i	w Michael Wang, This Tool is not associated with the GREET Model, port at points throughout the project. Direct inputs related to fuel and ooundary. ■ COPYRIGHT 2017 UChicago Argonne, LLC
Project Funding: The India LGA Tool has been developed in the framework of the ITF activities on the Decarbonis Contributions - Transport initiative for Asia (NDC-TIA) projects.	ing Transport in Emerging Economies (DTEE) and Nationally Determined
nstructions INPUTS>> Base inputs EM PHASES>> Vehicle manufacturing Transport Use C	Operational services Infrastructure RESULTS>> Summary Grapi 🕀 : K



The tool inputs

- Provide input data or choose a default
- Three different energy scenarios + a fourth user defined scenario



Switch to renewables energy scenario



The tool results











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Technical study on Life Cycle Assessment of Passenger Transport in India

- Jointly developed with the World Bank
- Focuses on the Indian passenger transport sector
- Results from three electricity grid evolution scenarios on GHG emissions per pkm, vkm and vehicle.









Scope

Passenger transport

- Private and shared transport modes (cars including taxis and ride-hailing services, such as Uber or Ola and two-wheelers)
- Public transport modes (threewheelers, buses and metro-rail systems)

Vehicle technologies

- Internal combustion engines (ICE)
- Battery electric vehicle (BEV)
- Fuel cell electric vehicle (FCEV)

Fuels

- Diesel
- Petrol
- Compressed natural gas (CNG)
- Blue hydrogen (CNG based)
- Green hydrogen (100%)renewable energy based)

Life-cycle phases

- Vehicle and battery manufacturing
- Transporting the vehicle to the point of sale
- Vehicle usage
- Related infrastructure







Recommendations





Pathway to Zero Emission Trucking in India – June 2024

- Assessment of decarbonising heavy-duty trucks in India with focus on battery electric technology
- Four-pillared roadmap addressing technology, operations, infrastructure, financing, and policy
- Economic viability analyzed using WRI India UC Davis techno-economic analysis tool
- Examination of international policy developments and meta-review of global TCO studies





Thank you

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