PROMOTING LOW CARBON TRANSPORT IN INDIA

Resource Catalogue

Low Carbon Transport in India

UNEP

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Introduction

Promoting Low Carbon Transport in India is a major initiative of the United Nations Environment Programme (UNEP). Designed to help bridge the gaps between local, state and government policies, the project seeks socially optimum solutions for the country's transport sector. The project aims to attain these goals by strategically linking the transport requirements of India's National Action Plan on Climate Change with urban transport renewal and the creation of smart cities.

A number of key resources designed to support India's low-carbon mobility pathway have been produced during the project. This catalogue offers snapshots of the reports, which include case studies, roadmaps for sectoral action plans, policy summaries, peer reviewed journals, and toolkits. The publications present the project's key findings in line with its overall goals: creating an enabling environment for coordinating policies to achieve a sustainable transport system, and building cities' capacity to improve mobility while lowering CO_2 emissions.

These publications were developed during the project's five-year lifespan (2010 to 2015) by its partners: UNEP DTU Partnership, the Indian Institute of Management, the Indian Institute of Technology, CEPT University, and guest experts. Prior to publication, each report's findings were shared with a broad range of stakeholders and experts both within and outside India, and the inputs gathered were integrated into the finalized documents.

UNEP would like to thank all those involved in production of the publications. The production of these publications was made possible through funding support from the International Climate Initiative of the German Government. All the publications are available online on the project website: **www.unep.org/transport/lowcarbon**

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Inclusive and sustainable mobility

Reports & Toolkits

Gender Sensitive Transport Planning for Cities in India

Author: D. Mahadevia
December 2015

Indian women generally have very low mobility, which is detrimental to their participation in the labour market and keeps them from making the most of life's opportunities. This report examines gender issues in transport planning for Indian cities, demonstrating how affordable, dependable and safe transportation options encourage both gender equity and sustainable, low-carbon transport.

Biofuel Roadmap for India

Authors: S. Dhar and P. Purohit
November 2015

Biofuels are emerging as India's most promising alternative to conventional fuels, as they can be produced locally and can be substituted for diesel or gasoline. This report looks at the biofuels' potential in India, identifying key challenges and analyzing implications in regards to energy security, air quality, GHG mitigation, employment and rural development.

Transport Scenarios for India: Harmonising Development and Climate Benefits

Authors: S. Dhar, P.R. Shukla and M. Pathak
November 2015

This report explores how to integrate both development and climate concerns into transport scenarios for India, analyzing both supply and demand. Options are examined in terms of CO2 mitigation, development co-benefits and investment needs. Demand side subjects include passenger and freight transport, while supply side issues include fuel efficiency, fuel switching and electric vehicles.

Report on Heavy Duty Vehicles

Authors: L. Malik , G.Tiwari and D. Mohan
October 2015

Growing urbanisation in India has led to growth in the consumption of goods and services, as well as an increase in demand for freight transport services in and between cities. This report reviews the status of freight vehicles in India, including fuel efficiency and emission norms, and provides a road map for improving the sustainability of heavy duty vehicles

Scenarios and Roadmap for Intercity Transport in India: The Role of High Speed Rail

Authors: P. R. Shukla, M. Pathak, S. Mittal and S. Dhar
September 2015

As the demand for transport between Indian cities grows, sustainable transport options appear to be shrinking. Until recently, the main inter-city transport choices were motor vehicles, railways, and to a lesser extent, airplanes, but today railway use is declining. If this trend continues, the gap will probably be filled by road-based transport and air, resulting in both increased greenhouse gas emissions and energy security challenges. This report examines India's current intercity transport landscape and analyses the feasibility of a High Speed Rail network in terms of both sustainability and accessibility.

Low-Carbon Comprehensive Mobility Plan: Udaipur

Authors: R. J. Dutta, R. Bose, S. Mahajan, D.P. Sunku, Y. Namasani and H.M. Sarma
January 2015

The cities in fast developing countries like India continue to grow rapidly in both its spatial extent and population, as a consequent of growth of national economy of the country. This has led to fast urban growth and urbanization. Urbanization has in turn led to an increase in the number of vehicles and energy consumption.

Low-Carbon Comprehensive Mobility Plan: Vishakhapatnam

Authors: A. Arora, R. Gadepalli, P.K. Sharawat, A. Vaid and A. Keshri
November 2014

The second-largest city in Andhra Pradesh, Visakhapatnam is growing at a rapid pace, and its transport system is struggling to keep up. As the city expands, it faces increased pollution, congestion and accidents due to increased vehicle use. This detailed LCMP offers a low-carbon vision for the city, including safe and sustainable transport systems for all citizens.

Electric Vehicle Scenarios and a Roadmap for India

Authors: P. R. Shukla, S. Dhar, M. Pathak and K. Bhaskar
November 2014

Taking into account the Indian government's National Electric Mobility Mission Plan 2020, which is geared towards boosting electric vehicle (EV) manufacturing and use, this report examines the current EV landscape, including new EV markets and emerging technologies. Using a bottom-up system model, the report offers future scenarios for Indian passenger transport with a focus on EVs.

Preparing a Comprehensive Mobility Plan (CMP): Revised Toolkit

Author: UNEP
September 2014

This is the latest version of a toolkit detailing how to prepare a CMP. After consulting with a wide range of experts and stakeholders, the revised toolkit has a clear focus on climate change and sustainable development and provides guidance for integrating the concept of inclusiveness into the transport planning processes.

Assessment of Motor Vehicle Use Characteristics in Three Indian Cities

Authors: D. Mohan, R. Goel, S. Guttikunda and G. Tiwari
June 2014

This report presents case studies of motor vehicle fuel efficiency in three Indian cities: Delhi, Visakhapatnam, and Rajkot. Designed to determine on-road fuel efficiency values for private motorized vehicles, the study's broad aim is to provide data for fuel efficiency standards based on real-world values, as opposed to the current practice of relying on figures provided by automobile manufactures.

Case Study of Metro Rails in Indian Cities

Authors: R. Goel and G. Tiwari
June 2014

Though city planners tend to favor metro rail projects, high construction and operational costs make it imperative to carefully weigh the pros and cons. Using the proposed Delhi metro rail as an example, this case study examines the costs and benefits of metro rail projects in regards to achieving the twin goals of inclusive and sustainable development and low-carbon growth.

Second-Generation Biofuel Potential in India

Authors: P. Purohit and D. Fischer
June 2014

This study assesses the availability of biomass from sustainably-derived agricultural residues in India, and its potential for producing biofuels. Offering an overview of biofuel policy and production in India, the report includes a critical review of literature on the evolution and development of Indian biofuels as well as a survey of research and development initiatives currently underway.

Low-Carbon Comprehensive Mobility Plan: Rajkot

Authors: T. Munshi, K. Shah, A. Vaid, V. Sharma, J. Kenny, R. Sayan, D. Advani and J. Yogi
April 2014

Like many other Indian cities, Rajkot continues to grow rapidly in terms of economy, area and population, putting pressure on urban transport infrastructure, and raising concerns about vehicular emissions. This LCMP integrates transport, land use and environment strategies for current and future urban needs. Strategies covered include walking, bicycling and public transport infrastructure.

NMT Infrastructure in India: Investment, Policy and Design

Authors: G. Tiwari and D. Jain
August 2013

Providing an overview of Non-Motorized Transport (NMT) projects in Indian cities, this study identifies gaps in existing infrastructure, policies and design intervention, and offers recommendations on how to close them. Issues explored include NMT's role in user's transport choices, options for NMT infrastructure along the Delhi BRT corridor, and the impact of improved NMT on CO_2 emissions and fuel consumption.

Low Carbon City: A Guidebook for City Planners and Practitioners

Authors: S. Dhar, M. Pathak and P. R. Shukla
August 2013

Designed to help city planners incorporate globally agreed-upon climate change objectives into their long-term city development plans, this guidebook is geared towards municipal policymakers, urban planners, and transport planners. Offers insight on how to align national development and climate change agendas with municipal development plans that impact not only transport, but also air quality, energy access, congestion and national energy security.

Impact Assessment and Management Framework for Infrastructure Assets

Authors: A. Garg, P. Naswa and P. R. Shukla
August 2013

This case study shows how climate change can affect transport infrastructure by examining a prominent Indian railway system that is facing challenges due to the uncertainty of weather events. The growing uncertainty of rainfall during monsoon season makes it increasingly difficult to predict the probability of boulders, etc. falling on the tracks, and hence, the likelihood of accidents and the subsequent economic consequences.

Infrastructure for Low-Carbon Transport in India: A Case Study of the Delhi-Mumbai Dedicated Freight Corridor

Authors: P. Pangotra and P. R Shukla
August 2012

The Delhi-Mumbai Dedicated Freight Corridor (DFC) is one of the largest transport infrastructure projects being implemented in India. This case study provides a long-term assessment of the DFC's CO_2 emissions over a 30-year time period from 2016-17 to 2046-47, under three future scenarios. The case study is available as both a detailed report and a policy summary.

Low-Carbon Mobility in India and the Challenges of Social Inclusion: BRT Case Studies

Authors: D. Mahadevia, R. Joshi and A. Datey
October 2011

This study assesses the status and progress of BRT systems in five Indian cities: Ahmedabad, Pune, Delhi, Jaipur and Indore. The study focuses on how these cities in particular, and urban India in general, is transiting to relatively low-cost and low-carbon transport options such as BRT. Available as either detailed report or policy summary.

Macro Indicators for Low Carbon Transport in India

Authors: P. R. Shukla and P. Pangotra
October 2011

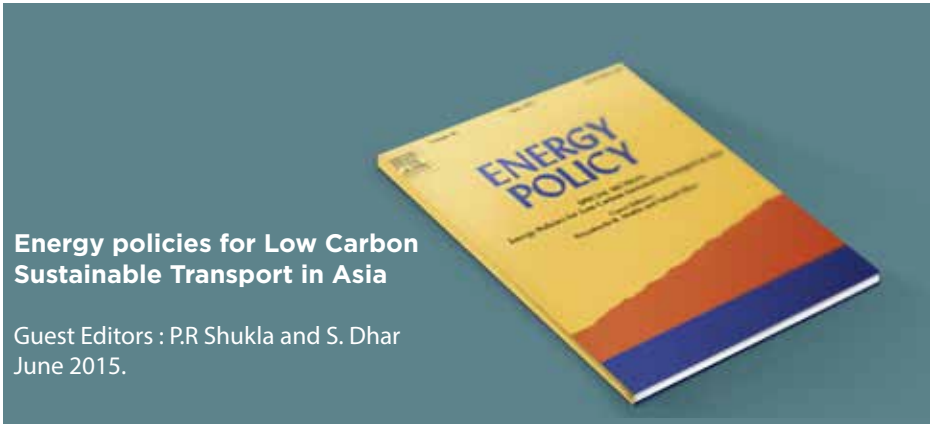
This report presents indicators relating to the macro-economic, national and long-term contexts for low carbon transport in India. Five key aspects are covered: economic, social, environmental, technological and meta-strategic indicators. The discussed indicators take into account both passenger and freight transport.

City Level Indicators: Promoting Low Carbon Transport in Indian Cities

Authors: G. Tiwari, D. Mohan, K. R. Rao, D. Mahadevia and R. Joshi
October 2011

The indicators in this report were designed to measure the sustainability of urban transport systems based on long-term economic, social and environment impacts. They cover five key aspects of urban transport: mobility and accessibility, infrastructure and land use, safety and security, environmental impact, and economic response.

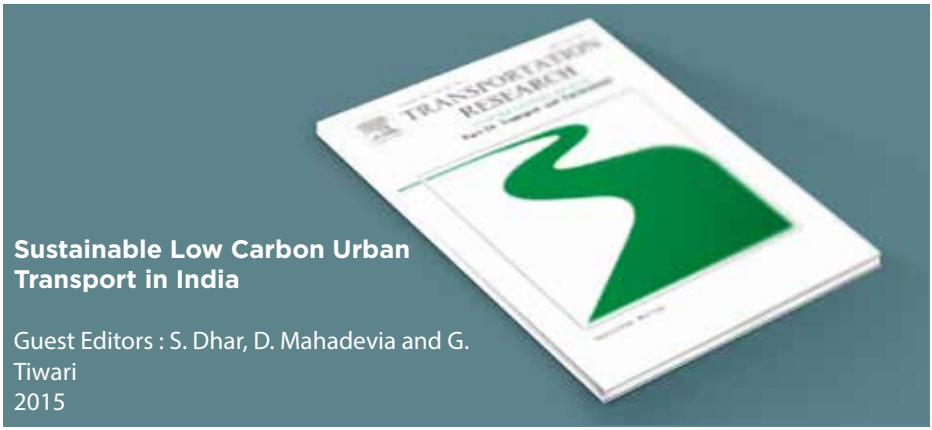
Journals



Energy policies for Low Carbon Sustainable Transport in Asia

Guest Editors : P.R Shukla and S. Dhar
June 2015.

This special issue of the peer-reviewed Energy Policy Journal includes a special section devoted to sustainable transport in India. A direct outcome of the Promoting Low Carbon Transport in India project, the section includes three articles by project participants that include assessments and analysis of India's current transport situation, as well as scenarios for a low-carbon future.



Sustainable Low Carbon Urban Transport in India

Guest Editors : S. Dhar, D. Mahadevia and G. Tiwari
2015

This journal publishes original research on the environmental impacts of transportation, policy responses to those impacts, and their implications for the design, planning, and management of transportation systems. It covers all aspects of the interaction between transportation and the environment.
The journal contains seven papers authored by the Low Carbon Transport in India project participants.

Brochures

Low Carbon Comprehensive Mobility Plan for Rajkot: Project Flyer

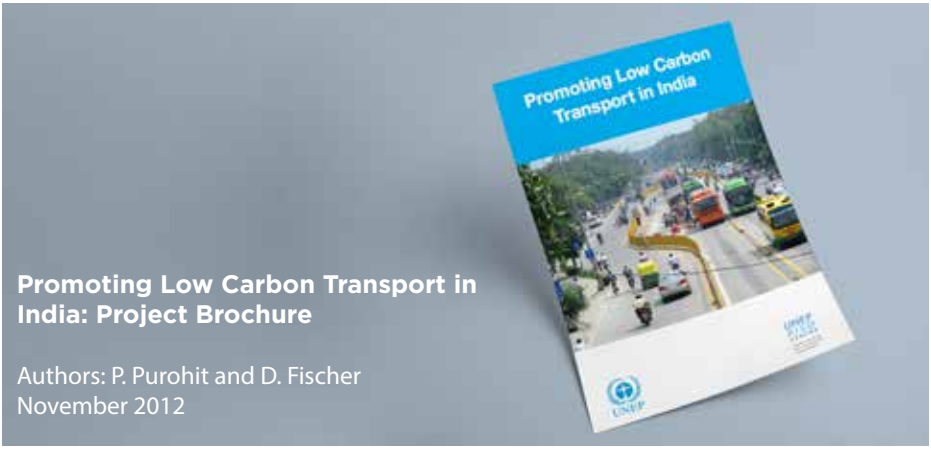
Author: UNEP
November 2013

This brochure highlights key issues in developing Low Carbon Comprehensive Mobility Plans (LCMPs) in the city of Rajkot, the fourth largest city in the state of Guajarat. The text examines both the structure and transport systems of Rajkot, and outlines four broad strategies designed to achieve lower carbon emissions.

Low-Carbon Comprehensive Mobility Plan for Udaipur: Project Flyer

Author: UNEP
November, 2013

This flyer summarizes the key transport issues covered in the LCMP for the Indian city of Udaipur. The city's lack of both organized public transport and NMT infrastructure poses a serious challenge for transport planning. The LCMP makes detailed recommendations for possible land use interventions, NMT, public transport systems, and improved vehicle technologies.



The brochure outlines the Promoting Low Carbon Transport project, offering a brief overview of the Indian transport sector, as well as project activities that promote the adoption of low carbon transport strategies and technologies. Key project outcomes and milestones are also detailed.

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