

A Toolkit for Preparation of Low Carbon Mobility Plan



September 2016

Copyright © United Nations Environment Programme, 2016

ISBN : 978-92-807-3615-1

Job No: DTI/2056/NA

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. UNEP would appreciate receiving a copy of any publication that uses this publication as a source. No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from the United Nations Environment Programme.

Disclaimer:

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme, nor does citing of trade names or commercial processes constitute endorsement.

Photo acknowledgment front cover:

Cyclists on cycle tracks in Concepcion, Chile Courtesy of Solutiva Consultants

Tram in Helsinki, Xavi R Pintero, Flickr <https://www.flickr.com/photos/frikjan/7125791137/>

BRT Delhi, Centre for Urban Equity, CEPT

Electric Car, <https://www.flickr.com/photos/7317295@N04/8587181932>

Recommended citation: UNEP (2016). A Toolkit for Preparation of Low Carbon Mobility Plan. United Nations Environment Programme, Nairobi.

An online version of this toolkit is available at <http://www.unep.org/transport/lowcarbon/toolkit/>

A Toolkit for Preparation of Low Carbon Mobility Plan

September 2016

Acknowledgements

This toolkit refers to the Comprehensive Mobility Plan (CMP) Revised (2014) toolkit of the Ministry of Urban Development, India, which was developed by the Institute of Urban Transport (IUT) Delhi, and UNEP DTU Partnership, along with Indian project partners from the UN Environment Project *Promoting Low Carbon Transport in India*, as a starting point.

The toolkit for CMP was revised into a toolkit for Preparation of Low Carbon Mobility Plan (LCMP) for global application by a team of researchers comprising Dr. Subash Dhar, Dr. Talat Munshi and Dr. Minal Pathak. Our special thanks to Ms Kamala Ernest from UN Environment for her valuable support and inputs in the finalisation of this toolkit.

We would like to thank the authors of the CMP toolkit comprising of team from IUT : Mr M.L. Chotani, Ms Kanika Kalra and Ms Vijaya Rohini, our project partners in India: Prof Darshini Mahadevia (CEPT University), Prof Geetam Tiwari (the Indian Institute of Technology Delhi, IITD), and Prof P.R. Shukla (the Indian Institute of Management Ahmedabad, IIMA). We would like to extend our thanks to LCMP Consultants: Dr. Anvita Arora (Innovative Transport Solutions Pvt Ltd, iTrans) and, Mr Ranjan Jyoti Dutta (Urban Mass Transit Company Limited, UMTCL).

The team would like to thank the following global transport experts: Ms Akshima Ghate (TERI University), Mr Bert Fabian (UN Environment), Dr. Jorge Rogat (UNEP DTU Partnership), Ms Kanika Kalra (IUT), Mr Debashish Bhattacharjee and Ms Stefanie Holzwarth (UN-Habitat), Mr Julien Allaire (Cooperation for Urban Mobility in the Developing World, CODATU) and Mr Christopher Kost (Institute for Transportation & Development Policy, ITDP). The toolkit has greatly benefitted from their critical and insightful comments and suggestions. The team would also like to thank Ms Rasa Narkeviciute for her comprehensive comments.

We appreciate the editorial assistance of Ms Josephine Baschiribod for the final draft and, Mr Steve Kinuthia for developing the online version of this toolkit.

Supported by:



Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

based on a decision of the German Bundestag

Contents

<i>Foreword</i>	<i>vi</i>
<i>Preface</i>	<i>vii</i>
<i>Abbreviations</i>	<i>viii</i>
Introduction	1
Background	1
What is a Low Carbon Mobility Plan (LCMP)?	2
Scope of LCMP	2
Main features	2
How does it work?	3
Key outcomes	3
Setting Up	5
Institutional structure LCMP	5
City profile	7
Defining the scope	8
Planning area	9
Planning horizon	10
Work plan	10
Framework for preparing the LCMP	10
ToR for LCMP consultants	11
Profiling Existing Urban and Transport Systems	12
Land-use and urban form indicators	15
Urban expansion	15
Population density	15
Job density	16
Population/jobs balance	16
Land-use mix	16
Mobility and accessibility indicators	16
Mobility: travel behaviour indicators	17
Mobility: transport infrastructure indicators	17
Accessibility indicators	19
Goods and freight	19
Safety and security indicators	20

Environmental indicators	20
CO ₂ emissions	20
Air pollutant emissions	22
Profiling of indicators for the current year	23
Developing the Business-as-Usual (BAU) Scenario	24
Large cities – developing the Business-as-Usual scenario	24
Socio-economic projections	24
Future transport demand	25
Fuel and technology transitions	26
BAU indicators and LCMP targets	27
Small cities – cross comparison with benchmarks	27
Revisiting base year indicators	27
Setting benchmarks	27
Analysing actions with respect to base year	28
Analysing Alternative Low Carbon Scenarios	29
Alternate low carbon scenarios	29
Land-use and planning	30
Non-motorised transport	31
Public transport	31
Vehicles	31
Regulatory and financial measures	33
Analysing indicators and LCMP targets	33
Develop Low Carbon Mobility Plan	34
Feedback for land-use plans	34
Public transport improvement plans	34
NMT infrastructure improvement plans	35
Road network improvement plans	35
Freight movement plans	35
Mobility management measures plan	35
Implement, Monitor and Report	37
Identification and prioritisation of projects	37
Funding of projects	38
Monitoring and reporting	39
References	40
Reference toolkits	41
Glossary	42
Annexures	46
Annexure 1: Data Collection Approach, Methodology and Sources	47
Annexure 2: Stakeholder Consultation	79
Annexure 3: Four-Step Modelling	86

Annexure 4: List of Maps to be Prepared	91
Annexure 5: Travel Indicators and Travel Behaviour	93
Annexure 6: Methodology for Establishing Vintage for Vehicles	97
Annexure 7: Future Fuel Efficiency	99
Annexure 8: Estimating Air Pollutant Emission Factors	100

List of Tables

Table 1: City profile data required and sources of data	7
Table 2: Indicative time for preparation of LCMP	10
Table 3: Urban Transport Indicators	14
Table 4: Mobility-Travel Behaviour Indicators	18
Table 5: Mobility-Transport Infrastructure Indicators	19
Table 6: Accessibility Indicators	20
Table 7: Goods and Freight Indicators	20
Table 8: Safety and Security Indicators	21
Table 9: Energy Balance	22
Table 10: Vehicle Inventory	22
Table 11: A stylised table for vehicle kilometres travelled and fuel mix for base year	23
Table 12: CO ₂ Emission Coefficients for Fossil Fuels	23
Table 13: Air Quality Data	24
Table 14: A stylised table for PM 2.5 Emissions for base year	24

List of Figures

Figure 1: The process of preparing low carbon mobility plans	4
Figure 2: Roles of consultants and stakeholders	6
Figure 3: Urban Growth: An example from the city of Rajkot, India	8
Figure 4: Scoping of LCMP	9
Figure 5: The LCMP modelling framework	11
Figure 6: Fuel Mix Projections for BAU in India	28
Figure 7: Exploring Options for Low Carbon Mobility	32
Figure 8: Land-use strategy in LCMP Rajkot	34
Figure 9: Approach for prioritising programmes/projects	42

Foreword

Following the successful completion of the Promoting Low Carbon Transport in India project (2010 to 2015), I am pleased to present a **Toolkit for Preparation of Low Carbon Mobility Plans (LCMP)**. The toolkit supports the development of a long-term vision for sustainable urban transport. It is based on the experiences and the pilot cities of the project.

A sustainable low carbon transport sector is essential for building better and cleaner cities and, therefore plays a key role in implementing the Paris Agreement on Climate Change as well as the achievement of the 2030 Development Agenda of the Sustainable Development Goals.

The foundation for a low carbon transport pathway builds from a city development plan that integrates transport planning with safety, social inclusivity, reduced air pollution, and carbon dioxide emissions. Through a set of sustainability indicators and step-by-step approach, the toolkit provides guidance on how to strategize mobility planning as part of urban planning, prioritize accessibility for all socio-economic groups, prioritize shifts to sustainable transport modes and reduce environmental impacts.

I would like to thank the authors and all involved in the development of this toolkit. The toolkit caters for small, medium and large cities. It is my hope that it will be useful for cities around the world.

Thank you.



Ligia Noronha

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_15958

