

PREFACE

The Government of India set up a High Level National Transport Development Policy Committee (NTDPC) on 11 February 2010. The main objective of setting up this Committee was to develop long term national transport policy (with a twenty year horizon) which facilitates overall growth and efficiency in the economy, while minimising energy use and effects on climate change. A somewhat similar Committee constituted by the Government to look at long term transport policy was the National Transport Policy Committee under the chairmanship of Shri. B. D. Pande, a former Cabinet Secretary. That committee submitted its report to the Government in May 1980. This was followed up by the Steering Committee on Perspective Planning for Transport Development in 1988.

The Constitution of the NTDPC and its terms of reference are at Annex P.1.

At the outset, I would like to express my deepest appreciation to the Prime Minister and Shri. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission for having the vision to constitute the NTDPC and then providing it with all the support that was essential for its functioning throughout its long tenure. The Committee was initially given a tenure of 18 months. Because of the complexity of the task and volume of work, its tenure had to be repeatedly extended and we are grateful to the Government for having the patience and understanding to allow us to complete our work to our satisfaction.

I would also like to express my gratitude to the Member Secretary of the Planning Commission and the team of officers and staff from both the Administration as well as Transport Divisions, from whom the Committee received utmost cooperation in the initial days of its life while setting up the secretariat, conducting meetings and appointing officials and staff. Smt. Vini Mahajan, Joint Secretary, Prime Minister's Office provided excellent guidance and support in the setting up of the Committee.

This is the third Committee on infrastructure issues which I have had the privilege to be associated with. The first was the Expert Group on Commercialisation of Infrastructure Projects which issued the *India Infrastructure Report* in June 1996. The second was the Expert Group on Indian Railways which issued the *Indian Railways Report* in July 2001. The work involved in the current report has been the most complex by far and has involved a very large

number of institutions and individuals in its preparation. I would like to record my personal gratitude to all the institutions and experts who have contributed to the preparation of this report.

The work of the Committee was greatly facilitated by the generous provision of excellent office facilities and infrastructure support provided by the Infrastructure Development Finance Company (IDFC) in their New Delhi offices. A very special word of thanks for this generous gesture goes to Shri. Deepak Parekh, Chairman of the IDFC at the inception of the NTDPC, and Dr. Rajiv Lall, then CEO & MD, and now Executive Chairman.

The Committee held 21 meetings over the period of almost 4 years of its existence, mostly on Saturdays. A list of the dates on which the meetings were held and the venue are given below.

1. 15 March 2010, Planning Commission
2. 18 May 2010, Planning Commission
3. 26 June 2010, Planning Commission
4. 31 July 2010, Rail Bhavan
5. 21 August 2010, Rail Bhavan
6. 28 October 2010, Metro Bhavan
7. 8 January 2011, Rajiv Gandhi Bhavan
8. 12 February 2011, Planning Commission
9. 26 March 2011, Rail Bhavan
10. 14 May 2011, Rail Bhavan
11. 11 June 2011, Rail Bhavan
12. 18 June 2011, Rail Bhavan
13. 19 November 2011, Rail Bhavan
14. 31 March 2012, Rail Bhavan
15. 7 July 2012, Rail Bhavan
16. 28 July 2012, Rail Bhavan
17. 5 January 2013, Rail Bhavan
18. 23 February 2013, Planning Commission
19. 15 July 2013, Rail Bhavan
20. 19 August 2013, Rail Bhavan
21. 30 November 2013, Rail Bhavan

The NTDPC is grateful to the respective Chairmen, Railway Board, for hosting most of the meetings of the Committee.

We are also grateful to the Government of South Africa for having graciously hosted the Committee, during their visit to South Africa between 19-28 March 2012. The team benefited from the delibera-

tions and interaction with the Deputy Minister of Transport as well as from their field visits.

INTERIM REPORT OF THE NTDPC

In view of the length of time that it has taken us to prepare the Final Report of NTDPC, Shri. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, requested the NTDPC to submit an Interim Report so that could be used in the preparation of the 12th Five Year Plan. A number of NTDPC Members contributed to its preparation, which was coordinated by Shri. B. N. Puri, Member Secretary. Shri. Rishab Sethi contributed significantly to its preparation. The Report was submitted in April, 2012 (http://planningcommission.nic.in/sectors/NTDPC/Interim%20Report_NTDPC_2012.pdf, accessed 27 March 2014).

I am grateful to all members of the NTDPC and their delegates for actively participating and contributing to the work of the Committee throughout the lengthy period of its existence.

We received consistent support from all the ex-officio members, the Chairmen, Railway Board and all the Secretaries of the various ministries represented. Advisor to Deputy Chairman, Planning Commission, Shri. Gajendra Haldea withdrew from membership of the Committee in its late stages due to his official pre-occupations. We benefitted from his contribution in the earlier stages.

I would like to record a particular debt of gratitude to what emerged as the core group of independent members: Shri. K. L. Thapar, Shri. S. Sundar, Shri. D. P. Gupta, Professor Dinesh Mohan, Shri. M. Ravindra and Shri. Cyrus Guzder along with Shri. Vivek Sahai, who held my hand and provided constant encouragement throughout the period. Each of them are recognized experts in the area of transportation and they gave very generously of their time to guide me with great deal of patience throughout this period. NTDPC also benefitted from the consistent support of the institutions with which they are affiliated: in particular, the Asian Institute of Transport Development (AITD), The Energy and Resources Institute (TERI), and the Transport Research and Injury Prevention Programme (TRIPP) of the Indian Institute of Technology, Delhi. This report could not have been compiled without their generosity and lifelong dedication to the development of efficient transport in India.

The compilation of this report has been a very complex operation since we have had the task of, on the one hand, preparing detailed sectoral reports on each of the transport sectors, and on the other, addressing each of the cross-cutting themes needed to be addressed across the transport sectors in a consistent fashion, while keeping in focus an integrated

view of the whole transport sector. As will be appreciated while going through individual sector chapters, each sector by itself is extremely complicated with its own laws, regulations and peculiarities, and which had to be captured in each case. Addressing the cross cutting issues involved wider consultation, both domestically and internationally. The work of the NTDPC has therefore involved the participation and existence of a great many people, all of whom have contributed generously, and largely on a *pro bono* basis.

WORKING GROUPS

The Committee was provided with a broad terms of reference to begin with. Considerable discussion took place in the first three meetings on how we should organize the work of the Committee. Should it be organised on a sectoral basis or on cross cutting themes? We concluded that it was necessary to look at each sector in depth, while simultaneously initiating work on various cross cutting themes that were identified. Hence, initially, the Committee appointed the five sectoral Working Groups:

- i. Railways
- ii. Roads
- iii. Civil Aviation
- iv. Ports and Shipping
- v. Urban Transport

Subsequently, as the discussions proceeded, the NTDPC decided to appoint an additional set of two special Working Groups on specific issues.

A presentation given by the Ministry of Coal gave rise to the understanding that the future growth of the country, being highly dependent on corresponding growth in energy production, would need a coordinated approach for significant transport investment to ensure timely and efficient transportation of coal and other key energy related commodities. Hence, it was decided to appoint an additional Working Group on “*Integrated Strategy for Bulk Transport of Energy and Related Commodities in India*”.

Second, as discussions proceeded, it became clear that because of the isolation of the North East from the rest of the country, which arose at the time of independence and partition, it would be necessary to take an integrated view of the transport needs of the North Eastern region. Hence, it was also decided to constitute a full Working Group on “*Improvement and Development of Transport Infrastructure in the North East*”.

Each of the Working Groups appointed their own respective sub-groups to facilitate their work. The composition and terms of reference of these Working Groups and Sub-Groups are given at Annex P.2 and Annex P.3.

I am grateful to the Chairmen of the Railway Board and respective Secretaries of sectoral Ministries for agreeing to chair the sectoral Working Groups and for taking personal interest in the deliberations and preparation of the Working Group reports. As would be seen from the composition of these Working Groups and various sub groups formed by them, all the Ministries and associated organisations contributed generously to the work of these groups.

- 1. The Working Group Report on Railways** was prepared under the direction of Shri. S. S. Khurana, Shri. Vivek Sahai and Shri. Vinay Mittal, former Chairmen, Railway Board. Shri. Ranjan Jain, former Advisor (Infrastructure), Shri. Sushant Mishra, then Executive Director, Shri. Girish Pillai, Advisor (Infrastructure) and Shri. Mukul Mathur, Executive Director, Railway Board were particularly instrumental in preparing the Report of the Working Group. Sushant Mishra and Ranjan Jain had earlier been associated with the preparation of the Indian Railways Report in 2001, and also with the Sam Pitroda report on “Modernization of Indian Railways” more recently. The continuity of their association with developments in thinking on railways reform helped greatly in the preparation of this report. The Report was submitted to the Government on 9 August 2012.
(http://planningcommission.nic.in/sectors/NTDPC/Working%20Group%20Reports/Railways/Report%20of%20Working%20Group%20on%20Railways_Submitted%20to%20the%20Govt%20on%20Aug%209th,%202012.pdf, accessed 27 March 2014).
- 2. The Working Group Report on Roads** was prepared under the direction of Shri. Brahm Dutt, Shri. R. S. Gujral and Shri. A. K. Upadhyay, former Secretaries, Ministry of Road Transport & Highways. Shri. Arvind Kumar contributed to the drafting of the report. The report was submitted to the Government on 4 July 2012.
(http://planningcommission.nic.in/sectors/NTDPC/Working%20Group%20Reports/Roads/Report%20of%20Working%20Group%20on%20Roads_Submitted%20to%20the%20Govt%20on%20July%204th,%202012.pdf, accessed 27 March 2014).
- 3. The Working Group Report on Ports and Shipping** was prepared under the guidance of Shri. K. Mohandas and Shri. Pradeep Kumar Sinha, former Secretaries, Ministry of Ports and Shipping. Shri. Arvind Kumar and Shri. M. M. Hasija contributed to the drafting of the report. The report was submitted to the Government on 25 September 2012.
([http://planningcommission.nic.in/sectors/index.php?sectors=National%20Transport%20Development%20Policy%20Committee%20\(NTDPC](http://planningcommission.nic.in/sectors/index.php?sectors=National%20Transport%20Development%20Policy%20Committee%20(NTDPC)), accessed 27 March 2014).]
- 4. The Working Group Report on Civil Aviation** was prepared under the guidance of Shri. M.M. Nambiar and Dr S. N. A. Zaidi, former Secretaries Ministry of Civil Aviation. Shri. M. Kannan, was primarily responsible for drafting of the report. The report was submitted to the Government on 4 July 2012.
(http://planningcommission.nic.in/sectors/NTDPC/Working%20Group%20Reports/Civil%20Aviation/Report%20of%20Working%20Group%20on%20Civil%20Aviation_Submitted%20to%20the%20Govt%20on%20July%204th,%202012.pdf, accessed 27 March 2014).
- 5. The Working Group Report on Urban Transport** was prepared under the direction of Dr. Sudhir Krishna, Secretary, Ministry of Urban Development and his predecessors Shri. M. Ramachandran and Shri. Navin Kumar. Shri. S. K. Lohia contributed greatly to the preparation of the report. The report was submitted to the Government on 4 July 2012.
(http://planningcommission.nic.in/sectors/NTDPC/Working%20Group%20Reports/Urban%20Transport/Report%20of%20Working%20Group%20on%20Urban%20Transport_Submitted%20to%20the%20Govt%20on%20July%204th,%202012.pdf, accessed 27 March 2014).
- 6. The Working Group Report on Integrated Strategy for Bulk Transport of Energy and Related Commodities in India** was prepared under the guidance of Shri. P. Uma Shankar, former Secretary, Ministry of Power. Dr. Anupam Khanna and Shri. Daljit Singh of the NTDPC were mainly instrumental in the drafting of the report. The report was submitted to the government on 24 June 2013.
(<http://planningcommission.nic.in/sectors/NTDPC/Working%20Group%20Reports/Bulk%20Transport%20of%20Energy/WG%20Report%20on%20Bulk%20Transport%20of%20Energy%20.pdf>, accessed 27 March 2014).
- 7. The Working Group Report on Improvement and Development of Transport Infrastructure in the North East** was prepared under the direction of Shri. Vivek Sahai, former Chairman, Railway Board. Smt. Jayashree Mukherjee, Joint Secretary, Ministry of Development of North Eastern Region (DoNER) was responsible for drafting of the report. Smt. Bunty Prasad, Ms. Jayati Chandra, former Secretaries, Ministry of DoNER, were very generous in their support of this work. This report was submitted to the government on 4 July 2012.
(http://planningcommission.nic.in/sectors/NTDPC/Working%20Group%20Reports/NER/Report%20of%20Working%20Group%20on%20North%20East_Submitted%20to%20the%20Govt%20on%20July%204th,%202012.pdf, accessed 27 March 2014).

8. Information and Communication Technology (ICT): Efficiency in the transport sector is undergoing significant transformation with the introduction of ICT in this sector. Moreover, development in seamless transfer across modes is being enabled by the new applications of ICT. Accordingly, we requested Shri. T. V. Mohandas Pai, Member, NTDPDC and former CFO of Infosys to help the NTDPDC in developing an approach to ICT in transport. He readily agreed and oversaw the work on ICT in Transport which was led by Shri. C. N. Raghupathy, with assistance from Shri. Deepankar Khashnabish and Shri. Kripakaran of Infosys and Shri. Daljit Singh of NTDPDC. Our grateful thanks to all of them.

As would be seen from the composition of these Working Groups and their Sub-Groups, a whole host of experts, officials and institutions were involved in the work of these Working Groups and the subsequent preparation of their reports, which finally culminated in the sectoral chapters in Volume III of this Report. I would like to express my deep appreciation of all the contributions made all concerned.

I want to record a particular debt of gratitude to Shri. P. Uma Shankar, former Secretary, Ministry of Power who chaired the Working Group on “Integrated Strategy for Bulk Transport of Energy and Related Commodities in India” despite the fact that his portfolio was not, prima facie, connected with transport. As will be evident from the Working Group Report, and from Chapter 8, Volume II of this Report, a great deal of data collection and modelling had to be undertaken to accomplish this task. This would not have been possible without the special support of Shri. Uma Shankar.

I am similarly indebted to Shri. Vivek Sahai who agreed to chair the Working Group on the North East after stepping down as Chairman, Railway Board. Given his long experience in the Railways, he then became part of the “core group” and gave generously of his time and advice.

SPECIAL STUDIES

In organising its work, the NTDPDC also decided to commission a few special studies on issues that were cross cutting across sectors.

1. Fiscal Issues and Allocative Efficiency: This study was assigned to the National Council for Applied Economic Research (NCAER). We are very grateful to Shri. Suman Bery, former Director General and Dr Shekhar Shah, Director General of NCAER, for agreeing to undertake this work and providing enough latitude to the researchers for completing the task while responding to our repeated requests for revisions and data collection. Very detailed work was carried out both

in modelling and data collection by Dr. Rajesh Chadha and Dr. Sourabh Pal. They cheerfully and patiently accepted our many comments and went through various drafts as requested by us. Shri. B. N. Puri, assisted by Dr. Krishna Dev, Geeta Garg and Honey Gupta, guided and contributed towards finalisation of the report. The study was submitted to the Government on 4 January 2013. (http://planningcommission.nic.in/sectors/NTDPDC/Study%20Reports/NCAER/Study%20on%20Fiscal%20Issues%20and%20Allocative%20Efficiency_Submitted%20to%20the%20Govt%20on.pdf, accessed 27 March 2014).

I would also like to record my appreciation to Dr. Sudipto Mundle (then at National Institute of Public Finance and Policy (NIPFP), now Member, 14th Finance Commission) for reviewing the report and providing us with very useful comments.

2. Life Cycle Analysis Study of Transport modes:

There is increasing concern on the differential environmental impact of different transport modes. It is found, often, that some erroneous conclusions are drawn because a comprehensive evaluation is not taken of full life cycle impacts involved in construction and operation of different modes. This study was entrusted to The Energy and Resources Institute (TERI). We are very grateful to the very innovative work done by Dr. Akshima Ghate with able assistance provided by Ms. Raina Singh, Ms. Tarika Sinha and Shri. Apoorv Vj. She was also assisted by an Advisory Committee consisting of Shri. S. Sundar, Shri. D. P. Gupta, Shri. M. Ravindra, Prof. Dinesh Mohan, Shri. B. N. Puri (all Members of NTDPDC), Dr. Anupam Khanna (NTDPDC), Shri. S. K. Mishra (Railways), Shri. Arvind Kumar (MoRTH) and Shri. S. D. Sharma (DMRC). Shri. S. Sundar provided overall direction at TERI. Our grateful thanks to all who have contributed their time in the preparation of this report. The study was submitted to the Government on 4 January 2013.

(http://planningcommission.nic.in/sectors/NTDPDC/Study%20Reports/TERI/Study_Life%20Cycle%20Analysis%20of%20Transport%20Modes_Submitted%20to%20the%20Govt%20on%20Jan%204,%202013/LCA_Final%20Report%20Vol%20I.pdf, accessed 27 March 2014). (http://planningcommission.nic.in/sectors/NTDPDC/Study%20Reports/TERI/Study_Life%20Cycle%20Analysis%20of%20Transport%20Modes_Submitted%20to%20the%20Govt%20on%20Jan%204,%202013/LCA_Final%20Report%20Vol%20II.pdf, accessed 27 March 2014).

3. Regulatory Framework for Transportation:

This study was entrusted to Dr. Rajat Kathuria (then Professor, International Management Institute) and now Director, ICRIER. He prepared

a detailed paper on the subject which was discussed at various times in the NTDP Secretariat and by the NTDP. This work was condensed to the chapter now appearing in the report Chapter 6, Volume II, Regulatory Issues: An Overall Approach). Shri. S. Sundar and Ms. Jessica Seddon very kindly gave their time to review the study in its various stages.

4. Institutional Development for Long Term Transport Policy in India:

This study was entrusted to the Indian Institute of Human Settlements (IIHS) under the supervision of Jessica Seddon, then Head of Research at the IIHS. The key issue that engaged the attention of NTDP, which is a recurrent theme of the report, is the development of institutional capacity in the country to integrate transport strategy and planning over time. As economic conditions over time and there are new technological developments, it is essential that the country develops adequate institutions that can adapt the extant transport strategy on a continuing basis. In preparing the study, Jessica was assisted by H. S. Sudhira and research assistance from Aruna Raman, Amogh Arakali, M. T. Vishnu, Arindam Jana and Anushree Dey. In view of the importance of this study for the development of transport strategy in India, it was discussed with selected members of NTDP and other experts in various meetings. Shri. K. C. Sivaramakrishnan, Shri. Anil Baijal (former Secretaries of Ministry of Urban Development) and Shri. V. K. Shunglu, a former Comptroller & Auditor General of India, kindly agreed to review the material prepared and to participate in the discussions with us. The final chapter on this issue (chapter 5, Institutions for Transport System Governance) owes much to the sage advice received from the collective wisdom embodied in these respected senior administrators.

I want to record a special debt of gratitude to Jessica Seddon for assisting us in reviewing a number of chapters far beyond the one that she was primarily responsible for her study on institutional development for transport system governance. She gave us very significant assistance in reviewing various drafts related to urban transport, regulation, capacity development, and safety. She has done this despite her own very heavy load of work, reflecting her long-standing association with transport policy in India.

TECHNICAL ASSISTANCE FROM THE WORLD BANK

The Committee was concerned that it should reflect best practices that are now developing across the world in the transportation area. In order to incorporate these developments in the work of the NTDP, the Committee requested the Secretary, Department of Economic Affairs, Ministry of Finance to

facilitate Technical Assistance (TA) from the World Bank. The TA was coordinated for the World Bank by Shri. Ben Eijbergen, Lead Transport Specialist in South Asia Region and Shri. Arnab Bandopadhyay, Sr. Transport Engineer from the Delhi office of the World Bank. I am grateful to Dr Roberto Zagha, Director of the World Bank in India for enabling and facilitating the commissioning of this Technical Assistance. The anchors of the different sectors were:

- Railways Paul Amos
- Roads Clell Harral
- Ports and shipping Marten van den Bossche
- Urban Transport Ken Gwilliam

Overall, 24 papers were submitted to the NTDP and each paper was discussed with select Members of NTDP and other experts in the NTDP secretariat. The papers were then revised after the Secretariat provided its comments to the World Bank. Two international workshops were also held in New Delhi on 6-8 February 2012 and 15 June 2012 to discuss the papers with a wide variety of stakeholders, representatives of government ministries and selected invited practitioners from other emerging market countries. The papers were submitted to the government on 9 August 2012. A list of the papers is at Annex P.4, along with the programmes of the two international conferences.

The World Bank team also helped in organising the South Africa visit of the NTDP in March, 2012. The programme of that visit is at Annex P.5.

I would also like to express my deepest appreciation to the World Bank for providing the services of Shri. Bhaskar Naidu, Statistical Officer, Development Data Group of the World Bank, who developed the macro model which is the basis of the overall investment projections made in Chapter 3 of this report. Bhaskar Naidu had made a similar contribution in the preparation in the *Indian Infrastructure Report* in 1996. He has since made such modelling efforts for a host of other countries in the world. He developed and simulated the model innumerable times over the last three years during the preparation of this report. Continuous revisions had to be made with changing economic conditions in India, and revisions of data during this period. He has given his time far beyond the call of duty which is deeply appreciated and acknowledged.

ASIAN DEVELOPMENT BANK

The NTDP has placed considerable emphasis on promoting international transport connectivity between India and rest of the South Asia region and beyond to South East Asia. We requested the Asian Development Bank through the Department of Economic Affairs, Ministry of Finance to provide us

assistance in this regard in view of the considerable work done by the ADB on international transport connectivity in South East Asia. We thank Mr. Hun Kim, Country Director, ADB for his support. Ms. Kavita Iyengar drafted the final chapter after several much lengthier drafts with great deal of dedication, knowledge and interest. She has had to do much of this during her own time in addition to her normal duties at the ADB. Critical inputs were provided to her by Cuong Minh Nguyen and assistance from Elizabeth Tan at ADB, Manila. I am deeply grateful to Kavita for all the work she has put in into this enterprise and I do hope that this work will indeed result in new initiatives promoting international connectivity within the South Asia region.

CONSULTATIONS WITH STATE GOVERNMENTS

Responsibilities for the transport sector are shared between central and state governments in different ways. It was therefore felt essential to hold consultations with state governments. Initially, a questionnaire was sent to all state governments in order to elicit their views on various issues of relevance to them. Subsequently, a series of meetings were organized as follows:

1. 8-9 October 2012 at Patna, with state governments of Bihar, Chhattisgarh, Jharkhand, Odisha and West Bengal (invited, but not able to attend)
2. 4-5 February 2013 at Mumbai, with state governments of Goa, Gujarat, Madhya Pradesh, Maharashtra and Union Territories of Daman & Diu and Dadra & Nagar Haveli.
3. 27 May 2013 at Chandigarh, with state governments of Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Union Territory of Chandigarh.
4. 1 August 2013 at Jaipur, with state governments of NCT of Delhi, Rajasthan, Uttarakhand and Uttar Pradesh.
5. 26 August 2013 at Bengaluru, with state governments of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Union Territories of Andaman and Nicobar Islands, Puducherry and Lakshadweep.

Annex P.6 lists the participants in each of the above meetings. Annex P.7 gives in brief the issues highlighted in those meetings and the way forward suggested.

The NTDPCC is very grateful to the state governments of Bihar, Maharashtra, Rajasthan and Karnataka and of the Union Territory of Chandigarh for hosting these meetings. In addition, the Working Group on Improvement and Development of Transport

Infrastructure in the North East held consultations with state governments at Guwahati, Assam. We are grateful to the State Government of Assam for hosting these meetings.

PREPARATION OF THE FINAL REPORT

The preparation of this complex report has been a truly cooperative effort. However, I would like to acknowledge the specific contributions made by the many individuals who gave generously their time through various drafts and revisions of each of the chapters.

Chapter 2 Trends in Growth and Development of Transport

Shri B. N. Puri was primarily responsible for the preparation of this chapter. He received able assistance from Shri. Honey Gupta and Ms. Geeta Garg from the NTDPCC Secretariat. Dr. Somik Lal also contributed to this chapter in the initial stages.

Chapter 3 Macroeconomic Growth Backdrop: Transport Investments Requirements: 2012-32

I am deeply indebted to Shri. Bala Bhaskar Naidu for developing and simulating the macro-economic model on which this is based. Dr. Somik Lal, Dr. Krishna Dev and Shri. Amod Jain, and Shri. Muneesh Kapur, Advisor, IMF also contributed to the preparation of this chapter.

Chapter 4 Integrated Transport: Strategy and Logistics

This chapter was prepared by Shri. B.N. Puri and Shri. Rishab Sethi with consistent advice from Shri. K.L. Thapar and Shri. Cyrus Guzder. We also received useful inputs from Shri. Pritam Banerjee of DHL. Dr. Krishna Dev provided further assistance.

Chapter 5 Institutions for Transport System Governance

Ms. Jessica Seddon was primarily responsible for the preparation of this chapter with advice and contributions from Shri. B. N. Puri, Shri. S. Sundar and Shri. K. L. Thapar.

Chapter 6 Regulatory Issues: An Overall Approach

This chapter was prepared by Dr. Rajat Kathuria. Ms. Jessica Seddon and Shri. S. Sundar contributed significantly to the development of this chapter.

Chapter 7 Energy and Environment

We received generous assistance from the International Council on Clean Transportation (ICCT) based in Washington DC. Shri. Gaurav Bansal, Dr. Anoop Bandivadekar, Dr. Alan Lloyd and Mr. Michael Walsh contributed to the work embodied in this chapter. We are grateful to the ICCT for providing this assistance. We are also grateful to Dr. Sarath Guttikunda for his contribution to this chapter. The chapter was pre-

pared under the direction of Shri. S. Sundar by Ms. Akshima T. Ghate of TERI and Shri. Gaurav Bansal.

Chapter 8 Transportation of Energy Commodities

This chapter was prepared by Shri. Daljit Singh under the direction of Dr. Anupam Khanna.

Chapter 9 Fiscal Issues

The work embodied in this chapter was done by Dr. Rajesh Chadha and Dr. Sourabh Pal. Shri. B. N. Puri, assisted by Shri. Honey Gupta and Ms. Geeta Garg, steered the drafting of chapter.

Chapter 10 Potential of Information and Communication Technology to Enhance Transport Efficiency

This chapter is based on the work done by Shri. C. N. Raghupathy, Shri. Dipankar Khashnabhis, Shri. Kripakaran, under the direction of Shri. T. V. Mohandas Pai. Shri. B. N. Puri, along with Shri. Daljit Singh contributed tremendously to the final drafting of this chapter.

Chapter 11 Research and Human Resource Development

Chapter 12 Safety

These chapters were primarily prepared by Professor Dinesh Mohan, with review and advice from Shri. K. L. Thapar and Ms. Jessica Seddon.

Chapter 13 Promoting International Transport Connectivity between India and South and South East Asia Region

The primary work for this chapter was done by Ms. Kavita Iyengar of the Asian Development Bank. She received critical inputs from Mr. Cuong Minh Nguyen and assistance from Ms. Elizabeth Tan at ADB, Manila. We are also grateful to Shri. Shyam Saran, former Foreign Secretary, Shri. Ashok Kantha, Secretary (East), Ministry of External Affairs and Ms. Renu Pall, Joint Secretary, Ministry of External Affairs, for their valuable inputs to this chapter.

SECTORAL CHAPTERS

1. Railways

A great deal of work, discussion and deliberation went into the preparation of this chapter. Very significant contributions were made by Shri. M. Ravindra, Shri Vivek Sahai, Shri. K. L. Thapar, Shri. S. Sundar, Shri. B. N. Puri, Shri. Cherian Thomas, Shri. Ranjan Jain, Shri. S. K. Mishra and Dr. Krishna Dev. Shri. Sourabh Anand and Ms. Jyoti Gujral of the IDFC did the excellent final drafting of this chapter.

2. Roads and Road Transport

This chapter was primarily prepared by Shri. D. P. Gupta, with contributions from Shri. B. N. Puri.

Shri. Rishab Sethi, and Dr. Krishna Dev, Ms. Shruti Jain provided valuable assistance.

3. Civil Aviation

The primary work on which this chapter is based was done by Shri. M. Kannan and Shri. Rishab Sethi. Shri. B. N. Puri, Shri. K. L. Thapar and Shri. Cyrus Guzder made valuable contributions. Ms. Vidya Satchit provided assistance in the initial stages.

4. Ports and Shipping

We received significant assistance in the preparation of this chapter from Shri. Rahul Chaudhary and Shri. Thomas Netzer from McKinsey and Co. in its initial stages. The final draft is greatly due to the intensive work put in by Shri. B. N. Puri, Shri. Honey Gupta and Ms. Geeta Garg. Advice received from Shri. S. Sundar and Shri. Bharat Sheth has been of great value in the preparation of this chapter. Shri. M. M. Hasija, Shri. Ajit Khot and Shri. Anil Devli also provided useful comments.

5. Urban Transport

This chapter has been prepared primarily by Shri. Shubaghato Dasgupta with very significant contributions from Professor Dinesh Mohan, Shri. S. Sundar, Ms. Jessica Seddon, Shri. S. K. Lohia and Shri. B. I. Singhal.

6. Transport Development in the North East

This chapter has been prepared by Shri. Vivek Sahai, Shri. B. N. Puri, Ms. Jayashree Mukherjee, and Shri. Honey Gupta. Ms. Shruti Jain provided valuable assistance.

Each of the chapters went through extensive debate and discussion at the meetings of the NTDPC and in other meetings held in the NTDPC Secretariat throughout 2013. Each chapter was circulated to all the Committee Members for comments and then revised on the basis of comments received.

SECRETARIAT OF THE NTDPC

As may be seen from the description of work undertaken by the NTDPC, a great deal of background work has gone into preparation of this final report, which required coordination at all stages. We operated with a relatively lean Secretariat, all members of which have contributed to the work of the NTDPC far beyond the call of normal duty. Dr. Anupam Khanna, was Principal Advisor and Dr. Somik B Lall was Senior Consultant in the NTDPC Secretariat in the initial period of the Committee's work until mid-2011. Dr. Anupam Khanna continued to assist the Committee through his work on Transportation of Energy Commodities; and Dr. Somik Lall continued to assist in the preparation of chapter 3. Shri. Daljit Singh joined the NTDPC Secretariat in mid-2011 and has contributed significantly to the overall work of the Committee since then, though particularly in the

work on Integrated Strategy for Bulk Transport of Energy and Related Commodities in India, and on Information and Communication Technology (ICT). Shri. Shubaghato Dasgupta has been a Consultant in the Secretariat concentrating essentially on all the work connected with the urban transport.

We have been fortunate to get the assistance of a number of Research Assistants during the tenure of the Committee. Shri. Amod Jain worked in the Secretariat as an Associate on leave from McKinsey and Co., from the inception of the NTDPC until mid-2011. He contributed very significantly to the preparation of the basic data that was used in the macro-economic model used in Chapter 3 of Volume II. He also prepared a large number of Boxes that have been used in the report. Shri. Rishab Sethi has been with the NTDPC since early 2011 and has contributed very significantly to the work on Roads, Civil Aviation and Integrated Transport Strategy and Logistics. Shri. Honey Gupta has been with the Secretariat since mid-2012 and has contributed a great deal to the work connected with Ports and Shipping, Fiscal Issues and the North East. Ms. Shruti Jain and Ms. Geeta Garg worked in the Secretariat from mid-2010 until mid-2013. They provided research assistance on a wide variety of work carried out in the Secretariat.

Shri R. K. Sharma, Administrative & Accounts Officer (AAO) shouldered much of the administrative burden of the NTDPC as AAO. He has worked to keep all our accounts and other administrative actions consistent with government procedures and conventions. He has been instrumental in taking away a good deal of the administrative burden from the Chairman and the Member Secretary. Ms. Asha Jhulka worked as PS to the Member Secretary and helped a great deal in organising the large number of meetings that had to be set up during the tenure of the Committee.

I would like to convey the appreciation of the NTDPC to CRIS personnel, Shri. G. K. Maishi, GM, Ms. Seema Vadhera, Manager, and Shri. Rahul Gupta, Sr. Software Engineer who have maintained the website of NTDPC since its inception.

Shri Vinod Tejjal, Shri. Shatrudhan and Shri. Brajesh Tiwari have been with the NTDPC Secretariat almost throughout its existence as office support staff. They have worked far beyond the call of duty at all times with a very cheerful countenance and efficiency.

A special word of appreciation goes to Shri. K. Raghuraman, my PS, who has been a rock of support throughout the existence of the NTDPC. He has helped me to keep track of all the work of the NTDPC through this whole long period. This has not been easy since I have spent significant time in the United States throughout the tenure of the Commit-

tee: first as Professor at Yale University, and later as Executive Director at the International Monetary Fund (IMF). His loyalty, sincerity, devotion to work and efficiency would serve as an example to all.

During the existence of the NTDPC, I have functioned four months at a time during September-December 2010, 2011, 2012 as Professor in Yale University in United States. I was also then appointed as Executive Director in the International Monetary Fund effective November, 2012. During these periods, I have also received significant assistance from colleagues in these institutions. At Yale, I received assistance from Shri. Rahul Ahluwalia and Shri. Ashraf Virk who helped me in preparing a number of the Boxes that appear in Sectoral reports and which have been extracted from the papers submitted to NTDPC as part of the World Bank technical assistance. Ms. Carla Mills provided excellent administrative assistance. My grateful thanks to all of them for being generous with their assistance.

At the IMF, I received assistance from Shri. Ravi Sundararajan in the compilation of the final draft chapters by conducting consistency checks, drafting and introducing uniformity in the formatting of different chapters. It would not have been possible to finish this task without his very efficient assistance.

In addition, my colleagues, Shri. K. V. Eapen, Dr. Janak Raj, Shri. Muneesh Kapur and Dr. Manoj Govil provided excellent support so that I could also discharge my duties as Executive Director effectively, while also providing useful comments on various chapters in this Report. Shri. Davinder Sandhu, formerly of the Prime Minister's Office also provided useful comments. Shri. S. Gopavajhala provided very able administrative assistance all through.

Dr. Krishna Dev has been a Consultant in the NTDPC Secretariat throughout its existence. He has been a pillar of strength in much of the administrative work connected with the Committee and in assisting in the work of the Working Groups, the commissioning of the studies, the monitoring of the World Bank technical assistance and of the final report preparation. He has kept in order all the records of the Committee's work, the papers prepared, the reports prepared and the many versions that each chapter has undergone. He did all these extremely efficiently and quietly with a great degree of sincerity and devotion to work. I owe him a deep debt of gratitude for accomplishing all these tasks very cheerfully, while exhibiting great humility.

Shri B. N. Puri has worked as Member Secretary of the NTDPC from its inception. As Senior Consultant Planning Commission he was instrumental in setting up the Committee including drafting of its TOR. Shri. Puri has been an anchor of Indian transport policy in the Planning Commission for a good por-

tion of his career. He was associated with the original NTPC in 1980. He has therefore provided the continuity and institutional memory that is so necessary in the compilation of a report like this. The NTDP has also benefited immensely from his knowledge of all the Ministries associated with transport and personnel at all levels. He has done a truly outstanding job of coordinating all the activities of the NTDP throughout its existence. He has also shouldered the burden of coordinating the final preparation of all the chapters with a painstaking eye to detail, including cross-checking of all the data that are embodied in the Report. He has done all these in a very patient and quiet manner which is typical of his self-effacing personality. My sincerest appreciation goes to him for taking away much of the worry that would otherwise have fallen on me. The Indian transport sector owes a great deal to his devotion and continuity of work that he has exhibited throughout his career.

This Report has taken an inordinately long time in its preparation, much longer than any of the other Expert Group Reports that I have had the privilege of being associated with. This mainly reflects the enormous complexity of the task that the NTDP confronted: the development of an integrated view across sectors; adequate in-depth treatment of each sector; the forging of broad agreement on various contentious issues; consultation and coordination with the government departments and ministries;

and consultations with state governments. The rapidly changing macroeconomic conditions that have led to a significant economic slowdown in the last couple of years also led to repeated revisions in the macroeconomic modelling framework used to make projections in the Report.

I would like to conclude on a personal note. This is by far the most difficult task that I have undertaken during my relatively long policy advisory career, while simultaneously undertaking teaching and other advisory assignments in India and abroad, culminating in my appointment as Executive Director at the International Monetary Fund. I have been able to do all this because of the understanding displayed and unstinted support provided by all my colleagues in different institutions over all these 3 to 4 years.

Most of all, I am truly indebted to my wife Rasika, and children Tarini and Rasesh, who supported me all throughout and who have been most patient over this whole very difficult period.

It is my earnest hope, along with all my colleagues in the NTDP, that this Report will generate active discussions leading to substantive change in how transportation policy is approached in India. The focus must be on the facilitation of all our people and businesses for their travel and freight needs.