

INDIA

THREE YEAR ACTION AGENDA

2017-18 TO 2019-20



NITI Aayog
GOVERNMENT OF INDIA
NEW DELHI

INDIA THREE YEAR ACTION AGENDA 2017-18 TO 2019-20



NITI Aayog
GOVERNMENT OF INDIA
NEW DELHI

Copyright © 2017 NITI Aayog

Published by NITI Aayog
Sansad Marg,
New Delhi
www.niti.gov.in

The Three Year Action Agenda, a NITI Aayog document, is based on extensive discussions with and inputs from the central ministries and State governments. The Governing Council of the NITI Aayog, consisting of the Prime Minister as its Chairperson and several Union Ministers and State Chief Ministers as Members, extensively deliberated on the document in its draft form at its meeting on 23rd April 2017. This final document incorporates the comments made at the meeting and those received subsequently from Chief Ministers.

PREFACE

On 1st January 2015, the National Institution for Transforming India or NITI Aayog came into existence as the government's premier think tank. Subsequently, vide Office Order PMO ID No. 360/31/C/38/2014-ES-II dated 09/05/2016 (Annexure 1), the Prime Minister's Office advised the NITI Aayog to prepare Fifteen Year Vision, Seven Year Strategy and Three Year Action Agenda documents. Accordingly, the present document is being published to recommend policy changes and programmes for action from 2017-18 to 2019-20, the last three years of the Fourteenth Finance Commission. A second document containing the Fifteen Year Vision and Seven Year Strategy is currently under preparation at the NITI Aayog.

The Vision, Strategy and Action Agenda exercise represents a departure from the Five Year Plan process, followed with a handful of discontinuities until the fiscal year 2016-17. The 12th Five Year Plan was the last of these plans. It has been felt that with an increasingly open and liberalized economy, we needed to rethink the tools and approaches to conceptualizing the development process. The proposed shift represents an important step in this direction.

The Action Agenda has been prepared as an integral part of the exercise leading to the Vision and Strategy document. It has been fast tracked and released first, keeping in view that with the start of fiscal year 2016-17, it is of immediate relevance for policy implementation. Work on the Vision and Strategy document is already far advanced.

The Three Year Action Agenda offers ambitious proposals for policy changes within a relatively short period. It is understood that while some may be fully implemented during the three-year period, implementation of others would continue into the subsequent years. Where relevant, we have included possible actions by the states to complement the efforts of the Centre.

For holistic development, all ministries and departments must progress simultaneously and harmoniously. Therefore, as a roadmap for future progress, the Action Agenda attempts to cover nearly all aspects of the economy. Despite this wide coverage, an effort has been made to present all action points with the utmost clarity. To ensure that the document does not become unduly long, however, we have deliberately refrained from providing the detailed rationale for each proposed action. Where appropriate and necessary, we propose to undertake this latter task in the Vision and Strategy document.

The Action Agenda is the result of the hard work and efforts of a vast number of individuals and institutions. The NITI Aayog has been lucky to have three world-renowned scholars as its Members: Shri Bibek Debroy, Dr. V. K. Saraswat and Dr. Ramesh Chand. It also has a number of outstanding Advisers leading its work in different areas of policy. Working under the guidance of the Members, the Advisers and their teams prepared the core inputs that formed the backbone of the final document. I greatly appreciate the contributions of the Members, Advisers and their teams to the Action Agenda.

Inputs were also sought and received from State Governments, Union Territories and Ministries of the Central Government. Extensive consultations were held with groups of scientists, economists, journalists, voluntary organisations, industry associations and experts in education, health, culture, transport and other fields. Many outside experts also provided extremely useful written inputs. Annexure 2 at the end of the document lists the outside experts exhaustively with the hope that I have not missed anyone. I sincerely thank the states, union territories, Ministries, outside experts and institutions for the gift of their ideas and time.

Shri Amitabh Kant, the Chief Executive Officer of the NITI Aayog, skilfully steered the entire process to its logical conclusion. The task simply could not have been completed without his leadership in navigating and guiding all those involved throughout the process. I am deeply appreciative of the energy and time he generously provided.

A dedicated team of six talented young policy analysts, who recently joined the NITI Aayog, worked under my close direction to convert the inputs provided by the Advisers and outside experts into a unified document. They are: Chinmaya Goyal, Atisha Kumar, Urvashi Prasad, Vaibhav Kapoor, Rahul Ahluwalia and Devashish Dhar. This part of the exercise consisted of preparation of different chapters, fitting them into a single whole and revising the draft multiple times. The process also included several discussions lasting hours. Atisha and Chinmaya jointly performed the key functions of coordination and editing of the document throughout the process. It was a real pleasure for me working with this brilliant, energetic and enthusiastic team of young analysts.

Pavithra Rangan oversaw the publication and production of the document. My office staff, headed by Dr. Prem Singh, provided critical logistical support. Prem not only saw to it that all went smoothly but also provided critical intellectual inputs at all stages of the work.

In draft form, the Action Agenda was circulated to all members of the Governing Council of the NITI Aayog at its third meeting on 23rd April 2017. Subsequently, several states and their Chief Ministers provided comments on that draft document. A concerted effort has been made to incorporate these inputs as well as the remarks made by the Chief Ministers at the Governing Council meeting in this final version.

It is hoped that the Three Year Action Agenda will help launch a new phase in our journey towards a New India.



Arvind Panagariya
Vice Chairman

New Delhi
1 August 2017

Praise for the Action Agenda in the Media

“The analysis and proposals provided in the Three Year Action Agenda range from the actionable to the aspirational. We shall, in the fullness of time, see how many of its proposals are taken up and implemented. Be that as it may, we believe that its primary contribution will be in serving as a base of knowledge and analysis to support any future discussions on policy reform; it should be welcomed.”

— Pravin Krishna and Vivek Dahejia, *Livemint*, 4 May 2017.

“It must be stated that for the first time, a comprehensive reform agenda has been placed before the Union and State governments for implementation. The report, thus, provides a practitioners’ guide to policy reforms.”

— M. Govinda Rao, *Financial Express*, 2 May 2017

“The “Three Year Action Agenda” augurs well for a better India.”

— N.K. Singh, *Indian Express*, 20 May 2017.

“There is much value in terms of actionable reforms for the government in the Action Agenda. If the government just focuses on those that create good jobs, the exercise would have been more than worth it.”

— R. Jagannathan, *Swarajya*, 4 May 2017.

“The action plan is a mix of corrective measures, new ideas and model proposals and statutes that can be tried elsewhere. If the NITI Aayog was set up to provide a holistic structure to the dozens of programmes that the government wants to implement to achieve certain lofty goals, it has made a good beginning. And if that is the case, the three year agenda is providing a clear view of the broad contours of the seven year strategy and the 15 year vision of the government.”

— Joe. C. Mathew, *Business Today*, 21 May 2017.

“Economists have endorsed the three-year growth outlook of federal policy think-tank NITI Aayog banking on the reforms currently underway such as the introduction of goods and services tax (GST), the resolution of stressed assets in the banking sector and a planned turnaround in the power sector”

— *Livemint*, 10 May 2017.

“NITI Aayog’s recommendations must be implemented honestly, and without fear or favour, to generate leadership in science”,

— Gautam Desiraju, *Swarajya*, 30 April 2017.

“The suggestion to unify customs duties at 7% is worth following since, apart from removing the issue of inverted duties, it will send out a powerful message on India lowering import duties.”

— *Financial Express*, 29 April 2017

“The document provides a useful blue print for India policy environment and can be considered a significant step forward.”

— *Citi Research*

“Giving special emphasis on the energy sector, the Aayog in its 208 page document, has laid down a comprehensive list of measures the government should take in the next three years so as to develop the one of most key essentials of growth of the country.”

— *Energy World*, 3 May 2017.

“The three-year draft action agenda released by the Aayog today stressed on reforms in taxation, agriculture and governance, among others with a view to accelerate the all-round development of the country”

— *Economic Times*, 28 April, 2017.

“The Niti Aayog has made a few suggestions that need to be immediately implemented in the next three years to bring about much needed critical reforms in the Indian judicial system”.

— Ritika Jain, *Daily News And Analysis*, 1 May 2017.

Table of Contents

Preface	i
List of Figures	vi
List of Tables	vii
List of Boxes	viii
List of Abbreviations	ix
Chapter 1. Three Year Action Agenda: An Overview	1
PART I: THREE-YEAR REVENUE AND EXPENDITURE	6
Chapter 2. Context and Strategy	7
Chapter 3. Growth Outlook and Resource Envelope Forecasts	9
Chapter 4. Expenditure	18
PART II: ECONOMIC TRANSFORMATION IN MAJOR SECTORS	48
Chapter 5. Agriculture: Doubling Farmers' Incomes	49
Chapter 6. Trade, Industry and Services: Creating Well-Paid Jobs	31
PART III: REGIONAL DEVELOPMENT	48
Chapter 7. Urban Development	49
Chapter 8. Rural Transformation	58
Chapter 9. Regional Strategies	62
PART IV: GROWTH ENABLERS	70
Chapter 10. Transport and Connectivity	71
Chapter 11. Digital Connectivity	82
Chapter 12. Public Private Partnerships	87
Chapter 13. Energy	93
Chapter 14. Science and Technology	100
Chapter 15. Creating an Innovation Ecosystem	104
PART V: GOVERNMENT	108
Chapter 16. Governance	109
Chapter 17. Taxation Policy and Administration	115
Chapter 18. Pro-Competition Policies and Regulation	119
Chapter 19. The Rule of Law	125
PART VI: SOCIAL SECTORS	130
Chapter 20. Education and Skill Development	131
Chapter 21. Health	140
Chapter 22. Towards Building a More Inclusive Society	148
PART VII: SUSTAINABILITY	162
Chapter 23. Environment and Forests	163
Chapter 24. Sustainable Management of Water Resources	166
ANNEXURES	174
Annexure 1	175
Annexure 2	176

List of Figures

Figure 3-1: Quarterly Growth in Gross Value Added – Real and Nominal (2011-12 prices, %)	9
Figure 3-2: Inflation Rate based on WPI and CPI (April 2015 to February 2017)	10
Figure 3-3: Assumed Nominal GVA Growth trajectory during the Action Agenda Period	11
Figure 3-4 : Growth in Gross Tax Revenues and Nominal GVA (2003-04 to 2019-20)	12
Figure 3-5: Total Tax to GDP ratio (%) 2002-03 to 2019-20 (Baseline scenario)	12
Figure 3-6: Direct Tax to GDP ratio (%) 2002-03 to 2019-20	13
Figure 3-7: Indirect Tax to GDP ratio (%) 2002-03 to 2019-20	14
Figure 12-1: Development of the PPP landscape in India through different phases	88
Figure 18-1: Rankings in World Economic Forum Global Competitiveness Index	120

List of Tables

Table 3-1: Forecast of Gross Tax Revenues for the Central Government – Action Agenda Period (Rs Lakh Crore)	11
Table 3-2 : Forecast of Non-Tax Revenue and Non-Debt Capital Receipts for the Union Government – Action Agenda Period (Rs. Lakh Crore)	15
Table 3-3 : Forecast of Resource Envelope for Union Government – 2017-18 to 2019-20: Baseline Scenario (Rs. Lakh Crore)	16
Table 3-4: Forecast of Resource Envelope for Union Government – 2017-18 to 2019-20: High Growth Scenario (Rs. Lakh Crore)	16
Table 3-5: Forecast of Resource Envelope for Union Government – 2017-18 to 2019-20: Low Growth Scenario (Rs. Lakh Crore)	17
Table 4-1: Summary – Expenditure Allocation (% of GDP)	19
Table 4-2: Summary – Expenditure Allocation (Rs. Crore)	19
Table 4-3: Summary – Expenditure Allocation (% of Budget)	19
Table 4-4: Expenditure Allocation, by Sector (Rs. Crore)	21
Table 9-1: Deliverables for Pradhan Mantri Awas Yojana – Housing for All	62
Table 9-2: Deliverables for Smart Cities Mission – Number of Cities	74
Table 9-3: Deliverables for Swachh Bharat Mission	75
Table 9-4: Deliverables for Deen Dayal Antodaya Yojana–National Urban Livelihood Mission	76
Table 16-1: Key Action Agenda Deliverables with Timelines	114
Table 19-1: Key Action Plan Deliverables with Timelines	128
Table 20-1: Hollowed Out Public Schools (2014-15)	133
Table 20-2: Key Action Points with Timelines for School Education	138
Table 20-3: Key Action Points with Timelines for Higher Education	139
Table 22-1: Unequal Participation of Women across Sectors	148
Table 24-1: Action Agenda Targets for the Water Sector	170

List of Boxes

Box 11-1: Service Delivery through e-Mitra in Rajasthan	86
Box 18-1: Urban Land Ceilings and Regulations Act – A Case of Unintended Harmful Effects of Regulation	119
Box 18-2: Past Entry Restrictions on Digital Mobile Payments in India	121
Box 18 -3: Anti-competitive Electricity Regulations Acting as a Barrier to “Make in India”	121
Box 21-1: Specific Health Goals to be Achieved by the Year 2020	141
Box 22-1: Kanyashree Prakalpa Scheme, 2013	151

List of Abbreviations

AAI	Airports Authority of India	CAD&WM	Command Area Development & Water Management
ABD	Area Based Development	CAG	Comptroller and Auditor General
AD	Additional Customs Duty	CAGR	Compound Annual Growth Rate
AERAAT	Airports Economic Regulatory Authority Appellate Tribunal	CBDT	Central Board of Direct Taxation
AIBP	Accelerated Irrigation Benefits Programme	CBEC	Central Board of Excise and Customs
AIF	Alternative Investment Fund	CBIT	Central Board of Indirect Taxation
AIIMS	All-India Institute of Medical Sciences	CBC	Centre Buffer Coupler
AIM	Atal Innovation Mission	CBM	Coal-Bed Methane
AIPAC	Alternative Investment Policy Advisory Committee	CBU	Completely Built Units
AMC	Asset Management Company	CCTNS	Crime and Criminal Tracking Network and Systems
AMRUT	Atal Mission for Rejuvenation and Urban Transformation	CEO	Chief Executive Officer
API	Advance Passenger Information	CEZ	Coastal Employment Zone
API	Annual Parasite Incidence	CGD	City Gas Distribution
APMC	Agricultural Produce Marketing Committee	CHA	Clearing House Agents
ARC	Asset Reconstruction Company	CHC	Community Health Centre
ASCI	Agriculture Skill Council of India	CHPP	Coal-Handing and Preparation Plants
ASEAN	Association of South East Asian Nations	CIL	Coal India Limited
ASER	Annual Status of Education Report	CIWTC	Central Inland Water Corporation Limited
ASHA	Accredited Social Health Activist	CLTS	Community-Led Total Sanitation
AT&C	Aggregate Technical and Commercial	CO2	Carbon Dioxide
ATF	Aviation Turbine Fuel	CPMF	Central Para Military Force
ATM	Automatic Teller Machine	CPGRAMS	Centralized Public Grievance Redress and Monitoring System
ATVM	Automatic Ticket Vending Machine	CPI	Consumer Price Index
BARC	Bhabha Atomic Research Centre	CPSEs	Central Public Sector Enterprises
BBIN	Bangladesh-Bhutan-India-Nepal	CRF	Central Road Fund
BBNL	Bharat Broadband Network Limited	CRM	Common Review Mission
BCM	Billion Cubic Meters	CrPC	Criminal Procedure
BE	Budget Estimate	CSIRO	Commonwealth Scientific and Industrial Research Organisation
BOOT	Build-Operate-Own-Transfer	CSR	Corporate Social Responsibility
BPL	Below Poverty Line	CSS	Centrally Sponsored Scheme
BRTS	Bus Rapid Transit System	CTNI	Chief Trade Negotiator of India
		CWC	Central Water Commission

DALYs	Disability-Adjusted Life Years	ESCert	Energy Saving Certificate
DARPG	Department of Administrative Reforms and Public Grievances	EST&P	Employment through Skill, Training & Placement
DAY – NULM	Deen Dayal Antodaya Yojana – National Urban Livelihood Mission	ETC	Electronic Toll Collection
DBT	Direct Benefit Transfer	EU	European Union
DDAY-NRLM	Deen Dayal Antyodaya Yojana - National Rural Livelihoods Mission	EV	Electric Vehicle
DDT	Dividend Distribution Tax	EWS	Economically Weaker Sections
DDUGJY	Deen Dayal Upadhyaya Gram Jyoti Yojana	EXIM	Export-Import
DDUGKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana	FDI	Foreign Direct Investment
DELP	Domestic Efficient Lighting Programme	FFC	Fourteenth Finance Commission
DEPwD	Department of Empowerment of Persons with Disabilities	FIR	First Information Report
DGFT	Directorate General of Foreign Trade	FPO	Farmer Producer Organisation
DGH	Directorate General of Hydrocarbons	FRA	Forest Rights Act
DHA	District Health Authority	FRBM	Fiscal Responsibility and Budget Management
DIAL	Delhi International Airport Ltd.	FSI	Floor Space Index
DIPP	Department of Industrial Policy and Promotion	FSSAI	Food Safety and Standards Authority of India
DISCOM	Distribution Company	FTA	Free Trade Agreement
DMEO	Development Monitoring and Evaluation Office	GDP	Gross Domestic Product
DMIC	Delhi-Mumbai Industrial Corridor	GeM	Government E-Marketplace
DMICDC	Delhi-Mumbai Industrial Corridor Development Corporation Limited	GER	Gross Enrolment Ratio
DMU	Diesel Multiple Units	GIS	Geographical Information System
DoLR	Department of Land Resources	GM	Genetically Modified
DPR	Detailed Project Reports	GNPA	Gross Non-Performing Advances
E&P	Exploration and Production	GPS	Global Positioning System
EBA	Everything but Arms	GRB	Gender-Responsive Budgeting
EGDI	E-Government Development Index	GSDP	Gross State Domestic Product
EHR	Electronic Health Record	GST	Goods and Services Tax
e-NAM	electronic-National Agricultural Market	GSTN	Goods and Services Tax Network
EODC	Export Obligation Discharge Certificate	GVA	Gross Value Added
		GW	Gram Vidyut Abhiyanta
		HDI	Gigawatt
		HDN	Human Development Index
		HFA	High-Density Network
			Housing for All

HFC	Housing Finance Company	IWMP	Integrated Watershed Management Programme
HLCFI	High Level Committee on Financing Infrastructure	IWRM	Integrated Water Resources Management
HO	Hydrological Observation	IVR	Interactive Voice Recognition
HPC	High Powered Committee	JAM	Jan Dhan-Aadhaar-Mobile
HR	Human Resource	KPN	Potassium Phosphorus Nitrogen
HRIDAY	Heritage City Development & Augmentation Yojana	KWh	Kilo-Watthour
HTT	Horsepower to Trailing Ratio	LED	Light Emitting Diode
IBWT	Inter Basin Water Transfer	LEEP	Logistics Efficiency Enhancement Program
ICDS	Integrated Child Development Services	LIG	Low Income Groups
ICMR	Indian Council of Medical Research	LNG	Liquefied Natural Gas
ICT	Information and Communication Technology	LPG	Liquefied Petroleum Gas
ICZM	Integrated Coastal Zone Management	LPI	Logistics Performance Index
IDF	Infrastructure Debt Fund	MAHSR	Mumbai-Ahmedabad High Speed Rail
IEC	Information, Education and Communication	MBP	Maternity Benefit Programme
IGCC	Integrated Gasification Combined Cycle	MCA	Model Concession Agreement
IIFCL	Infrastructure Finance Company Limited	MEA	Ministry of External Affairs
IISc	Indian Institute of Science	MEITY	Ministry of Electronics and Information Technology
IISCs	India International Skill Centres	MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Scheme
IIT	Indian Institute of Technology	MIAL	Mumbai International Airport Ltd.
ILR	Inter-Linking of Rivers	MICE	Meetings, Incentives, Conferences & Exhibitions
IP	Intellectual Property	MIDH	Mission for Integrated Development of Horticulture
IPC	Indian Penal Code	MMBD	Million Barrels Per Day
IPC	Irrigation Potential Created	MMTPA	Million Metric Tonnes Per Annum
IPFS	Indian Public Finance Statistics	MoEFF & CC	Ministry of Environment, Forest and Climate Change
IPOP	Integrated Programme for Older Persons	MoFPI	Ministry of Food Processing Industries
IPR	Intellectual Property Rights	MoR	Ministry of Railways
IPU	Irrigation Potential Utilized	MoRTH	Ministry of Road Transport and Highways
ISP	Internet Service Provider	MoU	Memorandum of Understanding
ISRO	Indian Space Research Organization	MoWR, RD&GR	Ministry of Water Resources, River Development & Ganga Rejuvenation
IT	Information Technology		
ITA	Information Technology Agreement		
IWAI	Inland Waterways Authority of India		

MSDE	Ministry of Skill Development and Entrepreneurship	NISD	National Institute of Social Defence
MsDP	Multi-sectoral Development Programme	NMEEE	National Mission for Enhanced Energy Efficiency
MSW	Municipal Solid Waste	NNM	National Nutrition Mission
MT	Million Tonnes	NOS	National Occupational Standards
MTEF	Medium Term Expenditure Framework	NOx	Nitrogen Oxides
MTOE	Million Tonnes of Oil Equivalent	NPA	Non-Performing Asset
MTPA	Million Tonnes Per Annum	NPL	Non-Performing Loan
MW	Megawatt	NRDWP	National Rural Drinking Water Programme
MWP	Minimum Work Programme	NRI	Non-Resident Indian
NABARD	National Bank for Agriculture and Rural Development	NSAC	National Sagarmala Apex Committee
NABL	National Accreditation Board for Testing and Calibration Laboratories	NSCS	
NAM	National Agriculture Market	NSDA	National Skill Development Agency
NAS	National Achievement Survey	NSDC	National Skill Development Council
NCIWRD	National Commission for Integrated Water Resources Development	NSDC	National Skill Development Corporation
NDR	National Data Repository	NSDCB	National Skill Development Coordination Board
NeGP	National e-Governance Plan	NSQF	National Skills Qualifications Framework
NEMMP	National Electric Mobility Mission Plan	NSS	National Service Scheme
NER	North Eastern Region	NWDA	National Water Development Agency
NFHS	National Family Health Survey	NWIC	National Water Informatics Centre
NGO	Non-Governmental Organisations	NYKS	Nehru Yuva Kendra Sangathan
NGMIS	National Ground Water Management Improvement Scheme	O&M	Operations and Maintenance
NHAI	National Highways Authority of India	OALP	Open Acreage Licensing Policy
NHDP	National Highways Development Program	OBC	Other Backward Classes
NHFDC	National Handicapped Finance and Development Corporation	ODF	Open Defecation Free
NHP	National Hydrology Project	OECD	Organisation for Economic Co-operation and Development
NHSRC	National High Speed Rail Corporation Ltd.	OEM	Original Equipment Manufacturers
NIIF	National Investment and Infrastructure Fund	OEPA	Overseas Employment Promotion Agency
NIMZ	National Investment and Manufacturing Zones	OMC	Oil Marketing Companies
		OMMAS	Online Management, Monitoring and Accounting System
		OMS	Output per Man Shift
		OOPS	Out-of-Pocket Spending
		PA	Precision Agriculture

PACS	Primary Agricultural Cooperative Societies	R&M	Renovation and Modernization
PAN	Permanent Account Number	RADMS	Road Accident Data Management System
PAT	Perform, Achieve and Trade	RBI	Reserve Bank of India
PCB	Populated Printed Circuit Board	RBO	River Basin Organizations
PCB	Pollution Control Board	RCEP	Regional Comprehensive Economic Partnership
PDI	Panchayat Devolution Index		
PESA	Panchayats Extension to Scheduled Areas	RCI	Rehabilitation Council of India
		RE	Revised Estimate
PFBR	Prototype Fast Breeder Reactor	REMC	Renewable Energy Management Centres
PHC	Primary Health Centre		
PIU	Project Implementation Units	RFID	Radio Frequency Identification Device
PLF	Plant Load Factor	RFP	Request for Proposal
PMAY-G	Pradhan Mantri Awaas Yojana - Gramin	RFQ	Request for Qualification
PMGDSA	Pradhan Mantri Gramin Digital Saksharta Abhiyan	ROFR	Right of First Refusal
PMGSY	Pradhan Mantri Gram Sadak Yojana	RPL	Recognition of Prior Learning
PMJDY	Pradhan Mantri Jan Dhan Yojana	RPO	Renewable Purchase Obligations
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana	RRR	Repair, Renovation and Restoration
PMKVY	Pradhan Mantri Kaushal Vikas Yojana	RRTC	Regional Resource and Training Centres
PM's 15 PP	PM's New 15 Point Programme	RRTS	Regional Rapid Transit System
PMUY	Pradhan Mantri Ujjwala Yojana	RTE	Right of Children to Free and Compulsory Education
PNGRB	Petroleum and Natural Gas Regulatory Board	RUSA	Rashtriya Uchchatar Shiksha Abhiyan
PoS	Point-of-Sale	S&T	Science and Technology
POSOCO	Power System Operation Corporation Limited	S.U.R.E	Specifications for Urban Roads Execution
PPP	Public Private Partnership	SAAP	State Annual Action Plans
PPP PMU	PPP Project Monitoring Unit	SANKALP	Skill Acquisition and Knowledge Awareness for Livelihood Promotion Programme
PPP PRU	PPP Performance Review Unit	SARDP-NE	Special Accelerated Road Development Project
PRAGATI	Pro-Active Governance and Timely Implementation	SBM	Swachh Bharat Mission
PSB	Public Sector Bank	SC	Scheduled Caste
PSC	Production Sharing Contract	SCB	Scheduled Commercial Banks
PSE	Public Sector Enterprise	SCCL	Singareni Collieries Company Limited
PwDs	Persons with Disabilities	SCSP	Scheduled Caste Sub-Plan
QP	Qualification Packs	SEBI	Securities and Exchange Board of India
R&D	Research and Development		

SECC	Socio-Economic Caste Census	TRIPS	Trade-Related Aspects of Intellectual Property Rights
SECI	Solar Energy Corporation of India Limited	TSP	Tribal Sub-Plan
SEP	Self-Employment Programmes	UDAY	Ujwal DISCOM Assurance Yojana
SEQI	School Education Quality Index	UDID	Unique Disability Identity Card
SEZ	Special Economic Zone	UGC	University Grants Commission
SFAC	Small Farmers Agri-Business Consortium	UIDAI	Unique Identification Authority of India
SHG	Self-Help Group	UIP	Ultimate Irrigation Potential
SHP	Small Hydro Power	UK	United Kingdom
SIR	Special Investment Region	ULB	Urban Local Bodies
SIRD	State Institutes of Rural Development	UMLC	Unmanned Level Crossing
SLDC	State Load Despatch Centre	UMTA	Unified Metropolitan Transport Authority
SME	Small and Medium Enterprise	UN	United Nations
SMID	Social Mobilization and Institutional Development	UNECE	United Nations Economic Commission for Europe
SO2	Sulphur Dioxide	USA	United States of America
SPV	Special Purpose Vehicle	USD	United States Dollar
SRLM	State Rural Livelihood Mission	USTR	United States Trade Representative
SRR	Seed Replacement Rate	UT	Union Territory
SSA	Sarva Shiksha Abhiyan	VAT	Value Added Tax
SSC	Sector Skill Council	VRDL	Viral Research & Diagnostic Lab
SSCM	Site Specific Crop Management	VGF	Viability Gap Funding
ST	Scheduled Tribe	WASH	Water, Sanitation and Hygiene
STEM	Science Technology Engineering and Mathematics	WECI	Waste to Energy Corporation of India
STP	Sewage Treatment Plants	WEF	World Economic Forum
SUH	Shelter for Urban Homeless	WHO	World Health Organization
SUSV	Support to Urban Street Vendors	WIPO	World Intellectual Property Organization
SWIFT	Single-Window for Customs Clearance	WPI	Wholesale Price Index
T&D	Transmission and Distribution	WRIS	Water Resource Information System
TARC	Tax Administration Reform Commission	WTO	World Trade Organization
TCAS	Train Collision Avoidance System		
TDS	Tax Deducted at Source		
THR	Take Home Ration		
TIFR	Tata Institute of Fundamental Research		
TRAI	Telecom Regulatory Authority of India		

CHAPTER 1.

THREE YEAR ACTION AGENDA: AN OVERVIEW

- 1.1. The objective of eliminating poverty in all its dimensions such that every citizen has access to a minimum standard of food, education, health, clothing, shelter, transportation and energy has been at the heart of India's development efforts since Independence. The extremely low level of per-capita income and widespread poverty made it impossible for us to achieve this objective without growing the economy. Tax revenues were so meagre and the economy's needs so vast that no serious dent into poverty could be made through redistribution alone. While we substantially improved economic performance during the first four decades of independence over that during the preceding fifty years, growth remained below 4%, which was woefully inadequate for a meaningful decline in poverty.
- 1.2. But the signs of change began to emerge during the second half of the 1980s, with 1991 proving to be a turning point. The reforms that followed first under Prime Minister Narasimha Rao and then under Prime Minister Atal Bihari Vajpayee placed India first on a 6% growth trajectory and then, beginning in 2003-04, on an 8% plus trajectory. Rising wages accompanied faster growth and pulled many out of abject poverty. Growth also yielded handsome gains in tax revenues, which helped expand social spending manifold, reinforcing the direct effect of growth on poverty reduction.
- 1.3. Although a combination of global economic developments and domestic policy choices led to a dip in the growth rate to 5.6% in 2012-13, quick corrective action in 2014, followed by sustained policy reforms, has helped the economy sustain 7% plus growth during the three years ending on 31 March 2017. Indeed, there are good prospects that we will return to the 8% plus growth trajectory in another two to three years if not sooner. Therefore, the chances of a massive cut in the poverty rate in the upcoming decade are excellent.
- 1.4. India's 125 Crore citizens, a majority of which consists of the youth, increasingly aspire for greater empowerment and a better quality of life. It is in recognition of these joint aspirations that the Prime Minister has called for the transformation of India with the "Participation of All and Development of All" or "Sabka Saath, Sabka Vikas."
- 1.5. In this backdrop, the present document charts an ambitious, transformational yet achievable Action Agenda for the government during 2017-18 to 2019-20, that constitute the last three years of the Fourteenth Finance Commission. The Agenda is a part of a longer-term Fifteen-year Vision and Seven-year Strategy outlined in a separate document. The Action Agenda proposes a path to achieve all-round development of India and its people. A brief outline of the subjects covered in the document is provided below.

Part I: Medium-Term Revenue and Expenditure Framework

- 1.6. The most direct and visible policy tool of the government is the budget. The allocation of expenditure needs to be aligned to the government's overall objectives. Accordingly, chapters 2-4 in Part I present expenditure proposals for three years based on revenue forecasts. This exercise has been limited to the Central government.
- 1.7. During the past three years (2014-15 to 2016-17), the government has made significant progress towards implementing a sound and stable fiscal strategy. The fiscal deficit has been cut from 4.5% of the Gross Domestic Product (GDP) in 2013-14 to 3.5% in 2016-17 while the revenue deficit has been reduced from 3.2% to 2.1% of the GDP over the same period¹. It is proposed that the government should capitalize on this progress by maintaining its course during the next three years. Under the proposed fiscal framework, the fiscal deficit is to be reduced to its eventual target of 3% of the GDP under the Fiscal Responsibility and Budget Management (FRBM) framework by 2018-19, while the revenue deficit is expected to fall to 0.9% of the GDP by 2019-20.

- 1.8. The Action Agenda proposes linking Central government expenditures to future priorities. It suggests shifting the composition of expenditures by allocating a larger proportion of additional revenues that become available over time to high-priority sectors. Under the proposed agenda, the share of non-developmental revenue expenditure in total expenditure would decline from 47% in 2015-16 to 41% in 2019-20. At the same time, the share of capital expenditure, which is more likely to promote development, would rise significantly. The proposals imply substantial expansion in expenditures by 2019-20 on education, health, agriculture, rural development, defence, railways, roads and other categories of capital expenditure.

Part II: Economic Transformations in Major Sectors

- 1.9. This part includes two chapters, one dealing with agriculture, which is the backbone of the rural economy, and the other focuses on industry and services in which the key issue is the creation of well-paid jobs.

Agriculture: Doubling Farmers' Incomes

- 1.10. Farmers make up nearly half of India's workforce. Therefore, for India to flourish, its farmers and the farm economy must prosper. It is against this background that the Prime Minister has called for doubling farmers' incomes by 2022. To achieve this goal, the Action Agenda outlines a strong programme for agricultural transformation. It includes numerous measures to raise farm productivity, bring remunerative prices to farmers, put farmers' land to productive uses when they are not able to farm it themselves and improve the implementation of relief measures. Chapters in subsequent parts of the document offer an ambitious agenda for empowering the rural population through improved road and digital connectivity, access to clean energy, financial inclusion and "Housing for All."
- 1.11. Enhancing agricultural productivity requires of efficiently using inputs, introducing new technologies and shifting from low to high value commodities. We need to expand the scope of irrigation to increase crop intensity, improve access to irrigation, enhance the seed replacement rate and encourage the balanced use of fertilizers. Precision farming and related new technologies, that allow highly efficient farming and conserve resources, must be spread through appropriate policy interventions. Conditions conducive to shift into high value commodities such as horticulture, dairying, poultry, piggery, small ruminant husbandry, fisheries and forestry need to be created.
- 1.12. The reform of the Agricultural Produce Marketing Committees (APMC) Act needs a new lease of life. Farmers should get genuine rights for direct sales to buyers of all commodities, potential buyers should get the rights to buy produce directly from farmers, entry of private agricultural markets should be free and an effective legal framework for contract farming should be established. Minimum Support Prices (MSPs) have distorted cropping patterns due to their use in certain commodities in selected regions. There has been an excessive focus on the procurement of wheat, rice and sugarcane at the expense of other crops such as pulses, oilseed and coarse grains. These distortions have led to the depletion of water resources, soil degradation and deterioration in water quality in the North-west. At the same time, eastern states, where procurement at the MSP is minimal or non-existent, have suffered. One measure that can help reduce distortions in the MSP system is the system of "Price Deficiency Payment." While MSP may still be used for need-based procurement, under the deficiency payments system, a subsidy may be provided to farmers on other targeted produce, contingent on prices falling below an MSP-linked threshold.
- 1.13. Over the years, landholdings in India have become smaller and fragmented. According to the 2010-11 Agricultural Census, 47% of landholdings had become less than half a hectare in size. These holdings are too small to support a family of five so that many farmers now seek alternative sources of income. But stringent tenancy laws in most states have meant that these farmers hesitate to lease the land they leave behind. As a result, an increasing amount of farmland is being left fallow. The introduction of a modern land-leasing law that balances and protects the rights of the tenant and landowners would be a potential solution.
- 1.14. Finally, to alleviate distress in case of natural calamities, the government has recently introduced the Fasal Bima Yojana. This is an important positive step toward mitigating risk but requires improvement. Capping the subsidy amount per farm household to a fixed amount and charging the full premium for additional insurance would not only economize on financial resources but will also be more equitable.

Trade, Industry and Services: Creating Well-Paid Jobs

- 1.15. Contrary to some assertions that India's growth has been "jobless," the Employment Unemployment Surveys (EUS) of the National Sample Survey Office (NSSO), which till date remain the most reliable sources of information on India's employment situation, have consistently reported low and stable rates of unemployment over more than three decades. Even under the most demanding definition of employment, the unemployment rate consistently remains between 5% and 8%.
- 1.16. Indeed, unemployment is the lesser of India's problems. The more serious problem, instead, is severe underemployment. A job that one worker can perform is often performed by two or more workers. In effect, those in the workforce are employed, but they are overwhelmingly stuck in low-productivity, low-wage jobs.
- 1.17. Three examples illustrate the point. First, in 2011-12, as per the NSSO Employment Unemployment Survey, 49% of the workforce was employed in agriculture. But agriculture contributed only 17% of India's GDP at current prices. Second, in 2010-11, firms with less than 20 workers employed 72% of India's manufacturing workforce but contributed only 12% of manufacturing output². Finally, services are no different. According to the 2006-07 NSSO survey of service firms, the 650 largest enterprises accounted for 38% of services output but only employed 2% of services workers. Put another way, the remaining services firms employed 98% of the workforce but produced only 62% of the output.
- 1.18. Therefore, what is needed is the creation of high-productivity, high-wage jobs. Accordingly, Chapter 6 of the Action Agenda focuses on the measures necessary for the increased emergence of larger, organized-sector firms. The experience of countries that managed to transform rapidly, such as South Korea, Taiwan, Singapore and China, shows that the manufacturing sector and the ability to compete in the vast global marketplace hold the key to the creation of well-paid jobs for low and semi-skilled workers. The "Make in India" campaign needs to succeed by manufacturing for global markets.
- 1.19. A focus on the domestic market through an import-substitution strategy, however attractive it may seem, would give rise to a group of relatively small firms behind a high wall of protection. They will not only fail to exploit scale economies but also miss out on productivity gains that come from competing against the best in the world. The electronics industry offers a case in point. Our domestic market in electronics as of 2015 is only USD 65 billion. In contrast, the global market is USD 2 trillion. Our policy of import substitution under high protection has given rise to a group of small firms none of which is competitive in the world markets. In contrast, a focus on the global market can potentially result in output worth hundreds of billions of dollars and hence a large number of well-paid jobs.
- 1.20. Today, with Chinese wages rising wages due to an ageing workforce, many large-scale firms in labour-intensive sectors currently manufacturing in that country are looking for lower-wage locations. With its large workforce and competitive wages, India would be a natural home for these firms. Therefore, the time for adopting a manufactures- and exports-based strategy could not be more opportune. Keeping this context in view, the Action Agenda offers detailed proposals for the implementation of an exports-based strategy. Among other things, it recommends the creation of a handful of Coastal Employment Zones, which may attract multinational firms in labour-intensive sectors from China to India. The presence of these firms will give rise to an ecosystem in which local small and medium firms will also be induced to become highly productive thereby multiplying the number of well-paid jobs.
- 1.21. India has, of course, already achieved considerable success in some key services and skilled-labour-intensive industries. It has had great success in the global markets in information technology (IT), information technology-enabled services (ITES) and pharmaceuticals. Its financial sector, including capital markets, has also acquired a modern character and has been exhibiting healthy growth during the past one and a half decades. Therefore, unlike past rapid transformers such as South Korea, Taiwan, Singapore and China, India has the advantage of walking on two legs: manufactures and services³. The Action Agenda offers specific proposals for jumpstarting some of the key manufacturing and services sectors, including apparel, electronics, gems and jewellery, financial services, tourism and cultural industries and real estate.

Part III: Regional Development

- 1.22. Chapters 7-9 in Part III focus on urban, rural and regional development, respectively. Urbanization is an integral part of modernization. Often, urban centres such as Mumbai and Shanghai are home to the organised sector activities. But even when these activities locate in rural areas, they quickly turn the latter urban. Shenzhen in China offers the most striking example of such a transformation. From a group of fishing villages with a population of 300,000 in 1980, today, Shenzhen is among the most urbanized spots on the face of earth. Accordingly, the Action Agenda spells out how we can facilitate urbanization in the country. Key challenges faced by the urban sector include affordable housing, infrastructure development, public transport, promotion of Swachh Bharat, reform of urban land markets and waste management.
- 1.23. A large part of India's population resides in rural areas. The challenges in the rural areas include creating jobs such that some agricultural workers could shift to non-farm sectors, skill development, accessing education and health facilities, infrastructure, local governance, drinking water and sanitation and financial inclusion. The Action Agenda outlines possible avenues to achieve progress in these areas.
- 1.24. The final chapter in Part III turns to a discussion of regional strategies to achieve balanced growth across the country, such that a minimum level of prosperity comes to all. The areas covered include the North Eastern region, coastal areas, islands, North Himalayan states and desert and drought prone areas. Developing infrastructure in these areas to bridge the divide created by geographical uniqueness is an important element of government actions.

Part IV: Growth Enablers

- 1.25. Part IV discusses how to enhance the contribution of a number of growth enablers. These include infrastructure, digital connectivity, Public Private Partnerships (PPPs), energy, science and technology and creation of an effective innovation ecosystem. Chapters 10-15 discuss each of these subjects in detail. Infrastructure development is one of the most crucial elements of economic transformation. The development of transport and connectivity infrastructure, including the roadways, railways, shipping & ports, in-land waterways and civil aviation, is discussed in Chapter 10. The challenges faced in this sector include physical capacity constraints, severe modal imbalances and a lack of holistic planning, maintenance and safety.
- 1.26. Digital connectivity has become an important driver of economic growth. In order to leverage efficiencies promised by the adoption of digital technologies, we need to develop a physical digital infrastructure network that is accessible to all. We must also create a host of software drive services including government services that can be provided digitally. The Action Agenda discusses the Digital India campaign and the actions related to enhancing digital connectivity.
- 1.27. Private sector involvement in infrastructure projects across different sectors helps in bridging the gap between the available public resources and the required investment. In addition, it helps in bringing private sector expertise into play. However, the institutional framework governing Public Private Partnerships (PPP) needs to be strengthened so that bottlenecks to implementation are avoided. Chapter 12 deals with these hurdles and suggests ways to overcome them.
- 1.28. The energy sector is one of the key drivers of economic growth and development. Access to reliable sources of energy is a crucial issue. Chapter 13 discusses this subject including actions necessary for increasing energy consumption and increasing energy efficiency and production. It pays particular attention to how we may improve the efficiency of distribution of coal, electricity, oil & gas, and harness renewable energy.
- 1.29. Another important element in India's development strategy is spurring science and technology including creating an enabling environment for innovation and entrepreneurship. With economic growth, India's contribution to science and technology has gained some momentum but it still lags behind the other major economies in the world. A culture of innovation is also essential for India to find ways to tackle its development challenges such as access to education, improving agricultural productivity and wastewater management. The Action Agenda for science and technology is presented in Chapter 14, while that for creating an effective innovation ecosystem is discussed in Chapter 15.

Part V: Government

- 1.30. Part V considers issues related to the government such as governance, taxation, competition and regulation. Chapter 16 discusses rebalancing the government's role in favour of public services and away from manufacturing. It also recommends reforms in the civil service, and electoral process. It suggests actions to eliminate corruption and black money, which have emerged as important policy priorities. Finally, the chapter offers suggestions for strengthening federalism and bringing states to the forefront of reform agenda.
- 1.31. Chapter 17 includes reforms to taxation policy and its administration with the view of reducing the scope for tax evasion and generation of black money, expansion of the tax base, and creation of a predictable and stable tax policy.
- 1.32. The government influences market outcomes through a regulatory environment that consists of laws, policies and rules. As elsewhere, India's regulatory environment has features that do not facilitate competition and may harm the public interest. Public procurement policies also need improvement. Chapter 18 discusses reforms that will encourage competition, improve the public procurement system and enhance the capacity of sectoral regulators.
- 1.33. Chapter 19 looks at the Justice System and includes a reform agenda to strengthen the rule of law in India. It covers three broad areas in which the Justice System needs reform - statutory and administrative laws, the judicial system and police. The suggestions on statutory and administrative law reform focus on modernizing and weeding out old and dysfunctional elements in legislation, unifying and harmonizing laws, reducing government intervention in areas where it is not required, undertaking statutory reforms in criminal justice and procedural laws, and reforming land/property related laws. The suggestions for reforming the judicial system revolve around streamlining human resource availability and performance, increasing and strengthening avenues for dispute resolution and extensive use of ICT to improve efficiency. For police reform, the important areas are state level legislative and executive reforms to help police forces serve more effectively within the modern-day democratic state.

Part VI: Social Sectors

- 1.34. Part VI of the Action Agenda turns to education, skill development, health and issues facing specific groups such as Scheduled Castes, Scheduled Tribes, women, children, differently abled and senior citizens. Education, skill development and health contribute to the creation of a productive workforce. Addressing the needs of all members of society is critical for inclusive growth of the country.
- 1.35. Given that a large and growing segment of India's population is under 25, education and skill development are critical to fully harvesting India's demographic dividend. Chapter 20 discusses the actions for improving the country's education system. The goals of improving learning outcomes in schools, raising the quality of education and research in higher education and promoting skill development are priorities for the sector. At the school level, while we have successfully brought all children into the fold of elementary education, quality education remains a distant dream. Actions to improve education quality can no longer be delayed. The chapter provides various steps to improve outcomes in the areas of school as well as higher education.
- 1.36. In the next fifteen years, we must entirely transform the delivery of health services and engineer a quantum jump in health outcomes. With this in view, Chapter 21 discusses measures necessary to lay down the foundation of a transformational change in the next three years. It focuses on public and preventive health, assurance of health care, reforming fiscal transfers from the Centre to states for better health outcomes, accelerating human resource development and improving access to medicines.
- 1.37. The guiding principle of the Prime Minister's development philosophy has been "Sabka Saath, Sabka Vikas" which implies that development should include every citizen. In this spirit, Chapter 22 discusses actions for building a more inclusive society. The chapter outlines actions aimed at the removal of obstacles faced by specific groups on the basis of gender, caste, age and physical impairment.

Part VII: Sustainability

- 1.38. The last part of the Action Agenda, Part VII, turns to environmental sustainability. We must address the high levels of air pollution in the cities, black carbon pollution indoors from the use of biomass fuels in cooking, massive volumes of solid waste in urban areas and deforestation. On the one hand, we must strengthen and streamline regulatory structures governing sustainability of the environment while on the other we must remove hurdles that adversely impact growth without protecting the environment. Chapter 23 outlines the action items contributing to these objectives.
- 1.39. Finally, water demand for irrigation, drinking and industrial use has been increasing with growth in incomes and population. But the sources of water supply remain scarce. We must address issues such as water scarcity, uneven distribution of water resources across people, sectors and regions, deteriorating water quality and excessive dependence on groundwater. These issues are taken up in the last chapter of the Action Agenda, Chapter 24.
- 1.40. Only by working together towards common national goals can the Centre and states meet India's development challenges. "Maximum Governance and Minimum Government", and "Competitive and Cooperative Federalism" are critical to achieving the full potential and creating a modern India, which brings prosperity to all of its 125 Crore citizens.

¹These figures represent the Revised Estimate for Budget 2016-17.

²Asian Development Bank estimates using NSSO and ASI data.

³Panagariya, Arvind, "A Passage to Prosperity," Wall Street Journal, 14 July 2005.

Part I

Three-Year Revenue and Expenditure

CHAPTER 2.

CONTEXT AND STRATEGY

- 2.1. Budget expenditure is an important tool for the government to advance policy objectives. It is important to align the expenditure allocation with the policy objectives during the next three years. For each sector, the expenditure also needs to be allocated in such a way that the maximum impact in terms of desired outcomes is achieved. Therefore it is not sufficient to allocate expenditure to a sector; there is a need to devise a strategy to determine the best use of the resources and regularly monitor progress against targets.
- 2.2. **Revenue versus Capital Expenditures.** One fundamental issue with expenditure planning in India has been a strong tendency towards revenue expenditure at the expense of capital expenditure. This has led to consistently high revenue deficits. Revenue expenditures are they key drivers of fiscal deficits.
- 2.3. Within revenue expenditures, subsidies have tended to crowd out the socially more productive expenditures such as those on education and health. Even within education and health, salaries end up accounting for the bulk of the expenditure.
- 2.4. Similar misallocations also characterize capital expenditures. Owing to the traditional path chosen, a large part of government resources has been used for investment in products that the private sector can readily produce and serve no public purpose. Investments in machinery, fertiliser, steel and other similar items exemplify these products and crowd out investments in activities such as roads, railways, ports, irrigation, power and digital connectivity.
- 2.5. This expenditure pattern has been facilitated partially by the artificial distinction between plan and non-plan expenditures, which has distracted attention from the more important difference between revenue and capital expenditure. Plan expenditure was seen as something positive since it was associated with development expenditures. Yet, the reality is that over time, a rising proportion of plan expenditures came to be allocated to items such as salaries. Actual investment, which promotes development and growth more directly, ended up taking the backseat. With the end of the 12th Five-year plan, it has been decided to do away with the plan and non-plan distinction. This decision offers a good opportunity to begin shifting the balance in favour of capital account items.
- 2.6. Any long-term strategy to address the expenditure imbalances must include measures to increase the tax-to- Gross Domestic Product (GDP) ratio including phasing out myriad exemptions that lead to narrowing of the tax base. Increases in revenues so achieved may then be predominantly used to boost capital expenditure. Another aspect of reforms is to gradually withdraw from activities and enterprises that serve no public purpose and can be undertaken by the private sector and use the revenue generated for capital investment.
- 2.7. Finally the social subsidies should be reoriented so that beneficiaries become economically independent instead of remaining perpetually dependent on them. Likewise, the efficiency of social expenditures must be improved to deliver better outcomes. This may be done, for example, through better targeting and the use of direct benefit transfers (DBT). Open-ended schemes that can absorb ever-rising expenditures and lack clearly identified beneficiaries must be avoided.
- 2.8. **Expenditure Classification.** With the discontinuation of the plan-non-plan expenditure classification, we now have an opportunity to revisit the entire issue of classification of expenditures in a way that is more suitable to assessing their overall quality in terms of likely development impact. For example, a functional classification that identifies clearly expenditures on agriculture, education, health, skill development, energy, infrastructure and other heads rather

than one that emphasizes items such as scheme versus non-scheme expenditures will be analytically more meaningful. This is particularly true since expenditures on these items in our system are spread across different ministries. It is also useful at this stage to consider whether parts of expenditures on education and health, which represent investment in human capital, should be counted as capital expenditures. A careful look at these issues should be a part of the government agenda in 2017-18.

- 2.9. **Medium-term expenditure framework.** The Centre's budget is set for an annual horizon. This means that the revenues and expenditure are decided for the upcoming year. This is in contrast to most of the modern economies, which employ a multi-year horizon when preparing the budget. Such an approach is essential for better realignment of expenditures to priorities since the room for realignment in one year is limited and the temptation in a one-year-horizon budget is to expand all expenditures more or less radially.
- 2.10. The Fiscal Responsibility and Budget Management Act, 2003 requires the Central Government to prepare a medium-term expenditure framework, which sets three-year rolling targets for expenditure. There is, however, no obligation for the government to adhere to these targets during the actual budget. As such, till date, this exercise has not been taken seriously.
- 2.11. Therefore, the time is ripe for the government to adopt a credible medium-term expenditure framework (MTEF) for allocating expenditure. In addition to making government expenditure more predictable and credible, it would also provide certainty to individual departments and ministries on available resources to them in the medium-term. This will allow them to focus on the optimum utilisation of available resources.
- 2.12. A medium-term fiscal framework would require forecasts of the levels of economic growth during the next three years, the expected tax and non-tax revenues of the Centre, and the targeted fiscal deficit. The MTEF would specify sector-wise and ministry-wise allocable expenditure ceilings based on the strategic objectives and development priorities. The states may also wish to consider allocating their resources based on a state level MTEF that may be synchronized with the Finance Commission award, along with appropriate amendment to the state level fiscal responsibility legislations.
- 2.13. In this part of the document, we offer a tentative MTEF covering the remaining three years of the Fourteenth Finance Commission (FFC), 2017-18 to 2019-20. The Budget for the year 2017-18 has, of course, been already presented. Therefore, the Revised Estimates for 2016-17 and Budget Estimates for 2017-18 for the part of information set of the proposed MTEF.
- 2.14. We use quantitative methods to forecast the revenues from projections of growth in nominal GDP. We also set clear future priorities, which guide the shifts in the composition of expenditures over time. We show how we can achieve substantial shift in the composition of expenditures in favour of education, health, agriculture, rural development, defence, railways, roads and other categories of capital expenditure just through prioritisation of the incremental revenue over time in favour of these sectors. We devote Chapter 3 to forecasting nominal GDP growth and the Centre's resource envelope and Chapter 4 to proposed sector-wise expenditure allocation.

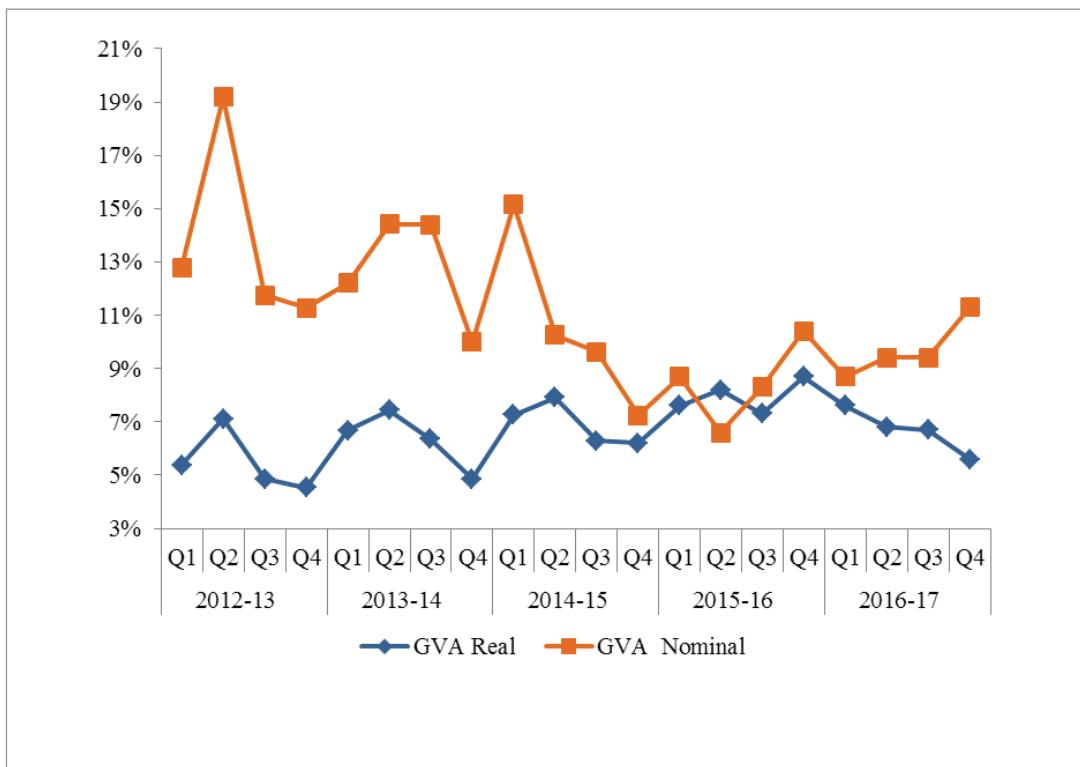
CHAPTER 3.

GROWTH OUTLOOK AND RESOURCE ENVELOPE FORECASTS

Growth Outlook

- 3.1. The Indian economy has emerged as the fastest growing major economy in the world. It is on an acceleration path even when the global economy has been facing an uncertain outlook and other major economies are either decelerating or are anchored at low growth levels. Contrary to the widely expressed fears of a major dip in the growth rate following demonetization, the economy has remained robust with the provisional estimates placing growth in real GDP on track at 7.1% for 2016-17.
- 3.2. The growth rate of GDP at constant 2011-12 prices increased from 5.5% in 2012-13 to 8.0% in 2015-16¹. Similarly, the growth rate of the Gross Value Added (GVA) at constant 2011-12 basic prices has increased from 5.4% in 2012-13 to 7.9% in 2015-16². The provisional estimate for GVA growth in 2016-17 is 6.6%.

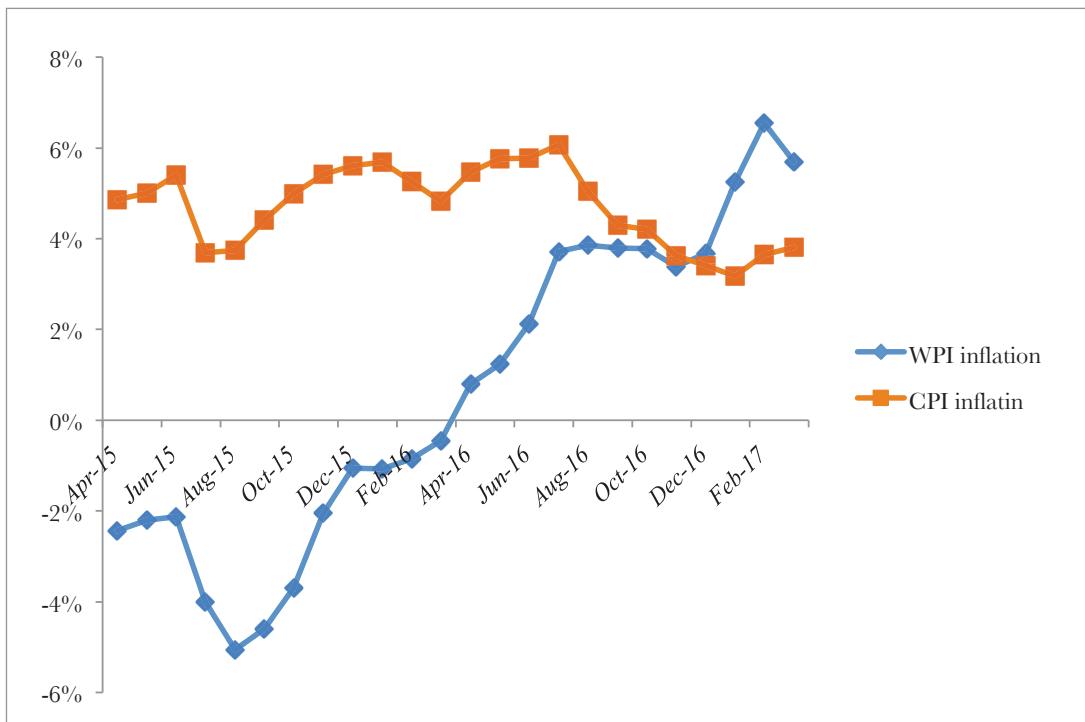
Figure 3-1: Quarterly Growth in Gross Value Added – Real and Nominal (2011-12 prices, %)



- 3.3. Because growth in tax revenues is linked more directly to growth in nominal output, in the following analysis, we focus on growth in nominal GDP and GVA. Even as the real growth has shown an increasing trend in recent years, the rate of nominal output growth has witnessed a sharp decline. The nominal GDP growth rate fell from 12.2% in 2012-13 to a low of 9.9% in 2015-16, while the nominal GVA growth rate fell from 11.9% to 8.5% during the same period. The growth in nominal GVA was the lowest in over a decade³.

- 3.4. The reason behind falling nominal growth rates is the sharp reduction in inflation rates as reflected in the Wholesale Price Index (WPI) and Consumer Price Index (CPI). This is due to steady progress in fiscal consolidation by the government and a well-calibrated monetary policy by the Reserve Bank of India (RBI). The global downturn in the commodity prices has also contributed to the decline in inflation. Even as the movements in both the price indices have been directionally similar, the magnitudes of decline in inflation rates have been significantly different. The CPI-based inflation rate fell from 10.1% in 2012-13 to 4.9% in 2015-16, and the WPI-based inflation fell from 7.4% in 2012-13 to -2.5% in 2015-16. This has caused a wide-divergence between CPI and WPI. Since the coverage of goods and services is much wider in the WPI than CPI, the GVA and GDP deflators have followed the WPI more closely.
- 3.5. In this context, it is important to note that after bottoming out in mid-2015-16, WPI-based inflation has seen a significant recovery. In August 2015, the WPI-based inflation was -5.1%, which has increased gradually to 5.7% in March 2017. Since the WPI has increased significantly during the course of 2016-17, the nominal GVA has also increased significantly in 2016-17(see Figure 3-2).

Figure 3-2: Inflation Rate based on WPI and CPI (April 2015 to March 2017)



Note: The WPI series is with the base 2004-05 and the CPI series is with the base 2011-12.

- 3.6. Based on the recent trends, we rely on the second advance estimates produced by the CSO that project the nominal GVA growth in 2016-17 as a whole to rise to 10.4%, compared to 8.6% in 2015-16.

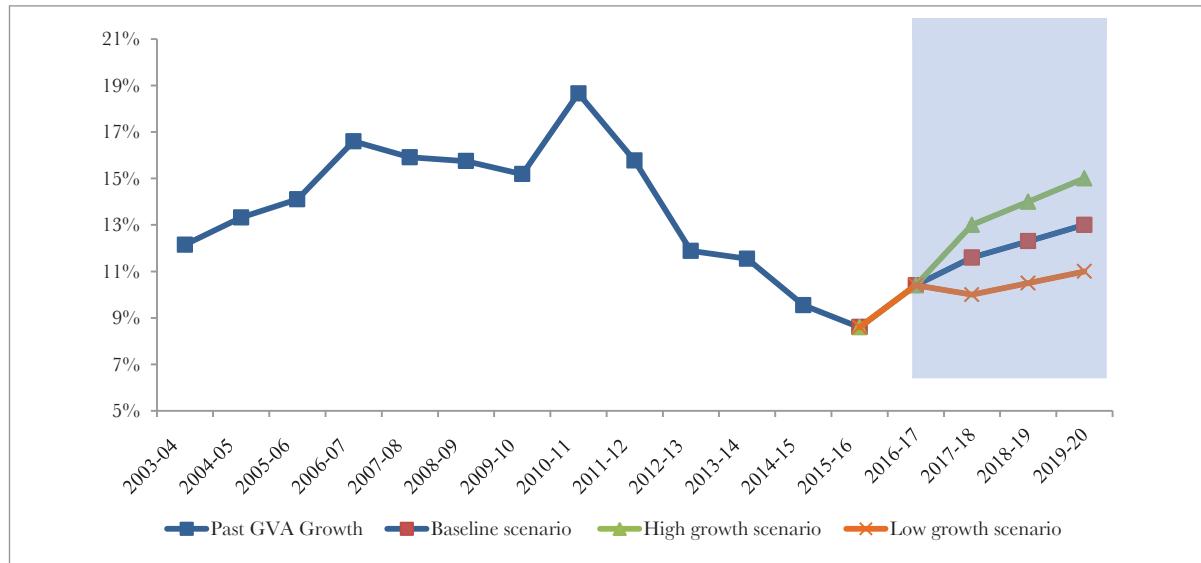
Growth outlook for 2017-18 to 2019-20

- 3.7. As mentioned above, the nominal growth in recent years experienced significant deceleration. Going forward, with the WPI realigning with the CPI, we expect the growth path to show upward movement. Importantly, it is expected that the real growth will also continue on the path of moderate acceleration. Public investment and private consumption would continue to lead growth even as private investment and exports gradually recover. India remains an attractive destination for foreign investments. To account for different upside and downside risks, we consider three potential scenarios for nominal GVA growth during the next three years: high growth, baseline and low-growth. Since our

objective is to predict tax revenues, which correlate most closely with nominal GVA, we focus here on the latter. The assumed growth trajectories of nominal GVA are as follows:

1. 2017-18: High growth – 13%; Baseline – 11.6%; Low Growth – 10%.
2. 2018-19: High growth – 14%; Baseline – 12.3%; Low Growth – 10.5%.
3. 2019-20: High growth – 15%; Baseline – 13%; Low Growth – 11%.

Figure 3-3: Assumed Nominal GVA Growth trajectory during the Action Agenda Period



Tax Revenue Forecasts

- 3.8. The forecasts for the Union Government's gross tax revenues, i.e., tax receipts before deducting the tax share of the states, are given below⁴. This is based on the growth scenarios outlined above. For 2017-18 baseline scenario, forecasts are based on the budget estimates with an adjustment for Goods and Services Tax (GST) implementation (described below). The forecasts for the 2017-18 high growth and low growth scenarios are derived from differences in growth rates in those scenarios compared to the baseline scenario. In the baseline scenario, the gross tax revenues are expected to grow from Rs. 17.03 Lakh Crore to Rs. 19.49, 22.66 and 26.48 Lakh Crore in 2017-18, 2018-19 and 2019-20 respectively, with annual growth rate ranging between 14% and 17%.

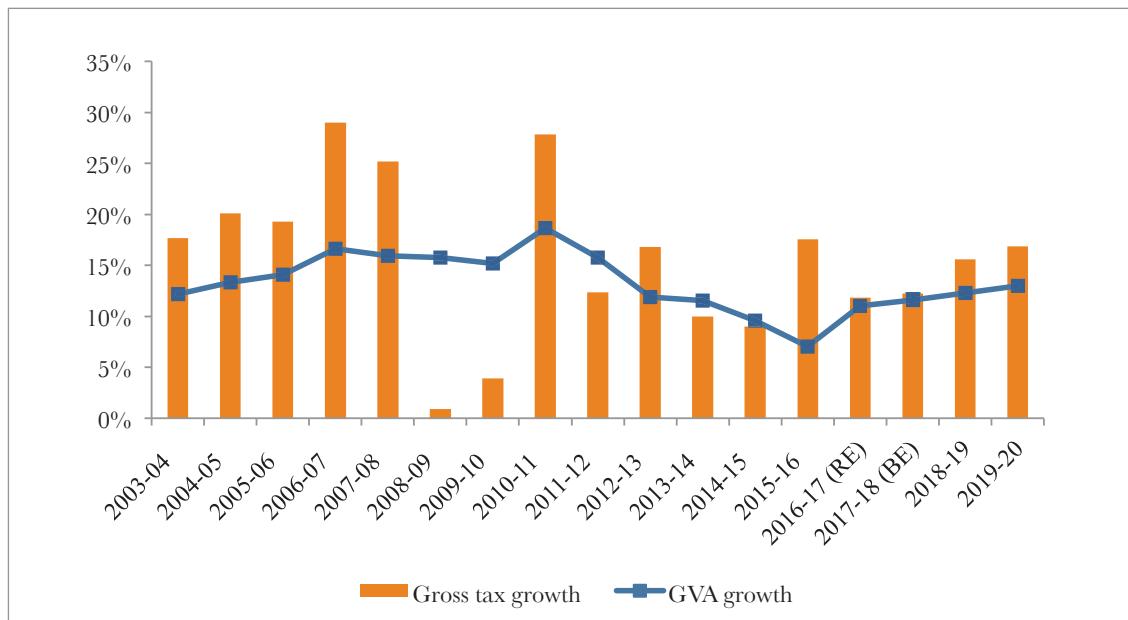
Table 3-1: Forecast of Gross Tax Revenues for the Central Government – Action Agenda Period (Rs Lakh Crore)

Growth scenarios	2016-17 (RE)	2017 - 18	2018 - 19	2019 - 20
Baseline	17.03	19.49	22.66	26.48
YoY Growth		(14%)	(16%)	(17%)
High growth	17.03	19.78	23.44	27.99
YoY Growth		(16%)	(18%)	(19%)
Low growth	17.03	19.15	21.83	24.94
YoY Growth		(11%)	(14%)	(14%)

Note: (1) RE refers to Revised Estimates. (2) Annual growth shown in parenthesis.

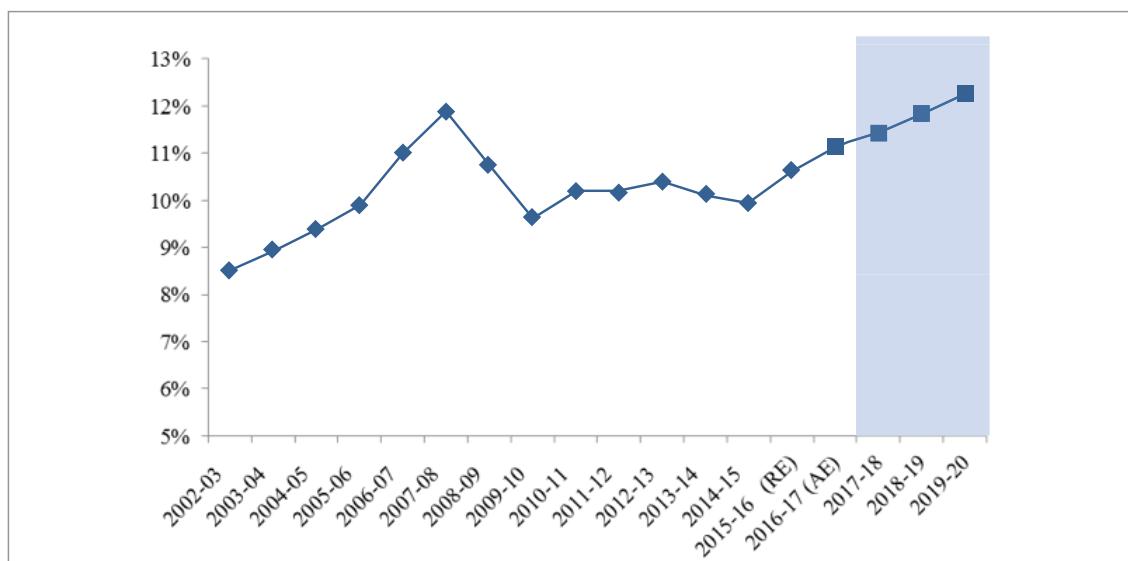
- 3.9. The charts below show that the growth in gross tax revenues (in the baseline scenario) in the next three years is much lower than the growth during 2003-04 to 2007-08. This is because of lower GVA growth as well as lower tax buoyancies compared to that period. However, the projected growth is higher than average growth in the period 2008-09 to 2016-17. This is mainly because of higher growth in GVA, but also an increase in tax buoyancies. The gross tax revenues to GDP ratio is forecasted to increase to 12.3% by 2019-20, compared to 11.2% in 2016-17. tax revenues are expected to grow from Rs. 17.03 Lakh Crore to Rs. 19.49, 22.66 and 26.48 Lakh Crore in 2017-18, 2018-19 and 2019-20 respectively, with annual growth rate ranging between 14% and 17%⁵.

Figure 3-4 : Growth in Gross Tax Revenues and Nominal GVA (2003-04 to 2019-20)



Note: (1) Gross tax growth for 2016-17 is a revised estimate and for 2017-18 is budget estimate along with our adjustments

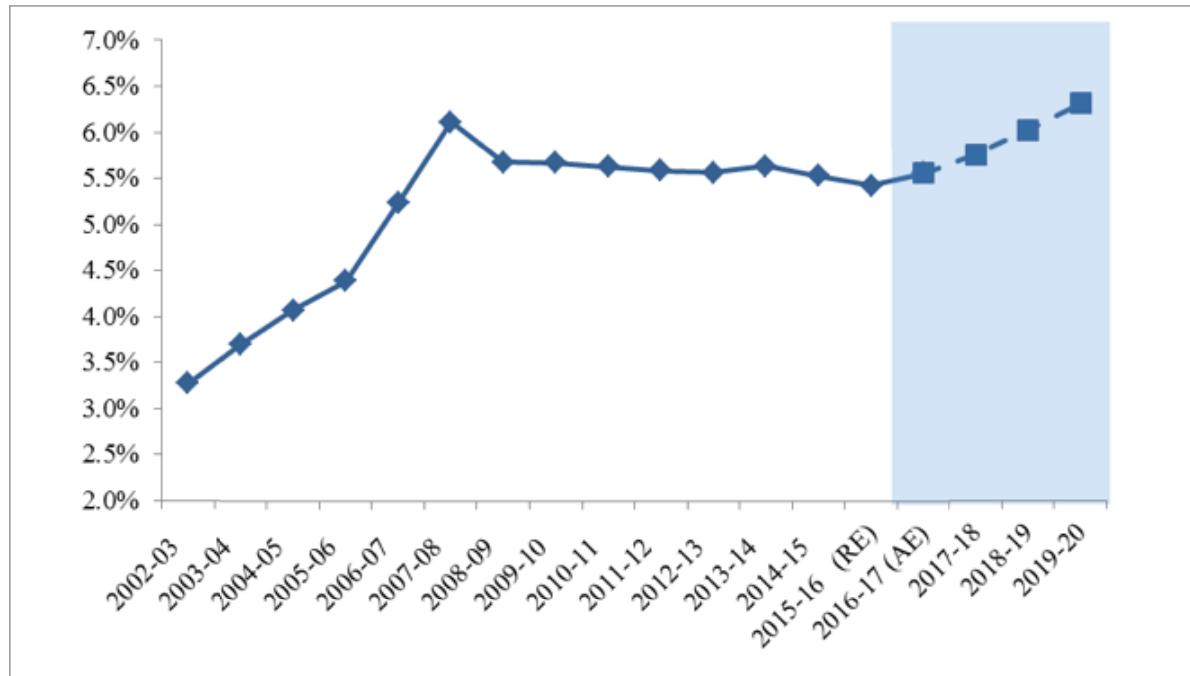
Figure 3-5: Total Tax to GDP ratio (%) 2002-03 to 2019-20 (Baseline scenario)



Direct tax forecasts

- 3.10. The direct tax (corporate tax and personal income tax) to GDP ratio has been rather stagnant from 2008-09 onwards, ranging between 5.4% and 5.7%. This is in contrast to the rapid increase in the direct tax to GDP ratio during the preceding years as a result of rationalisation and simplification of tax structure. Going forward, it is forecasted that the direct tax collections would experience substantial growth. The forecasted direct tax to GDP ratio is 5.8%, 6.0% and 6.3% in 2017-18, 2018-19, and 2019-20 respectively, compared to 5.6% in 2016-17⁶. The reasons for this acceleration are explained below.

Figure 3-6: Direct Tax to GDP ratio (%) 2002-03 to 2019-20



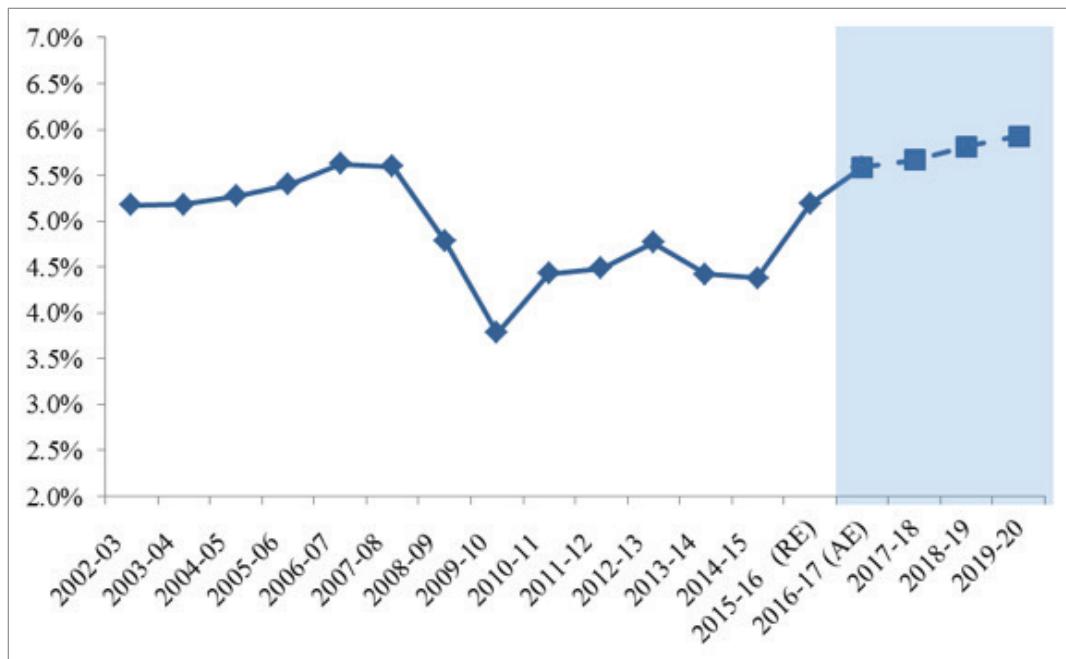
- 3.11. The demonetization on 8th November 2016 has led to a significant increase in bank deposits. It is likely that this would result in disclosure of a significant amount of income that would not have been done otherwise. Therefore, it is expected that there would be a significant one-time increase in the direct tax revenues for 2017-18. However, since it is too early to estimate the volume of this increase with any degree of certainty, we have not incorporated it in our estimates.
- 3.12. We expect that various reform measures including the demonetization would have a durable impact on the direct tax revenues. The government has taken a number of steps to curb black money generation, such as the disclosure of foreign assets, Benami Property Amendment Act, 2016 and amendments in Double Taxation Avoidance Agreements signed with Mauritius, Singapore and Cyprus. A major drive to replace cash transactions by digital transactions is also under way. Also under consideration is tax simplification. The cumulative result of these measures would be increased the tax compliance and an expansion in the tax base. Going forward, this will lead to an increase in the direct tax-to-GDP ratio.
- 3.13. The tax forecasts from 2018-19 onwards are made from tax buoyancy rates. The tax buoyancy rate is the ratio of growth in tax revenues and growth in GVA in any particular year. A tax buoyancy of greater than 1 means that the tax revenues increase at a faster rate than the nominal GVA. Similarly, a tax buoyancy rate of less than 1 implies that the tax revenue growth is less than the underlying economic growth. In order to increase the tax-ratio, the tax buoyancy rate needs to be greater than 1. Government policies are an important determinant of the tax buoyancy rate. Specifically, tax rates, coverage and efficiency of tax administration influence tax buoyancy.

- 3.14. The estimated long-term direct tax buoyancy rate is 1.42 based on an error correction model. This model uses data from 1995-96 to 2016-17 to establish the relationship between growth in GVA and the tax revenues, which in turn gives the tax buoyancy rates⁷.
- 3.15. Since the estimated direct tax buoyancy is much larger than 1, this implies an increase in the direct tax-to-GDP ratio. This is consistent with the directional impact of demonetization and various other reforms.

Indirect tax forecasts

- 3.16. The buoyancy rate for indirect tax (custom duty, excise duty and service tax) is estimated to be 1.06 based on the above methodology. We adjust this further on the basis of the impending reform through the implementation of the GST. As per the Constitution (One Hundred and First Amendment) Act, 2016, the GST would replace most of the existing indirect taxes levied by the Centre and the states⁸. The GST is designed as a more efficient tax system that will create a common Indian market, spur investment and economic growth. It will help expand tax base as well as lead to better tax compliance due to a simplified structure and inherent incentives for self-reporting. For these reasons, it is expected that the GST implementation would, over time, lead to an increase in aggregate government tax revenues.
- 3.17. Since the final GST structure is under discussion at the GST Council, there is some uncertainty regarding the precise impact on the revenues of the Centre and the state Governments. For the purposes of the Action Agenda, it has been assumed that the GST would be implemented on 1st July 2017. For 2017-18, we broadly adopt the budget estimates for indirect tax revenues. Since the GST rate structure has been set-up to minimise large changes in tax liabilities on individual products and services, it is assumed that the GST would be revenue-neutral for the Centre in the first year of operations. However since the Centre has agreed to pay compensation to the states that face a loss in revenues, we assume that the resources for this would come from cess(es) imposed in the GST regime. We assume that the compensation to be paid to the states in 2017-18 would be Rs. 37,500 Crore, and thus an equal amount would be raised from additional taxes in GST.
- 3.18. Going forward, 2018-19 onwards, we expect the indirect tax buoyancy to increase as a result of GST implementation. We assume that the indirect tax buoyancy will increase to 1.11 and 1.17 in 2018-19 and 2019-20 respectively (an increase of 5% annually). This may be an underestimate, especially given that India has managed to achieve greater tax buoyancy historically during the period between 2004-05 and 2007-08. However, we choose to be conservative owing to the uncertainty around the precise date of the GST's implementation, and also because of the potential for a negative shock to indirect tax revenues arising from the global commodity prices. The fall in crude oil prices in the last few years has been beneficial for the tax revenues. The government has been able to absorb some of the decline in prices through an increase in excise duty. The excise duty revenues increased from Rs. 1.88 Lakh Crore in 2014-15 to Rs. 2.88 Lakh Crore in 2015-16, and again to Rs. 3.87 Lakh Crore in 2016-17⁹. However, if the crude oil prices increase in future, it is possible that the excise duty on petroleum products may be reduced, causing a downward pressure on overall indirect tax revenues.
- 3.19. The indirect tax to GDP ratio in 2016-17 is 5.6%¹⁰. We forecast that the indirect tax to GDP ratio will rise progressively to 5.7%, 5.8% and 5.9% in 2017-18, 2018-19 and 2019-20 respectively.

Figure 3-7: Indirect Tax to GDP ratio (%) 2002-03 to 2019-20



Devolution of tax revenues to states

- 3.20. The 14th Finance Commission recommended, and the Union government accepted that the share of divisible pool of tax revenues of the centre to the states would be set at 42% till 2019-20. The GST would subsume many existing cesses and surcharges levied on excise duty and service tax, which has the impact of increasing the divisible pool. On the other hand, a cess for compensation applied on GST would lead to the opposite effect.

Non-Tax Revenues and Capital receipts

- 3.21. The forecasted non-tax revenues and non-debt capital receipts are shown in the table below. The 2017-18 forecasts are based on Budget 2017-18.

Table 3-2 : Forecast of Non-Tax Revenue and Non-Debt Capital Receipts for the Union Government – Action Agenda Period (Rs. Lakh Crore)

Growth scenarios	2016-17 (RE)	2017 – 18	2018 - 19	2019 – 20
Non-tax revenues	3.35 (34%)	2.89 (-14%)	3.20 (11%)	3.60 (13%)
Non-debt capital receipts	0.57 (-10%)	0.84 (49%)	0.90 (6%)	0.90 (0%)

Note: (1) RE refers to revised estimates. (2) Annual growth shown in parenthesis.

- 3.22. The non-tax revenues are forecasted a decline in absolute terms in 2017-18, compared to 2016-17 budget estimates. This is primarily because of lower projected value of revenues from the telecom sector, which includes revenues from auction of spectrum. As the recent spectrum auctions held in 2016-17 showed, the results of such auctions can be uncertain, as it depends on industry factors (such as the gap between the need and availability of existing spectrum). Therefore, to be conservative we assume a lower and steady growth in telecom revenues. (Rs. 62,500 Crore in 2017-18 (BE) as compared to Rs. 98,995 Crore in 2016-17 (BE)).

- 3.23. The forecast for non-debt capital receipt in 2017-18 is Rs 84,400 Crore, which is 49% higher than the 2016-17 (RE). This is because of higher proceeds for disinvestment, which is expected to gather momentum due to the implementation of NITI Aayog's recommendations. The forecasted revenues from disinvestment and strategic sales are Rs 80,000 Crore in each year: 2018-19 and 2019-20 respectively. As discussed in Chapter 18, NITI Aayog has recommended that the public sector enterprises (PSE) that do not serve a public purpose should be included in the list for strategic disinvestment. While the primary motivation is to unlock the potential of those enterprises through private sector involvement, this will also enhance government revenues.

Fiscal deficit

- 3.24. The fiscal deficit targets are set on the basis of the fiscal consolidation roadmap announced in Budget 2017-18, which commits the Union Government to reduce its fiscal deficit to 3.2% of GDP in 2017-18 and 3% of GDP thereafter. Our forecasts are consistent with the stated fiscal roadmap.

Summary Tables

**Table 3-3 : Forecast of Resource Envelope for Union Government - 2017-18 to 2019-20:
Baseline Scenario (Rs. Lakh Crore)**

S. No.	Particulars	2016-17 (RE)	2017 – 18	2018 - 19	2019 – 20
I.	GDP at market prices	152.5	170.2	191.1	215.9
1.	Gross tax revenues	17.0 (11.2%)	19.5 (11.5%)	22.7 (11.9%)	26.5 (12.3%)
2.	Tax share to states	6.1 (4.0%)	6.7 (4.0%)	8.1 (4.2%)	9.4 (4.4%)
II.	Net tax revenues	11.0 (7.2%)	12.7 (7.5%)	14.6 (7.6%)	17.0 (7.9%)
3.	Non-tax revenues	3.3 (2.2%)	2.9 (1.7%)	3.2 (1.7%)	3.6 (1.7%)
4.	Non-debt capital receipts	0.57 (0.4%)	0.84 (0.5%)	0.90 (0.5%)	0.90 (0.4%)
III.	Fiscal Deficit	5.3 (3.5%)	5.4 (3.2%)	5.7 (3.0%)	6.5 (3.0%)
IV.	Total receipts	20.14 (13.2%)	21.82 (12.8%)	24.35 (12.7%)	27.94 (12.9%)

Note: RE refers to revised estimates. Figures in parentheses are as % of GDP. Sums may not match due to rounding.

**Table 3-4: Forecast of Resource Envelope for Union Government - 2017-18 to 2019-20:
High Growth Scenario (Rs. Lakh Crore)**

S. No.	Particulars	2016-17 (RE)	2017 – 18	2018 - 19	2019 – 20
I.	GDP at market prices	152.5	172.3	196.4	225.9
1.	Gross tax revenues	17.0 (11.2%)	19.8 (11.5%)	23.4 (11.9%)	28.0 (12.4%)
2.	Tax share to states	6.1 (4.0%)	6.8 (4.0%)	8.2 (4.2%)	9.8 (4.3%)
II.	Net tax revenues	11.0 (7.2%)	12.9 (7.5%)	15.2 (7.7%)	18.2 (8.1%)
3.	Non-tax revenues	3.3 (2.2%)	2.9 (1.7%)	3.2 (1.6%)	3.6 (1.6%)
4.	Non-debt capital receipts	0.57 (0.4%)	0.84 (0.5%)	0.90 (0.5%)	0.90 (0.4%)
III.	Fiscal Deficit	5.3 (3.5%)	5.5 (3.2%)	5.9 (3.0%)	6.8 (3.0%)
IV.	Total receipts	20.14 (13.2%)	22.11 (12.8%)	25.12 (12.8%)	29.42 (13.0%)

**Table 3-5: Forecast of Resource Envelope for Union Government - 2017-18 to 2019-20:
Low Growth Scenario (Rs. Lakh Crore)**

S. No.	Particulars	2016-17 (RE)	2017 – 18	2018 - 19	2019 – 20
I.	GDP at market prices	152.5	167.7	185.3	205.7
1.	Gross tax revenues	17.0 (11.2%)	19.2 (11.4%)	21.8 (11.8%)	24.9 (12.1%)
2.	Tax share to states	6.1 (4.0%)	6.6 (4.0%)	7.9 (4.3%)	9.1 (4.4%)
II.	Net tax revenues	11.0 (7.2%)	12.5 (7.5%)	13.9 (7.5%)	15.8 (7.7%)
3.	Non-tax revenues	3.3 (2.2%)	2.9 (1.7%)	3.2 (1.7%)	3.6 (1.8%)
4.	Non-debt capital receipts	0.57 (0.4%)	0.84 (0.5%)	0.90 (0.5%)	0.90 (0.4%)
III.	Fiscal Deficit	5.3 (3.5%)	5.4 (3.2%)	5.6 (3.0%)	6.2 (3.0%)
IV.	Total receipts	20.14 (13.2%)	21.55 (12.8%)	23.52 (12.7%)	26.42 (12.8%)

Note: RE refers to revised estimates. Sums may not match due to rounding.

¹ Central Statistics Organisation, 2016-17 provisional estimates, 31 May 2017 based on new series.

² Central Statistics Organisation, 2016-17 provisional estimates, 31 May 2017 based on new series..

³ 2015-16 data refers to the 1st revised estimate.

⁴ This includes corporation tax, personal tax, excise duty, custom duty, and service taxes.

⁵ Based on revised estimates of gross tax revenues and second advanced estimates of GDP.

⁶ Based on revised estimates of gross tax revenues and second advanced estimates of GDP.

⁷ 2016-17 were budget estimates and 2015-16 were revised estimates. For 2016-17, a nominal GVA growth rate of 11% has been assumed which is consistent with the budget assumptions.

⁸ The Central taxes subsumed under GST are: Central Excise Duty, Additional Excise Duty, Service Tax, Additional Customs Duty commonly known as Countervailing Duty, and the Special Additional Duty of Customs. The state taxes subsumed under GST are: State Value Added Tax/Sales Tax, Entertainment Tax, Central Sales Tax, Octroi and Entry Tax, Purchase Tax, Luxury Tax and Taxes on lottery, betting and gambling.

⁹ The 2016-17 figure refers to the revised estimates.

¹⁰ Revised estimate.

CHAPTER 4.

EXPENDITURE

Overall Expenditure Allocations: 2017-18 to 2019-20

- 4.1. Our suggested breakup of the total expenditure into revenue and capital expenditure and development and non-development for years 2017-18 to 2019-20 is given below in Tables 4-1 to 4-3. A comparison of these expenditures with 2014-15 (RE) and 2015-16 (BE) expenditures is also provided. The ideal comparison would be with the actual expenditures for these years. But while the Budget 2017-18 provides the break-up of actual expenditures into revenue and capital categories, it does not distinguish between development and non-development categories. This latter break-up is provided in the Finance Ministry's publication Indian Public Finance Statistics (IPFS) but only in terms of 2014-15 (RE) and 2015-16 (BE) expenditures.
- 4.2. Under the proposed plan, the revenue deficit is expected to fall from 2.1% in 2016-17 (RE) to 1.9% in 2017-18, 1.4% in 2018-19 and 0.9% in 2019-20.
- 4.3. The revenue non-development expenditure is primarily the committed expenditure incurred on heads such as interest, pensions, defence salaries, and other establishment costs. Its share of total expenditure is above 40%, which limits the scope for expenditure on development activities. Going forward, it is estimated that the share of non-development revenue expenditure will fall, both as a proportion of total budget expenditure and GDP.
 1. The interest expenditure is estimated based on the updated FRBM roadmap. Due to the increased fiscal prudence and expected gradual reduction in interest rate on government securities, the share of interest expenditure in total expenditure will reduce.
 2. Defence revenue expenditure, police and pensions are expected to grow annually by 6% in 2018-19 and 2019-20 respectively.
 3. Other expenditures are based on the long-term trends.
- 4.4. Under the proposed plan, significant effort is to be put in to correct the imbalance in expenditures. The additional fiscal space created in 2018-19 and 2019-20 from forecasted growth in revenues and above reduction in committed expenditure is proposed to be utilised towards capital expenditure and other important development categories. Consequently, the share of capital expenditure should increase from 1.6% of GDP in 2016-17 (BE) to 2.6% in 2019-20. This will imply that capital expenditure contributes 16% and 20% in 2018-19 and 2019-20 of total budget expenditure.
- 4.5. While the non-development revenue expenditure as a proportion of budget expenditure will fall, the share of development revenue expenditure will be maintained.

Table 4-1: Summary – Expenditure Allocation (% of GDP)

Particulars	2014-15 (RE)	2015-16(BE)	2017-18	2018-19	2019-20
Revenue non-development expenditure	5.9%	6.0%	6.0%	5.7%	5.4%
Revenue development expenditure ^	5.4%	4.6%	4.4%	4.4%	4.4%
Statutory Grants to states	0.5%	0.7%	0.6%	0.6%	0.6%
Total revenue expenditure	11.9%	11.3%	11.0%	10.7%	10.4%
Capital non-development expenditure	0.8%	0.8%	0.6%	0.8%	0.9%
Capital development expenditure^	0.7%	0.9%	1.2%	1.3%	1.7%
Total capital expenditure	1.5%	1.7%	1.8%	2.0%	2.6%
Total Expenditure	13.4%	13.0%	12.8%	12.7%	12.9%
Revenue Deficit	2.9%	2.8%	1.9%	1.4%	0.9%

Table 4-2: Summary – Expenditure Allocation (Rs. Crore)

Particulars	2014-15 (RE)	2015-16(BE)	2017-18	2018-19	2019-20
Revenue non-development expenditure	741,046	819,397	1,014,938	1,090,344	1,156,364
Revenue development expenditure ^	678,409	622,839	754,400	843,377	952,336
Statutory Grants to states	64,675	88,865	103,101	111,063	133,678
Total revenue expenditure	1,484,130	1,531,101	1,872,439	2,044,785	2,242,378
Capital non-development expenditure	95,443	104,621	105,321	147,769	192,753
Capital development expenditure^	90,649	126,091	204,480	242,703	358,462
Total capital expenditure	186,092	230,712	309,801	390,472	551,215
Total Expenditure	1,670,220	1,761,812	2,182,240	2,435,256	2,793,593

Table 4-3: Summary – Expenditure Allocation (% of Budget)

Particulars	2014-15 (RE)	2015-16(BE)	2017-18	2018-19	2019-20
Revenue non-development expenditure	44%	47%	47%	45%	41%
Revenue development expenditure ^	41%	35%	35%	35%	34%
Statutory Grants to states	4%	5%	5%	5%	5%
Total revenue expenditure	89%	87%	86%	84%	80%
Capital non-development expenditure	6%	6%	5%	6%	7%
Capital development expenditure^	5%	7%	9%	10%	13%
Total capital expenditure	11%	13%	14%	16%	20%
Total Expenditure	100%	100%	100%	100%	100%

Source: 2014-15 (RE) and 2015-16 (BE) from Indian Public Finance Statistics (IPFS), Ministry of Finance; NITI Forecasts for later years. Break up of actual expenditure into development and non-development categories for years 2014-15 and 2015-16 is not available

RE: Revised estimate

BE: Budget Estimate

F: Forecast

^ Note: We classify food subsidy as development revenue expenditure instead of the non-development revenue expenditure as done in IPFS. Loans and advances are added to capital development expenditure. Expenditure classification based on development and non-development for 2016-17 is not available with the Finance Ministry.

Sector-wise Expenditure Allocation

4.6. The table below show the detailed sector-wise expenditure allocation for the next three years.

4.7. Some important sectors are discussed below:

1. **Health.** The allocation has been increased from around Rs. 30,000 Crore in 2015-16 to about Rs. 1,00,000 Crore by 2019-20, thereby increasing its share of total expenditure from 1.7% to 3.6%. The higher allocations have been done keeping in mind that the current expenditure levels on health are low. Health expenditures contribute directly to enhancing the social welfare of people and in developing human capital. The increased allocation should be utilised towards public health, state-level grants, fiscal incentives and human resources for health to states to improve health outcomes.
2. **Education.** The allocation has been increased from around Rs. 66,000 Crore in 2015-16 to about Rs. 1,12,000 Crore by 2019-20, thereby increasing its share of total expenditure from 3.7% to 4.0%. The higher allocations should support improving the government run education institutions and complement other governance reforms suggested for this sector.
3. **Railways and Road Capital Expenditure.** The allocation towards capital expenditure in the railway sector will increase from around Rs. 40,000 Crore in 2015-16 to about Rs. 1,18,000 Crore by 2019-20, thereby increasing its share of total expenditure from 2.3% to 4.3%. Similarly, the allocation towards capital expenditure for building and maintain roads is proposed to be doubled from Rs. 31,000 Crore to Rs. 86,000 Crore by 2019-20. This will imply that its share in total expenditure will increase from 1.8% to 3.1%. There is an urgent need to develop the transportation infrastructure to assist in economic growth. Higher allocations especially in the railways sector would decongest the existing roads, thereby improving performance of both the sectors.
4. **Defence Capital Expenditure.** The allocation towards capital expenditure in defence will increase from around Rs. 95,000 Crore in 2015-16 to about Rs. 1,72,000 Crore by 2019-20, thereby increasing its share of total expenditure from 5.3% to 6.2%. This is to allow for greater purchase of equipment for the armed forces, keeping in mind the security considerations for the country.
5. **Agriculture and Rural Development.** Since agriculture and rural development are priority sectors for the government, the allocations towards this sector are increased from Rs. 1,03,000 Crore in 2015-16 to Rs. 2,16,000 Crore by 2019-20. This will imply that the share of expenditure on rural development would be grow from 5.9% of total expenditure in 2015-16 to 7.7% in 2019-20.
6. **Food Subsidy.** The allocation towards food subsidy is increased from Rs. 1,24,000 Crore in 2015-16 to about Rs. 1,57,000 Crore by 2019-20. Given the recent subsidy rationalisation measures undertaken by the government, and the scope for better targeting through use of the socio-economic caste survey (SECC), there is a scope to contain the food subsidy expenditure in future. Therefore, our allocations are based on a reduction in the food subsidy as a proportion to GDP from 0.90% in 2015-16 to 0.73% in 2019-20.
7. **Fertiliser Subsidy.** The government has been able to contain the expenditures on fertiliser subsidies to Rs. 70,000 Crore in the last few years. Through better targeting and reforms of fertiliser subsidies, it is expected that the fertiliser subsidy expenditures will remain at this level in the next three years.

Table 4-4: Expenditure Allocation, by Sector (Rs. Crore)

S. No.	Particulars	2014-15 (RE)	2015-16(BE)	2017-18	2018-19	2019-20
A.	NON-DEVELOPMENTAL REVENUE EXPENDITURE					
1	Interest payments	411,354	456,145	523,078	557,779	592,568
2	Defence (revenue)	140,405	152,139	175,861	186,413	197,598
3	Organs of state	5,617	7,819	8,520	10,003	11,745
4	Fiscal Services	10,100	11,804	13,566	15,617	17,978
5	Police	52,433	55,436	65,576	69,511	73,682
6	Other administrative services (@)	16,833	17,712	14,940	16,786	18,859
7	Pensions & other retirement benefits	81,705	88,521	131,201	139,073	147,417
8	Technical & economic cooperation with other countries	5,319	6,337	10,000	11,876	14,105
9	Social security and welfare (Non-development related)	1,616	3,235	2,382	2,044	1,753
10	Other non-development expenditure (#)	15,148	19,692	31,713	35,643	40,060
11	Grants to UTs (NP)	516	557	600	600	600
12	Compensation to states for loss of GST			37,500	45,000	40,000
I.	Non-development revenue expenditure	7,41,046	8,19,397	1,014,938	1,090,344	1,156,364
B.	DEVELOPMENTAL REVENUE EXPENDITURE					
13	Social & Community Services	132,680	147,843	190,000	241,064	300,448
13.1	Education	66,955	66,132	75,000	97,460	112,289
13.2	Health	28,103	29,496	45,000	65,000	100,000
13.3	Others	37,622	52,215	70,000	78,604	88,158
14	General Economic services	28,269	28,207	30,000	12,000	15,000
15	Agriculture & allied service and Rural Development	103,130	103,384	170,000	191,098	215,941
16	Industry & minerals	72,898	44,024	65,000	72,000	80,000
17	Power, irrigation & flood control	13,355	14,683	19,000	21,337	24,111
18	Transport & communication	32,800	32,835	22,600	31,000	37,000
19	Public works	1,694	1,800	1,800	2,000	2,200
20	Grants to states & UTs	99,995	52,675	41,000	50,000	50,000
21	STATUTORY GRANTS TO STATES	64,675	88,865	103,101	111,063	133,678
22	Food subsidy	122,676	124,419	145,000	152,879	157,637
23	Fertilizer subsidy	70,912	72,969	70,000	70,000	70,000
II.	Total revenue development expenditure	743,084	711,704	857,501	954,440	1,086,014
C.	NON-DEVELOPMENTAL CAPITAL EXPENDITURE					
24	Defence (capital)	81,965	94,588	91,580	133,769	172,753
25	Other non-development capital expenditure (^)	13,478	10,033	13,741	14,000	20,000
III.	Total non-developmental capital expenditure	95,443	104,621	105,321	147,769	192,753

S. No.	Particulars	2014-15 (RE)	2015-16(BE)	2017-18	2018-19	2019-20
D.	DEVELOPMENTAL CAPITAL EXPENDITURE					
25	Transport & communication	49,668	78,204	111,713	137,036	215,144
25.1	Railways (Budgetary assistance)	30,100	40,000	55,000	76,439	118,768
25.2	Roads & bridges	11,997	31,628	48,500	51,597	86,376
25.3	Others &	7,571	6,576	8,213	9,000	10,000
26	Others *	30,284	34,528	72,767	83,667	119,318
27	Loans & Advances	10,697	13,359	20,000	22,000	24,000
IV.	Total capital development expenditure	90,649	126,091	204,480	242,703	358,462

Notes: @ These include stationery & printing, external affairs and others.

Includes non-plan expenditure on information and publicity, pension to freedom fighters, non-developmental, non-statutory grants' to states other than those for police and natural calamities etc.

^ Includes border services, fiscal services and others.

& These include expenditure on aviation, ports and others.

* Includes scientific research, general investments, industry & minerals, public works and others.

Part II

Economic Transformation in Major Sectors

CHAPTER 5.

AGRICULTURE:

DOUBLING FARMERS' INCOMES

- 5.1. Agriculture (inclusive of animal husbandry, forestry and fishing) is central to the nutrition needs of India and also remains the largest sector of India's economy as a source of employment. According to the Fifth Annual Employment-Unemployment Survey of the Ministry Labour and Employment, 45.7% of India's workforce in 2014-15 was employed in agriculture. After two consecutive droughts, the sector has seen a turnaround in 2016-17. For the prosperity of a large section of India's workforce, it is essential that we sustain this turnaround. Unsurprisingly, the Prime Minister has set the goal of doubling farmers' income by 2022-23 over that in 2015-16. Achieving this goal would require significantly faster growth in nearly all variables that positively impact farmers' incomes.
- 5.2. The NITI Aayog Report of Task Force on Agricultural Development has looked into the issue of revitalization of agriculture in substantial detail. A group of secretaries, appointed by the Prime Minister at the end of 2015 and tasked with looking into farmer-centric issues, has built further on the work of the taskforce. The present chapter draws on these sources and many others including some originating at the NITI Aayog. The Report of the Task Force on Agricultural Development provides details on many of the issues on which we touch below.
- 5.3. It may be noted at the outset that agriculture is a state subject. Therefore, it is critical that state governments actively participate in bringing about the requisite changes. The central government can help bring about change through a variety of central sector schemes and centrally sponsored schemes but these can only succeed if states are willing and active partners.
- 5.4. Immediate actions necessary to sustain and accelerate agricultural growth may be divided into four areas. First, we need to reform of agricultural produce marketing policies and market interventions to ensure that farmers receive remunerative prices. The Minimum Support Price (MSP) as currently implemented has limited reach both in terms of commodities that the government procures and geographical area over which such procurement extends. At the same time, the existing agricultural marketing system through which the bulk of the farmers sell their produce places in their hands only a fraction of the price paid by the final consumer. Both issues require immediate attention. Second, productivity of both land and water remains low for many crops when compared to other countries. There also exist large regional variations in productivity. Correcting this deficiency will require sustained action for many years to come. Third, enacted in the 1950s or 1960s, tenancy laws in most states of India no longer adequately serve the interests of either landowners or tenants. A beginning to correct the problem has been made recently but more work in this direction is required. Related, land ownership records are in need of modernization. This is essential if the landowner is to be able to lease or sell her land or take a loan against it from banks. Finally, relief measures in the event of natural disasters need to improve.

Remunerative Prices For Farmers

Marketing Reforms

- 5.5. Issues related to price fall under two categories. First, the prevailing marketing arrangements under the conventional Agricultural Produce Market Committees (APMC) acts in the states have meant that the farmer receives a small fraction of the price paid by the final consumer. Marketing arrangements under these acts have undermined the interests of the farmers and benefited the intermediaries. Second, the government procures some commodities in some regions at preannounced MSP. This leaves most commodities in most regions to be sold at market prices that can fluctuate substantially.
- 5.6. Agricultural marketing suffers from policy distortions, fragmentation resulting from large number of intermediaries,

poor infrastructure, lack of vertical integration and stranglehold of official mandis sanctioned by the Agricultural Produce Marketing Committees (APMC) acts of the states. Under the APMC acts, farmers are required to sell a large number of commodities in the vast majority of the states in a local mandi where intermediaries often manipulate the price. These same intermediaries then sell the produce to the next layer of intermediaries. Because mandis lack good storage and warehousing facilities especially when it comes to fruits and vegetables, substantial wastage occurs undermining the price received by the farmer. Mandis also charge multiple entry, exit and other fees. Therefore, it is essential that states genuinely reform their APMC acts. The Vajpayee government had originally initiated this reform via a model APMC Act but most states have implemented it only half-heartedly. This needs to change. Several steps are required.

- 5.7. Reformed APMC acts should fully empower farmers to sell their produce to whomsoever they wish. In parallel, actors other than APMC mandis should be conferred the right to buy produce directly from the farmer and to set up alternative marketplaces. This will create competition and pave the way for the farmer to receive lucrative prices. Conditions also need to be created for the emergence of aggregators who would collect produce from farmers for sale in competitive marketplaces. This is necessary to serve small farmers for whom it is neither feasible nor profitable to take their produce to such markets.
- 5.8. While this wholesale reform may take time, following the recommendations of the committee on Encouraging Investments in Supply Chains, as an early harvest, states may exempt perishables from the APMC acts and replace licensees of APMC markets with open registration backed by bank guarantees.
- 5.9. There is also urgent need for restructuring the Essential Commodities Act to provide exemptions to certain categories of players such as exporters, food processors, multiple outlet retailers and large departmental retailers from applicability of stock limits. Currently, tight stock limits in many states discourage exports and development of vibrant domestic markets.
- 5.10. We must encourage contract and group farming through separate contract farming acts under which the buyer can provide the farmer or Farmer Producer Organisation (FPO) access to modern technology, quality inputs, other support and a guaranteed price. Speedy implementation of the model law on contract farming announced in Budget 2017-18 would be an important step in the right direction. A necessary complementary reform is to encourage FPOs by reducing the ceiling on paid up capital and enhancing the role of Small Farmers Agri-Business Consortium (SFAC) and National Bank for Agriculture and Rural Development (NABARD).
- 5.11. Agricultural market in India is highly fragmented. With each farmer confined to a single mandi in many products in many states, we currently have thousands of markets across which no arbitrage takes place. This represents a huge inefficiency in the system, which must be corrected. Launched in April 2016, electronic-National Agricultural Market (e-NAM) is an important initiative in this direction. The initiative aims to unify mandis across the nation into a single national market through electronic trading whereby a buyer located anywhere in India would be able to place an order in any mandi in India. Though it currently covers more than 400 markets and is to be extended to 585 mandis by the end of 2017-18 and progress has been made in smoothing out transactions within participating mandis, cross-mandi purchases are few and far between. Even in Karnataka, which has pioneered the idea, with rare exceptions, sales within a mandi are confined to buyers who are physically present¹. Buyers show a strong preference for physical inspection of grain over quality assessment through assaying while farmers are reported to fear that assaying reduces the price of their produce. More work is required. Necessary measures include third party assaying and quality certification mechanisms, dispute settlement mechanisms, systems for forwarding goods to buyers, digital infrastructure to enable the national market and encouragement of FPOs. These are all key building blocks of a successful e-NAM, and we must ensure that they come into being alongside the platform.

MSP Reform

- 5.12. MSP has distorted cropping patterns, with excessive focus on the cultivation of wheat, rice and sugarcane in the procurement states at the expense of other crops such as pulses, oilseed and coarse grains. It has also resulted in depletion of water resources, soil degradation and deterioration in water quality in some states, especially in the north-western region. At the same time it has discriminated against eastern states where procurement at the MSP is

minimal or non-existent. One measure that can help remove distortion in the MSP system to some degree is the system of “Price Deficiency Payment”. While MSP may still be used for need-based procurement, under the deficiency payments system, a subsidy would be provided on other targeted produce in case the price falls below an MSP-linked threshold. This approach would not require procurement and thereby preventing the accumulation of unwanted stocks. More importantly, it would spread price incentives to producers in all the regions and all the crops considered important for providing price support. Each farmer would register her crop and acreage sown with the nearest APMC mandi. If the market price then falls below the floor price, the farmer would be entitled to the difference up to a maximum of, say, 10% of the MSP-linked price that could be paid via Direct Benefit Transfer (DBT) into an Aadhaar-linked bank account. This system would keep the quantum of the subsidy in some check and also meet the restrictions on the subsidy imposed by the World Trade Organization (WTO). The system can initially be piloted in one or two crops in a few districts.

Raising Productivity

- 5.13. Boosting productivity in agriculture in a sustainable manner requires us to work on four fronts – Irrigation; seeds, fertiliser, technology and a shift to high-value farm products such as fruits and vegetables, milk, eggs, chicken and fisheries.

Irrigation

- 5.14. Crop intensity and productivity, which are very important sources of growth in output and farmers' incomes, are critically dependent on irrigation. In India, a second crop is grown on less than 40 % of cultivated area. In some states, this figure is below 25%. The main reason for low crop intensity is access to water and moisture for crop production in Rabi season.
- 5.15. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) provides a sound framework for the expansion as well as effective use of water in irrigation. It focuses on four broad areas – Accelerated Irrigation Benefits Programme (AIBP), Har Khet Ko Pani, Per Drop More Crop and Watershed Development. Though we have announced ambitious PMKSY goals, progress on the ground needs improvement. At the current pace, it will take decades to reach the goal of Har Khet Ko Pani. Acceleration of pace requires many steps. We need manifold increase in the allocation of funds for PMKSY. We need quick clearance for Inter Linking of River project. We must include shallow tube wells in Assam and other water rich states in east India in PMKSY. Finally, we need a dedicated agency at national level to push PMKSY.

Seeds and Fertilisers

- 5.16. Seeds and fertilizers are key inputs determining crop yields. Actions are required in both areas. Ideally, seeds must be replaced every year for hybrid and every three years for non-hybrid varieties. In the former case, the optimum seed replacement rate (SRR) is 1 and in the latter case 33%. In India, seeds are replaced at rates below the optimum, especially in self-pollinated crops such as rice, wheat, pulses and oilseeds. To bring the rate to the optimum, we need to enhance seed-research capacity as well as multiply stations. We also have to encourage private sector participation in seed production and distribution by removing the price control order of seed and other restrictions discouraging private investment in the seed sector. At the same time, a robust third party quality certification system for seeds should be encouraged.
- 5.17. Judicious and optimum use of fertilisers is also essential. Fertilisers supply three critical elements: Nitrogen (N), Phosphorous (P) and Potassium (K). A common belief is that ideal mix of N, P and K is in ratio 4:2:1. While this may be an average, the actual optimum ratio and level of fertiliser use depends on soil and crop type and the amount of water used. This is why soil cards are important for customizing fertiliser use. Because urea is heavily subsidized in India, on average, there has been a tendency to overuse it. But it is important to remember that there is wide variation across regions with a study by the National Institute of Agricultural Economics and Policy pointing out that as many as two thirds of the largest 18 states use urea in below optimum quantity. There is need to create awareness of the optimal nutrient mix and optimal level of fertiliser use among farmers. The soil health card can be a good vehicle for accomplishing this objective.

New Technology

- 5.18. Technology in the form of high-yielding seeds and fertilisers were the driver of India's attainment of self-sufficiency through the green revolution, and new technology remains one of the most important determinants of growth in agriculture. We need to work on several fronts.
- 5.19. Genetically modified (GM) seeds have emerged as a powerful new technology promising high productivity, improved quality and lower use of fertilizers, weedicides and pesticides in the last one to two decades. They have also gained increasing acceptance among farmers around the world. Indian farmers also enthusiastically embraced these seeds in the only crop in which they have been permitted so far: cotton. There is some concern that GM seeds can be monopolized by multinationals, which may then exploit our farmers. But this concern is readily addressed by limiting GM seeds to those varieties discovered by our own institutions and companies.
- 5.20. Precision farming and related new technologies like the system of rice intensification, raised bed planting, poly house cultivation of fruits and vegetables, laser land levellers, self-propelled sprayers, precision seeders and planters, transplanters for rice and vegetable seedlings and multi-crop threshers and harvesters allow highly efficient farming and resource conservation. However, these are highly skill and capital intensive methods of farming. The emphasis should be on informing farmers of the opportunities new technologies offer, improving access to credit and creating an enabling policy environment for their adoption without major direct financial commitments. Private sector can play an important role in the provision of new technologies and we may ensure that any undue barriers to its entry are removed.
- 5.21. India needs a vibrant, responsive, market oriented and globally competitive agricultural research ecosystem. Instead of creating more institutions, quality must be attained through greater focus on fewer high quality institutions. One possible way of proceeding is to emulate the World Class University program. We may identify two agricultural universities and provide them necessary incentives to achieve global status. At the same time, urgent action is needed to overhaul the public sector Research & Development (R&D) institutions while creating favourable environment for private sector participation in agricultural research and technology development. An important step in this direction is to measure the performance of research institutions in terms of patents and publications. We may consider modifying the existing rules and regulations to facilitate public private partnerships in agriculture research. A genetic breakthrough in pulses and oilseeds is the need of the hour, and a challenge led approach to encourage consortia that can carry out crosscutting research with interdepartmental and multidisciplinary facets must be implemented immediately.
- 5.22. Extension is another element needing urgent attention alongside research. New methods and approaches need to be devised for agricultural extension using information technology and mobile technology. Skill India mission should be used for extension to impart agricultural skills. Local participation of progressive farmers, self-help groups and Primary Agricultural Cooperative societies (PACS) should be leveraged to help transfer technology through one-to-one exchange of information. As suppliers of seeds, private-sector participants play an important role in extension. Policy framework should ensure that there is healthy competition among private players.

Shift into High Value Commodities

- 5.23. Many high-value agricultural activities such as horticulture, dairying, poultry, piggery and small ruminant husbandry generate output streams that translate into generous income. Fisheries and forestry also constitute important alternative high-value products.
- 5.24. Shifts in the consumption pattern with rising incomes strongly suggest that the demand for these products will continue to rise as incomes rise and poverty declines in India. Besides, there exist vast export markets for many of these products. Therefore, they offer an important avenue to enhancing productivity, wages and incomes. But achieving this transition requires the creation of an ecosystem in which farmers find the shift into the high-value commodities cost effective.

Horticulture

- 5.25. The necessary actions include marketing reforms that allow farmers to capture a greater share of the price paid by the final consumer, contract farming that better connects the farmer to food processing industry, easier access to term loan credit instead of just crop loan credit, greater encouragement for Farmer Producer Organisations and improved storage, transport, power and communications infrastructure in rural areas. This would enable and encourage private investment in agribusiness and, in particular, supply chains.

Animal Husbandry

- 5.26. An important challenge in the development of animal husbandry concerns fodder. Rapidly growing numbers of unproductive male cattle and weak fodder base due to problems in pasture management and shrinking of common properties make this problem doubly serious. We need innovation in institutional aspects of pasture protection and management. Also necessary is greater co-ordination between agencies responsible for livestock and those for crops that produce fodder.
- 5.27. The dairy industry provides an important supplementary source of income in rural areas and encourages balanced growth for small farmers and farmers in hilly or drought prone areas. As eating habits evolve with increasing urbanisation and demographic changes, increased production of dairy based products should be encouraged for domestic consumption as well as for exports. For this, increase in livestock productivity through breed improvement, better feed and nutrition, animal health, and better herd composition are important. Selective genetic breed improvement of indigenous cows and buffalos will need to be an important part of this process. The Rashtriya Gokul Mission for increasing productivity of indigenous cows was launched in 2015-16. Based on the results of the program, a similar exercise for buffalos may be considered.

Blue Economy

- 5.28. India has vast scope in both marine and inland fisheries. Both have shown positive growth in recent years but there remains vast scope for further acceleration. Inland fisheries, particularly of brackish water linked export oriented prawn cultivation, offer substantial opportunities for faster expansion. Domestic demand for fresh water fish has also been growing. There is considerable scope for the expansion of fish production in rain fed water bodies, irrigation reservoirs, natural wetlands and ponds and tanks. We need to encourage the use of quality fish seed and feed while also investing in disease control, marketing infrastructure, modern fish processing plants and re-engineering of the value chain. Coastal states may also find it attractive to exploit deep-sea water for fishing, especially Tuna. Given its vast coastline, India is uniquely placed to expand its share in the large global market for Tuna.

Forestry

- 5.29. With regard to forestry, we need to revisit the policies with respect to felling of trees and their movement across state borders. Wood-based products such as paper and pulp and furniture offer vast potential for enhanced income for farmers. It is ironic that in a country with wide scope for growing wood as a renewable resource, we import wood for our furniture industry. It is essential and urgent that we liberalize our laws so that wood may be harvested from trees grown on private lands and transported to locations where it can be used most productively.
- 5.30. As the success of Gujarat and the original undivided Andhra Pradesh state illustrates, state governments can introduce most of the policy changes and interventions in this area on their own. Nevertheless, the central government can play a facilitating role through dissemination of best practices and financial assistance.

Agricultural Land Policy: Leasing And Records

- 5.31. Restrictions on formal and transparent land leasing in agriculture results in myriad issues, ranging from fragmentation of farms and low productivity of land to poor targeting of benefits and relief measures. A closely related issue is digitization and updating of land ownership records. Ideally, we should also begin working towards conclusive

ownership titles but this may be more difficult and may be considered once ownership records have been updated and digitized.

- 5.32. Land being a purely state subject except as it relates to land acquisition, land leasing requires amending existing state-level tenancy laws or replacing them by a new law. Recently, NITI Aayog has prepared a model Land Leasing Law. Following it, Madhya Pradesh has introduced a new land leasing law, which has all the important features of the NITI Aayog land leasing law. Uttar Pradesh has taken the amendment route, introducing the key features of the NITI Aayog model law that were missing from its existing law. Rajasthan has had a land leasing law that predates the NITI Aayog model law and goes beyond it. We need to build on this progress in the coming years. We must ensure that by end March 2020, at least two thirds of the states have liberal land-leasing laws that protect the rights of both the owner and the tenant and allow them to conclude written mutually agreeable lease agreements.
- 5.33. Turning to updating ownership records and digitizing them, a central sector scheme known as the National Land Records Modernization Programme was initiated in 2008. The scheme aims to build a transparent and integrated system of real-time land records based on land surveys, updating of survey and settlement records. High-resolution satellite imagery and ground truth data collection are to be used. It also envisages computerization of land records and registration, modernizing of record rooms and setting up of record management Centres. Unfortunately, however, this scheme has not worked well so far partly because it remains underfunded but perhaps also because of design problems. States have complained that conditions attached to the scheme make accessing funds under it difficult. It is urgent that the scheme is reformed and proper funding provided to speedily build updated digitized records in at least two-thirds of the states by end March 2020.

Relief Measures

- 5.34. Natural disasters such as droughts, floods, cyclones, storms, landslides and earthquakes can lead to extreme distress and hardship among many small farmers who lead a subsistence existence. In these situations, they need at least a minimal amount of relief at a rapid pace. The Pradhan Mantri Fasal Bima Yojana, for which Rs. 9,000 Crore have been allotted in the 2017-18 Union Budget is an important positive step towards risk mitigation for farmers but it needs to be subjected to four important reforms. First, at present, the insurance scheme limits the farmers' contribution towards premium to 1.5%-2% of the sum insured for non-commercial crops and 5% of the sum insured for commercial crops irrespective of the sum insured. The government pays the remainder of the premium as subsidy. This model results in larger absolute subsidy amounts for larger farmers who are less vulnerable. The scheme should instead be modified to have a capped subsidy amount per farm household and any farmer desiring to insure larger sums should pay full premium for the difference. Second, insurance scheme should provide coverage for three to five years so that coverage extends to both good and bad years. Otherwise, insurance companies will have an incentive to go slow in selling policies during years that droughts are predicted. Third, the subsidy on the premium should take the form of direct benefit transfer to ensure that farmers can shop for the best value for their money. Finally, there should be minimally two companies offering insurance in any given location. This will create competition and lead to greater efficiency and lower premiums for farmers.

¹ See http://ideasforindia.in/article.aspx?article_id=1751

CHAPTER 6.

TRADE, INDUSTRY AND SERVICES: CREATING WELL-PAID JOBS

- 6.1. Under-employment and therefore low-wage employment rather than unemployment is the key challenge facing India today. Over the last several decades, unemployment rates have remained steady at 2% to 3% of the workforce under the most liberal definition of employment (usual principal status or UPS) and at 5 to 8% under the most conservative definition (current daily status or CDS)¹. Most workers are employed but in low-productivity, low-wage jobs in small, micro and own-account enterprises.
- 6.2. According to the International Monetary Fund, nominal per-capita income in 2015 was USD 1,604 in India and USD 8,141 in China. The difference between these per-capita incomes is attributable partly to the difference between capital-labour ratios and partly to the difference in productivities. For example, productivity as measured by value added per worker in manufacturing in China is estimated to be nearly three times that in India. Correspondingly, average manufacturing wages in China are three times those in India.
- 6.3. Differences in productivities across sectors and across firms within the same sector make matters worse. For example, in 2011-12, agriculture employed nearly half of India's workforce but accounted for only 15% of its Gross Domestic Product (GDP). Within manufacturing, in 2010-11, small firms employing less than 20 workers each accounted for 72% of manufacturing employment but only 12% of manufacturing output. In the services sector, micro, small and medium firms employed 98% of the workers engaged in the sector but produced only 62% of services output in 2006-07². Our workers are overwhelmingly employed in low productivity and low-wage activities. The organized sector, which exhibits high productivity and pays higher wages, employs only a tiny proportion of the workforce. The formal sector paid workers an average wage of Rs. 122,794 relative to Rs. 6,058 in the informal sector in 2010³.
- 6.4. To combat under-employment, India needs to create more and more well-paid, formal-sector jobs. This requires both an expansion of the organized sector and a shift within it towards more labour-intensive goods and services. Till date, successful sectors in India have been either capital- or skilled-labour intensive. These include auto parts, automobiles, two wheelers, engineering goods, gems and jewellery, petroleum refining, pharmaceuticals, financial services, information technology and information technology enabled services. Labour intensive sectors such as apparel, footwear, food processing, electronic goods, light consumer manufactures, tourism and construction have performed either poorly or moderately well.
- 6.5. In this chapter, we first discuss policy issues that apply broadly to all industries and services and then focus on strategies for some specific major industry and services sectors aimed at creating high-productivity and high-wage jobs. We begin with a discussion of the critical role exports play in enhancing productivity and hence employment and wages.

The Critical Role of Exports

- 6.6. At the outset, it is important to point out that till date there are only four developing countries that have successfully transformed themselves within three decades: South Korea, Taiwan, Singapore and China. In every one of these cases, exports have played a key role. China, with its population comparable to that of India, offers the most relevant example. In 2015, the world merchandise exports amounted to USD 16.6 trillion. China accounted for 13.72% of these exports and India only 1.67%⁴. Even accounting for the fact that China's GDP was 5.2 times of that of India in 2015, India's share in world exports was low⁵.
- 6.7. Despite its much lower wages, India exported only USD 18.2 billion worth of apparel in 2015 compared to USD 175 billion by China. ⁶Vietnam, which is less than one-tenth of India in terms of population as well as GDP, exported more apparel in value terms than India. The gap between India and China was even starker in electrical and

electronic products with the two countries exporting about USD 8 billion and USD 782 billion, respectively⁷. The story is no different in footwear with India exporting USD 2.5 billion and China USD 51.2 billion in 2015⁸.

- 6.8. Why do exports matter? On the demand side, Indian firms often complain that there is inadequate demand for their products. Yet, the world market in merchandise exports at USD 16.6 trillion in 2015 is extremely large. Why are Indian firms not able to take advantage of this massive demand? The likely explanation is that their products are not competitive in the global economy. The flip side of this point is that the discipline of the global economy is what leads to fast productivity growth. Exporters must compete against the best in the world and must therefore constantly upgrade technology, management and product quality to remain competitive.
- 6.9. In addition, the large size of the export market allows exporters to leverage scale economies. Many super-competitive firms operating in China today employ not just tens of thousands of workers but hundreds of thousands of them. These large firms create an ecosystem that enforces discipline and high productivity on smaller firms as well. In contrast, there are hardly any firms in India employing hundreds of thousands of workers. The apparel industry offers the starker example: more than 90% of apparel workers in India were employed in firms with less than 50 workers in 2005. The corresponding figure in China was less than 15% the same year⁹.
- 6.10. The importance of exports for the creation of jobs at decent wages should be clear from this discussion. Exporting firms must maintain high productivity, which translates in high wages for their employees. Non-exporting firms either become ancillaries of the exporting firms or must compete against them in the domestic market. In either case, they must achieve high productivity to survive, which allows them to pay competitive wages. Recognizing this critical role of exports in the creation of well-paying jobs, India needs a focused strategy for creating an environment in which export competitive firms can emerge, especially in labour intensive sectors.

Coastal Employment Zones (CEZs) In 2017-18

- 6.11. A critical element in China's development strategy was the creation of very large Special Economic Zones (to be distinguished from India's Special Economic Zones, which are tiny by comparison) along its coast beginning in the early 1980s. Shenzhen provides a successful example of such a zone. Today, Shenzhen is a city with 2,050 square kilometres in area, 11 million population and per-capita income of USD 24,000. In May 1980, when the SEZ was formed, the region consisted of a group of fishing villages with a population of barely 300,000. The SEZ provided flexible land and labour markets, attractive incentives to foreign investors and a foreign trade regime that was liberalized over time. Firms in Hong Kong, Taiwan and South Korea, which were then exporting to the global markets but were facing declining competitiveness due to high and rising wages, gradually relocated to Shenzhen. They brought much needed technology, modern management practices, investment and links to export markets to the zone. The zone's coastal location allowed these firms to import inputs from abroad, process them using Chinese labour and export the final products. Over time, the region grew and multinationals from other countries including Japan, Germany and the United States also moved in. Today, Shenzhen is known as the hardware capital of the world and the most likely location of machine-to-machine-communication revolution.
- 6.12. Lately, many large multinational firms on the Chinese coast, especially in labour-intensive sectors, are turning uncompetitive due to high and rising Chinese wages, just as was the case with firms in South Korea, Taiwan and Hong Kong in the early 1980s. In turn, these firms are looking for alternative low-wage locations for production. Some of them have already migrated to countries such as Vietnam, Malaysia and Bangladesh. Many more will migrate in the years to come. India must take advantage of this potential migration.
- 6.13. It is in this context that India must replicate the Chinese strategy by creating two Coastal Employment Zones (CEZs), one on the east coast and the other on the west coast. Limiting the initial number of CEZs to two will ensure that limited resources are not spread thin over too many zones. Moreover, a focused approach has better chances of capturing agglomeration economies and producing results over a relatively short period. The main features of the zones are described below.
- 6.14. *Large Area with Flexible Land Conversion Rules.* CEZs are meant to be very different in concept than the existing SEZs in India. Unlike the latter, they are to be spread over a wide geographical area of 500 square kilometres or more. It is

noteworthy in this context that the total area of Singapore, which too has historically functioned like the Chinese Special Economic Zones, is 719 square kilometres. Not all of the land in the CEZ is expected to be currently unused. On the contrary, substantial areas with existing habitations and industry structures would be included in the CEZ. The zone will have sufficiently flexible land conversion rules to permit the conversion of these habitations and structures into alternative uses over time as industrialization proceeds. This would help accommodate numerous inter-related economic activities on large scale thereby generating economies of scale and scope. Flexibility in the Floor Space Index (FSI) will further allow taller structures to emerge to permit more efficient use of space.

- 6.15. *Liberal Economic Environment and Tax Incentives.* CEZs should have a more liberal and business-friendly economic environment. They should have liberal labour laws, as is currently the case in Gujarat's Special Economic Zones, Special Investment Regions (SIRs) and National Investment and Manufacturing Zones (NIMZs). They may also introduce more liberal land acquisition rules as done by Tamil Nadu and Gujarat via amendments to the national Land Acquisition Act, 2013. For firms that are early entrants into a zone and commit to creating a threshold level of employment, we may provide a limited-period tax holiday on corporate profit tax. For example, we may offer a five-year corporate tax holiday to firms creating 10,000 jobs within three years and add one year of tax holiday for each additional 2000 workers employed up to a maximum of ten years of tax holiday. Alternatively, we may zero-rate GST for three years for firms creating 10,000 jobs and for six years for firms creating 20,000 jobs. This will be an up-front benefit for firms in contrast to the corporate profit tax holiday that firms can only begin accruing after they attain profitability. Either of these benefits will help attract large firms in labour-intensive sectors such as apparel, footwear and electronic products. Firms that do not commit to creating 10,000 or more jobs will not be offered a tax benefit but may still benefit from the CEZ's business-friendly ecosystem.
- 6.16. *Proximity to Deep Draft Ports.* It is critical that CEZs are located close to deep-draft ports where large ships can dock. The coastal location next to ports will allow firms to import inputs and process and ship them back to the world markets in a timely manner. Port-led development has had some success in Gujarat. The state grew at 10.4% annually between 2000-01 and 2010-11 in part because of port-led development. The cargo transported through its ports grew rapidly during this period and came to account for one-third of India's cargo traffic by 2013-14. Registered manufacturing activities constituted 22% of Gujarat's Gross State Domestic Product (GSDP) during 2007-10 compared with an India-wide average of only 11% in 2007-08. The high share of registered manufacturing is closely associated with superior export performance: Gujarat accounted for 45% of India-wide exports from Special Economic Zones in 2013-14.
- 6.17. *Public Investment and Autonomy.* On a matching basis, the central government may commit to investing up to Rs. 5,000 Crore on each zone over a three-year period. This investment would help create the necessary infrastructure and housing for a large resident workforce. Also essential will be the provision of uninterrupted electricity at globally competitive rates. The state will also need to provide the zone enough administrative autonomy to create a liberal business environment. Each zone would include several production clusters related to different products.
- 6.18. *Trade Facilitation and Trade Liberalization.* The central government will need to commit to creating the frictionless movement of imports and exports from the zone. Currently, due to a variety of administrative requirements, the clearance time for both imports and exports is very high. This will have to be brought down to international levels at least within the zones. Likewise, tariffs in India are high relative to other countries. In principle, the existence of duty drawback systems can eliminate the cost of such duties on exports but in practice complex administrative procedures and endemic delays in obtaining drawbacks prevent many firms from accessing the facility. Therefore, the only practical solution is to unify all industrial tariffs to 7%, a rate that would result in no decline in tariff revenue while also liberalizing the regime. It will also eliminate the incentive to misclassify imports to evade tariffs. Finally, the central government will also need to provide for the creation of bonded free-trade zones or warehouses within the CEZs as needed. These free-trade zones would be able to freely import and export with custom duties and local taxes applied only when firms located in the zones sell goods in the domestic market.

Labour Law Reforms

- 6.19. Labour law reforms were discussed briefly in the context of the CEZs. But since the dearth of well-paid jobs is an India-wide problem, these reforms are needed across the country. The tenor of labour laws in India has been to

heavily protect those workers who manage to land regular, formal-sector jobs. But overly high levels of protection simultaneously discourage employers to hire workers on a regular basis. Consequently, formal sector jobs in India have remained a rarity. According to the fifth Annual Employment-Unemployment Survey (EUS) conducted between April and December 2015, 83% of the workers in India were self-employed, casual or contract workers. In the organized sector, entrepreneurs choose to stay away from labour-intensive industries and opt for highly capital- or skilled-labour-intensive technologies in the industries that they enter.

- 6.20. In order to incentivize entrepreneurs to accelerate the creation of regular salaried jobs, greater flexibility in labour laws is required. Two simple reforms worth considering right away relate to fixed-term employment and the definition of start-ups. Recently, fixed-term employment has been introduced in the textiles and apparel industry.^{11,12} This option may be extended to all sectors. The change will encourage employers to rely on regular fixed-term employment instead of contract workers, especially when hiring workers for specific projects or for meeting seasonal demand. Regarding start-ups, any enterprise less than five years old and having less than Rs. 25 Crore in turnover may be permitted to declare itself a start up with no subsidies in any form provided to the enterprise. This will ease up the burden of compliance of vast array of labour laws on the enterprise and pave the way for greater job creation.
- 6.21. We describe the other necessary labour law reforms in detail in the Vision and Strategy document. These reforms must begin as soon as possible even though their completion may take some years. Ideally, the reforms should be done at the level of the central government so that all parts of the country may experience acceleration in the creation of well-paid jobs. But this may be politically difficult as has been the case in the past. Therefore, the alternative route of Presidential assent to reforms passed in the State Assemblies should be vigorously pursued. This avenue has already been used by many states with substantial progress made.
- 6.22. Finally, it is important to note that unifying the existing large number of labour laws into four codes without reform of the laws themselves will serve little purpose. Unless we bring about substantive change either by amending the existing laws or rewriting them afresh, we cannot expect to change the current situation where low-productivity and low-wage jobs dominate the landscape.

Actions in Specific Manufacturing Sectors

- 6.23. We now provide specific suggestions for accelerating job growth in selected sectors. We begin with labour intensive sectors in which India has huge potential but is currently performing poorly or below potential in terms of organized sector activity and share in the world exports.

Apparel

- 6.24. As a key labour intensive product, apparel offers India a chance to create a large number of formal sector jobs. Historically, women have had a disproportionately high share in employment in larger apparel factories. Therefore, export-oriented large-scale production of apparel offers an important avenue to well-paid jobs for women. As noted in previous sections, India performs rather poorly in export markets and there is considerable scope for it to increase its global market share. India exported only USD 18.2 billion worth of apparel in 2015 compared to USD 175 billion by China. It also exports less apparel in absolute value than Vietnam, which is less than one-tenth of India in terms of both population and GDP. The importance of exports may be judged from the fact that the annual value added per worker is USD 8,900 among Indian apparel exporters relative to USD 3,800 among non-exporters¹³. Thus, increasing apparel exports is important for creating more productive, well-paying jobs in the sector.
- 6.25. As noted above, with wages high and rising in China, global apparel buyers are poised to shift production away from it to lower wage destinations. India is situated well to capture this displaced production if it adopts the right mix of policies. We must do so in a timely manner and seize the opportunities presented by current and evolving global trends. Easing barriers to input imports, enhancing trade facilitation and improving market access will promote apparel exports and generate jobs.
- 6.26. Ease barriers to imported inputs such as man-made (synthetic) fibres and fabrics. India performs particularly poorly in apparel made from synthetic cloth. This is especially disturbing since the global market for synthetic clothing is much larger

than for cotton clothing. Global demand has also been shifting towards synthetic clothing over time. High custom duties on synthetic fabrics have held back the progress of Indian apparel industry in this crucial sector. Countries such as Bangladesh and Vietnam are able to import synthetic fabric at low prices from other countries and therefore better able to compete globally than India¹⁴. In 2014, India imported USD 296.6 million of fabrics made out of man-made fibres. China imported USD 2.3 billion of man-made fabric in 2014, nearly 10 times the amount imported by India. Despite having a much smaller economy than India, Sri Lanka imported USD 335.5 million of man-made fabric in 2012. We need to urgently liberalize the imports of synthetic fabrics. Average import tariffs on synthetic fabrics in India were 10% in 2014 while those in Sri Lanka were 0.56%¹⁵. In addition to import tariffs, India may also charge importers an additional customs duty (AD), a special additional customs duty, a customs education cess and a customs handling fee.

- 6.27. An alternative to imports of synthetic fabrics is the presence of a vibrant domestic industry. But this too has been hampered by the presence of high custom duties and anti-dumping duties on synthetic fibre. Cutting these duties would facilitate the emergence of a vibrant domestic synthetic fabric industry, which can turn into a major exporter while also supplying the domestic apparel industry. The demand for apparel made with synthetic fabric is expected to grow faster than demand for natural fabric-based apparel going forward¹⁶. To enter this growing market, we must ease barriers to the import synthetic fabrics and fibres by 2018.
- 6.28. *Improve export logistics through Coastal Employment Zones (CEZs)*. Well-functioning logistics systems including quick clearances through customs and low duties (or effective duty drawback systems) are important for ensuring export competitiveness. In India, manufacturers spent an average of 350 hours to process an imported container through customs in 2016. In contrast, it took less than half the amount of time or 158 hours to process a container through customs in China¹⁷. The overarching Coastal Employment Zones (CEZs) will help improve export logistics in India. China's coastal led development in the apparel sector corroborates the need to pursue a CEZ-led strategy for apparel. In 2006, the Chinese provinces with the highest production capacity were located on the coastline and their combined output constituted 83% of China's total apparel output¹⁸.
- 6.29. *Enhance market access through the completion of trade agreements and a general lowering of tariffs*. Compared with some of its trading partners, notably Bangladesh, Indian exporters are at a disadvantage in the European Union (EU) market. Whereas clothing from India is subject to substantial duty in the European market, exports from Bangladesh enter duty free. In part, duty-free access available to the Least Developed Countries in the EU under Everything but Arms (EBA) Initiative of the latter, has led even some of the Indian apparel manufacturers to move their operations to Bangladesh and Kenya. India must also gain this advantage wherever it can through participating in free-trade agreements (FTAs). Of particular importance is making progress on the India-EU FTA. With Asia now a large market as well, the RCEP (Regional Comprehensive Economic Partnership) agreement across ten ASEAN (Association of South East Asian Nations) countries and six of its FTA partners also assumes special importance. Another avenue to an FTA is the United Arab Emirates, which has been an important market for Indian exports.
- 6.30. *Work with states to reform labour regulations*. Cumbersome labour laws have been found to discourage firms from entering the organized sector in apparel. They also adversely impact investment, scale and productivity of firms that do choose to enter the organized sector. Labour being a Concurrent List subject, in principle, the central government as well as state governments are empowered to introduce these reforms. In practice, lacking a majority in the Rajya Sabha, the central government may find it difficult to complete the reform. Therefore, it makes sense to pursue the reform at the state level as well. Indeed, several states, including Rajasthan, Gujarat, Madhya Pradesh, Andhra Pradesh and Haryana have successfully undertaken some key labour law reforms recently. We mention below some of the important labour law reforms that will have a positive effect on apparel and other labour intensive sectors.
 1. *Overtime Hours*. Labour regulations in India, under the Factories Act (1948) cap the number of overtime hours worked to 50 hours per quarter. This is excessively restrictive. A Bill extending the hours to 100 was passed by the Lok Sabha in 2016 but is yet to be passed by the Rajya Sabha²⁰.
 2. *Retrenchment of Workers*. The Industrial Disputes Act (IDA) (1947) effectively forbids factories employing 100 or more workers from retrenching workers under any circumstances. Recently states such as Rajasthan, Madhya Pradesh and Haryana have raised the threshold to 300 workers thereby extending the right to retrench to firms

employing up to 299 workers.^{21,22,23} Gujarat has gone a step further by allowing firms of all sizes in SEZs, SIRs and NIMZs to retrench workers provided they pay the latter 60 days-worth of wages for each year worked²⁴. Ideally, we need to allow firms located anywhere in any state or Union Territory the right to retrench workers as long as appropriate compensation is provided. Such a reform will have to be completed by the central government.

3. *Reassignment of workers.* Section 9A of the IDA imposes a heavy burden on an employer wishing to reassign a worker to an alternative task. In today's world of rapidly changing technology, the employer greater flexibility. Minimally, she should have the option to reassign the worker to a set of pre-specified tasks on a short notice and without challenge. Gujarat has recently amended this provision²⁵. Other states may follow its example.

Electronics

- 6.31. In addition to its employment generation potential, the electronics sector can drive innovation, increase productivity and catalyse investment. Historically, the sector has been one of the key factors behind rapid industrialization in Taiwan and Singapore from the 1970s to 1990s and in China during the last one and a half decades. India has the potential to become a large electronics manufacturer and exporter due to its large labour force, a growing domestic market and proximity to other economies on the electronics value chain. Yet, in 2015, electronics made up only 3% of India's merchandise exports. In the same year, India imported 45% of its electronics requirement²⁶. The world market in electronics products is USD 2 trillion compared with only USD 65 billion domestic market in India. Therefore, an aggressive export strategy is essential to credibly prepare ourselves for the 4th Industrial Revolution. Today, if China is credibly seen as a major venue for the development and expansion of machine-to-machine-communication technology, it is because it has been a leading manufacturer of electronics products over the last decade. To increase India's electronics manufacturing volumes and create jobs in the sector, we must address the high costs of inputs, reduce the administrative burden and provide appropriate incentives to producers.
- 6.32. *Lower duties on key inputs of final electronics products.* Under the Information Technology Agreement-1 (ITA-1), certain inputs used in information technology products were exempted from duties. A further notification extended the duty exemptions to components used in the products covered under the ITA²⁷. We should extend the low or no duty regime to inputs used in the final products not covered by the ITA-1.
- 6.33. The Union Budget 2017-18 increased the customs duty for Populated Printed Circuit Boards (PCBs) for use in the manufacture of mobile phones from zero to 2%. While this would provide modest protection to domestic manufacturers of PCBs, it will hurt the mobile phone manufacturers. At this stage, it is best for us to let mobile phone manufacturing flourish and not be handicapped by tariffs on its components. As this happens and we begin to export mobile phones in large volumes, the way to the manufacture of other components will be automatically paved. We should return to zero duty on PCBs. We must build industries that are globally competitive and do not need to operate behind a wall of protection.
- 6.34. *Reduce the administrative burden required to obtain duty drawbacks on inputs used in exports.* Absent tariff elimination, exporters must pay positive duties on inputs used in their products. These duties are subject to exemption or drawback. Unfortunately, in practice, the exemptions and drawbacks in India have been subject to undue delays due to complex and burdensome procedures. Sometimes exporters choose to forgo the drawback due to administrative requirements. In turn, this adds to the cost of production and undermines the competitiveness of our products in the world markets. Ideally, it will be best to simply eliminate the duties but failing that we must make duty exemption or drawback swift and administratively costless. Among possible alternatives are:
 1. Consider increasing the provision of mechanisms such as bonded warehousing facilities for firms exporting electronics.
 2. *Route the import of inputs by domestic electronics firms through a green channel procedure, based on self-certification.* To start off, by 2020, established firms, deemed so by pre-determined criteria such as age and past tax compliance, should be provided the self-certification option for timely processing. The customs and excise departments can periodically

request a consumption report to verify the use of imported inputs for exported final goods.

3. *Allow exporting firms to submit yearly applications to Central Excise for imported inputs.* Currently, firms must execute a separate bond for the differential amount of duty for each item it imports and each port of import. They must do so for three months²⁸. Since this adds unnecessary delays to receiving the inputs and thus production times, we should allow firms to submit a common yearly application. This can be instituted on a pilot basis in 2018 and scaled up by 2020.

Food Processing

- 6.35. The food processing sector contributed 1.6 % of India's GDP in 2014-15. It made up 10.12% of GDP attributable to agriculture and 9 % of manufacturing GDP during the same year²⁹. Between 2011-12 and 2014-15, the food-processing sector grew at an annual average growth rate of 2.3 %, relative to the 1.7% growth rate in the agriculture sector³⁰. The sector is an important source of direct and indirect employment, accounting for 11.95% of formal employment in 2012-13³¹. Food processing industries cover a wide array of activities ranging from traditional agro-based industries such as rice and flourmills to the processing of tea and coffee to the dairy industry. In addition to the activity-specific issues faced within food processing, the sector also faces a set of common challenges.
- 6.36. The sector contributes directly to economic growth through reducing food wastage, creating jobs and export earnings. However, growth and productivity are plagued by several challenges. According to the World Bank Enterprise Survey, value added per worker in agribusiness in China was almost four times that in India in 2014³². Food processing firms, particularly Small and Medium Enterprises (SMEs), have difficulties in accessing finance. The lack of quality infrastructure, including cold storage, storage for non-perishables, distribution networks and transportation, raise costs and inhibit competitiveness. Additionally, small farm sizes, restricted access to markets, uncertainty related to price, availability and quality of raw materials, and limited skilled manpower pose further challenges to the sector's growth. Below, we spell out specific actions that would help rejuvenate the sector.
- 6.37. *Restructure the Essential Commodities Act such that processing firms receive exemptions.* Restructuring the Essential Commodities Act to provide exemptions to exporters, food processors, multiple outlet retailers and large departmental retailers from applicability of stock limits will enhance output and marketability of these products.
- 6.38. *Attract private investment in agribusiness through institutional reforms.* Reforms in the APMC acts, a modern contract farming act as announced in the Union Budget 2017-18, easier access to term loan credit instead of just crop loan credit, greater encouragement for Farmer Producer Organisations and improved transport, power and communications infrastructure in rural areas will make investment in food processing industries attractive.
- 6.39. *Improve logistics and storage facilities.* The costs of freight transport constitute about 16% of turnover in agribusiness, and about 14% of outbound food grain industry turnover. Of the total warehousing space of about 1,800 million sq. ft., the industrial and agricultural segments constitute about 86% and 14%, respectively. Two thirds of food storage is owned by the public sector. India's current cold storage capacity at 25 MT is barely sufficient for 10% of fruit and vegetables produced in the country. The lack of adequate storage infrastructure in India is an important reason for the high cost of food products and wastage. The Ministry of Food Processing Industries (MoFPI) launched the Cold Chain Scheme to provide integrated cold storage and preservation infrastructure facilities without any interruptions in the supply chain. By 2020, we should complete 180 projects (managing about 60 Lakh MT of agro produce) under this scheme.
- 6.40. *Raise standards to converge with international standards.* We must encourage food processing industry to adopt food safety and quality assurance mechanisms such as Total Quality Management (TQM) including ISO 9000, ISO 22000, Hazard Analysis and Critical Control Points (HACCP), Good Manufacturing Practices (GMP) and Good Hygienic Practices (GHP). The quality and hygiene norms would lead to greater acceptance of Indian processed products by foreign buyers and help expand exports. In turn, this would help industry keep up with technological developments and best practices worldwide.
- 6.41. To maintain quality standards and food safety requirements, we should provide the requisite infrastructure such as

certified testing facilities, training and information campaigns on standards. This will be particularly important for smaller firms that may not have their own infrastructure or awareness about these issues.

- 6.42. *Set up 40 Food Testing Laboratories to Ensure Safety of Products.* Food quality and safety are serious issues in India. Reports of consignments being rejected and bans on exports due to a lack of compliance not only directly affect exports but they also affect the sector's credibility and future prospects. Under the Scheme for Quality Assurance, 42 Food Testing Labs have been completed. The Scheme aims to implement an additional 40 Food Testing Labs. By 2020, we should create a network of 44 NABL-accredited food-testing labs to support the food safety regulatory activities.
- 6.43. *Scale up initiatives that are integrated processing hubs such as Mega Food Parks.* The Ministry of Food Processing Industries (MoFPI) has an existing scheme for the development of Mega Food Parks. These parks follow a cluster-based approach and bring together farmers, processors and retailers. Eight such parks are already functional as of 2016. The MoFPI plans on creating 30 more of these. The development of these parks as integrated solutions should be expedited and these 30 parks should be made operational by 2020.

Gems and Jewelry

- 6.44. The Gems and Jewellery sector accounted for 15.1% of India's total exports in 2015-16, with total exports of USD 39.4 billion³³. The sector employed around 4.5 million skilled and semi-skilled workers across India in 2015. Further, India produces 95% of world's processed diamonds. The sector has further room for improvement but suffers from two key challenges. First, the industry is heavily skewed in favour of diamond processing and remains vulnerable to demand shocks as well as shocks in the supply of raw diamonds. Second, with higher technology adoption in the sector and capital-labour substitution, the Indian gems and jewellery industry faces increasing competition from China. Overall, an improved business environment, easier access to inputs such as gold and raw diamonds and skilled workers will help ensure future growth in the sector. With respect to the business environment, we should draw lessons from Gujarat, which accounted for 72% of the exports from the sector in 2012³⁴.
- 6.45. *Reduce the Customs Duty on Gold.* Lowering the customs duty on gold would help reduce the volume of gold that is smuggled and thereby reduce the potential for illegal transactions. After entirely eliminating custom duty on gold, the government re-introduced it in 2013. Between 2013 and 2014, India's gold imports declined from USD 37.7 billion to USD 31 billion. In 2015, gold imports remained USD 15 billion lower than their value in 2012³⁵. The imposition of this duty has created incentives for traders to smuggle gold. At the buyer level, it has created a monetary incentive to pay for gold in cash in exchange for a cheaper price. Reducing the customs duty will not only reduce the incentives for illegal transactions but it will also help ensure the availability of gold for small and medium firms thereby increasing the share of gold jewellery produced by the sector.
- 6.46. *Facilitate the import of rough diamonds.*
 1. *Ensure access to inputs.* We should ensure the smooth implementation of the Special Notified Zone in Bharat Diamond Bourse to facilitate the movement of rough diamonds by RBI-approved overseas diamond miners.
 2. *Enhance access to finance for diamond processing firms.* The gem and jewellery sector should be included under the interest subvention scheme to lower interest rates on inputs for exporters.
- 6.47. *Increase investment in skills training for the sector.* In order to ensure high productivity in the sector, we must ensure that there are adequate skills training facilities for workers in the sector. Currently, the raw materials and machinery costs for the sector are very high. Thus, establishing a training institute comes at a high cost.
 1. *Co-finance training centres.* The NSDC should partner with larger firms in the industry to co-finance the setting up of these training institutes and develop a demand-driven curriculum. The government would match the initial investment that large firms would put into the training facilities and could also provide tax holidays on the firms' investments in training.
 2. *Establish a trainer course in the sector.* Existing training centres face a shortage of quality trainers. Trainers are typically skilled workers with 10–15 years of experience in the sector. Often despite being skilled craftsmen, these workers

are not equipped to impart knowledge in an effective manner. The NSDC should set up a course for the training of trainers in the sector. It should also provide incentives to existing experienced workers in the industry to work as trainers for fixed periods of time.

3. *Facilitate exchanges with industry experts and associations in other top exporters.* We should facilitate exchanges between industry groups and host workshops from gems and jewellery exporters in other leading exporters such as Italy and Turkey. These will allow exposure to leading global practices and technologies.
4. *Increasingly adopt Recognition of Prior Learning (RPL) within the sector.* Using RPL to recognize the prior learning of artisans will help provide them with suitable opportunities. Thus far, more than 22,640 artisans have been certified across India under RPL in the sector³⁶. To meet the growing skills requirement in the sector, we should ensure that this trend continues.

Actions in Specific Services Sectors

- 6.48. Continued growth in the services sector will prove critical for maintaining robust economic growth and creating jobs to absorb the new entrants to the labour force. Services make up a significant and growing share of value added and employment in India. In 2015-16, services contributed 66.1% of India's gross value added (GVA) and 28.7% of employment.^{37,38} At a regional level, services contribute more than half of the gross state domestic product (GSDP) in 21 states and union territories (UTs). The sector has been growing rapidly relative to other countries. In 2014, India's service sector grew at 10.3 % relative to 8 % in China. The sector is also an important source of trade and investment. As of 2014, India was the eighth largest exporter of services in the world with USD 155.6 billion of services exports. The sector accounted for 53% of equity inflows of Foreign Direct Investment (FDI) into the economy in 2014-15³⁹.
- 6.49. Key commercial services include tourism, financial services, real estate, retail (including e-commerce), IT and IT-enabled services and pharmaceuticals. The action Agenda focuses on tourism, financial services and real estate. The chapter excludes other key services such as telecommunications, digital connectivity and shipping. These services are covered in detail the "Transport and Connectivity" and "Digital Connectivity" chapters.

Financial Services

- 6.50. Financial services play an important role in mobilizing and channelling resources to productive uses. A well-developed financial system should effectively harness domestic savings, facilitate the efficient allocation of resources to productive investments, facilitate risk sharing and support consumption and expenditure smoothing. Banking entities, including commercial, cooperative, rural and development banks, account for the majority of funds flowing through India's financial sector. Within the banking sector, public or state-owned banks account for nearly 73 % of total assets. The large share of public banks in the Indian context implies that any policy issues related to public banks play a large role on financial services and the overall economy. In particular, the volume of non-performing loans or assets (NPAs) held by banks has been rising since the economic downturn in 2008-09 and has shot up particularly sharply during 2015-16 and 2016-17. Nearly all NPAs are loans advanced during prior years. Lack of due diligence in advancing loans, downturn in commodity prices, poor project management and delays in clearances and permissions by the government are some of the important reasons for the accumulation of NPAs. The rise in the volume of distressed assets follows a period of high credit growth in the mid-2000s⁴⁰. The problem is particularly acute for public sector banks.
- 6.51. The withdrawal of 500- and 1000-rupee notes as legal tender on November 9, 2016 has also presented challenges for the financial services sector. One of the key challenges of demonetization has been the low share of non-cash transactions in the economy. Large parts of the country remain under-banked or unbanked and a large pool of money remains outside the formal banking system. Although the government has been ramping up its efforts to increase financial inclusion and digital payments, there is further room for increasing financial involvement and enhance the take-up of digital financial services.
- 6.52. Overall, a well-functioning financial system should be characterized by a strong and well-capitalized banking system and deep equity and bond markets, supported by liquid secondary markets and a robust regulatory and legal

infrastructure. We focus on the immediate priorities including tackling the NPA problem, improving loan quality and enhancing financial inclusion. Additional challenges within the financial sector are addressed in the Capital Markets chapter in the Vision and Strategy document.

Non-Performing Assets

- 6.53. Between March and September 2016, the Gross Non-Performing Advances Ratio (GNPAs), i.e. the non-performing assets as a share of total gross advances, increased from 7.8 % to 9.1% for Scheduled Commercial Banks' (SCBs) in India⁴¹. In contrast, the global ratio of non-performing loans to total gross loans was less than 4 % in March 2016⁴². The RBI classifies an account as an NPA when payments are overdue for more than 90 days. Upon classification, banks need to set aside money to cover 25 % of the loan amount in the first year. The high share of bad loans with Indian banks – particularly state-owned banks – limit their ability to take on any additional risk, thereby constraining credit growth in the country and reducing banks' profitability. The Reserve Bank of India has predicted that the overall non-performing asset ratio is expected to worsen in the immediate future. Although the decline in loan quality has taken place mainly on account of public banks, private banks have also contributed to it. Sectors such as infrastructure, steel and textiles have been particular contributors to the challenge of distressed assets⁴³. This issue of rising NPAs thus requires immediate attention.
- 6.54. The government has already committed a sum of Rs.70,000 Crore under the ‘Indradhanush’ scheme to recapitalize and help Public Sector Banks (PSBs) meet the capital requirements under Basel III. But it is likely that as the NPAs are moved out of the bankbooks, we will need a larger sum for recapitalization. The NPAs are now much larger than at the time the Rs. 70,000-Crore figure had been fixed.
- 6.55. Recent sharp decline in the growth of credit by public sector banks testifies to the detrimental effect that NPAs are having on the economy. Therefore, urgent action is required to resolve these assets. Under the circumstances, the practical solution would be to support the auction of the larger assets to private asset reconstruction companies (ARCs). The government should also strengthen the State Bank of India led ARC to actively participate in the auctions. Participation of this ARC would serve to discipline the behaviour of the private participants. Because the small number of private ARCs brings with it the risk of collusion, such discipline is important.
- 6.56. To overcome the problems associated with consortium lending and the general reluctance on the part of the managers of public sector banks to sell NPAs at below face value, the government will need to play an active role in facilitating auctions. More importantly, under the conditions of the auction, the creditor bank should be given the right to buy 80% share in the asset. This will leave 20% share in the hands of the ARC “buying” the asset, which would give it sufficient incentive for effective and efficient recovery. At the same time, the 80% share of the creditor bank will ensure that it would capture the bulk of upside potential of the asset. This will nearly eliminate the risk for the bank of allegations that it sold the asset at a throwaway price should the recovery be closer to the face value.
- 6.57. Beyond addressing the current challenge, we need to put in place measures to ensure the problem of NPAs does not increase to this magnitude in the future. To some degree, the haircut accompanying below face value recovery serve as a warning to the banks that reckless lending has its cost. But we need to ensure that the individual banks and the system recognize and acknowledge financial distress early on and take necessary corrective action.
- 6.58. Other preventative measures should focus on better monitoring of assets and loans before the loan has been approved. We should require banks to disclose the status of their loans on a continuous basis, improve capabilities and put in place incentive structures that align bank employees' incentives with having a lower share of NPAs in the bank's portfolio. For example, improving banks' in-house credit appraisal capabilities and project management capacity would allow them to evaluate proposals in a more comprehensive manner. Linking employee compensation with the bank's performance will align incentives. We should also use existing micro-data to analyse the factors contributing to non-performance and ensure that this knowledge is shared with all public and private banks. We could also enhance financial supervision so that the signs of stress on banks' books can be identified early on.
- 6.59. Finally, a robust legal infrastructure, which includes strong consumer protection, well-defined creditor rights and quick recovery of assets in case of bankruptcy, is essential. Although the Insolvency and Bankruptcy Code, 2016 has greatly

strengthened the legal infrastructure, its effective implementation will prove critical in the reorganization and insolvency resolution of companies⁴⁴. The capacity of Debt Recovery Tribunals to deal with the large number (thousands) of pending cases may be constrained by limited manpower and will require adequate planning to resolve these cases in a timely manner. India does not have a well-defined resolution mechanism for financial firms. The draft bill that was passed in 2016 on the resolution of financial firms should be pursued as a high priority to strengthen the legal landscape in India.

Financial Inclusion and Literacy

- 6.60. Increasing competition and promoting the entry of new players will improve the efficiency of the banking system in the longer term. The policy of ‘on-tap’ licensing of banks is a promising step in the direction of increasing competition and coverage of the system. However, some of its requirements, such as the initial capital requirement of Rs. 500 Crore, may deter sufficient entry. It is worth considering relaxing this requirement and allowing banks to open branches and ATMs under more liberal conditions. This will not only increase access to financial services but also increase the efficiency of existing players.
- 6.61. Measures to improve financial inclusion should be complemented with steps to improve financial literacy, especially to make people more aware of the benefits of using the formal banking system to send and receive payments, save and borrow money. While the share of population with bank accounts has gone up sharply over the past few years, active use of these accounts or financial involvement remains low. Enhancing financial literacy through campaigns, creating financial literacy modules in school and vocational curricula. The government should leverage the staff of public and private banks in rural areas to spread knowledge about the use of financial services. Additional action points on increasing financial literacy and inclusion through digital financial services are discussed in the Chapter on “Digital Connectivity.”

Tourism, Culture and Soft Power

- 6.62. The Hospitality, Travel and Tourism sector is a major driver of growth and employment worldwide and especially in India where it made up 6.7 % of the GDP in 2014. Foreign tourist arrivals in India have increased from 5.1 million in 2009 to 8.1 million in 2015⁴⁵. As a host to 35 world heritage sites, 10 bio-geographical zones and 26 biotic provinces, India has significant potential to increase number of arrivals going forward and increase its global presence by leveraging its cultural industries and soft power. Further, as a highly labour intensive sector, tourism has the capacity to generate large-scale employment. Further, it is an important sector to create jobs amongst the poorest segments of the population and can act as a gateway to formal sector employment. To capitalize on the job creation potential of the tourism sector and leverage soft power, five key areas for action are identified: visas, infrastructure, promotion and marketing, skill development, taxes and issues related to soft power.

Visas

- 6.63. The 2015 extension of the e-Tourist visa to 150 countries contributed to the growth of the tourism sector. After the extension of the e-visa, the number of tourists that arrived between January and July 2016 increased by 266 %⁴⁶. We need to ensure that the existing facility works efficiently. In addition, the following steps may be taken.
 1. *Increase Awareness.* We should increase information and awareness of the e-visa facility globally so that an increasing number of tourists avail it. One possible way to do this is to launch an information campaign through our consulates abroad.
 2. *Solicit Feedback.* We should solicit feedback on foreign travellers’ experiences during the application process and in obtaining the visa through a centralized online form or kiosks at airports. Data from users of the e-visa on specific aspects can help improve its functioning.
 3. *Simplify Conference Visas.* Industry experts report that travellers find it hard to obtain conference visas. Individuals circumvent this by entering on tourist visas. We should launch an e-visa regime to attract the Meetings, Incentives, Conferences and Exhibitions (MICE) market.

4. *Simplify Entry for Cruise Tourists.* We should also streamline immigration processes for cruise tourists with Advance Passenger Information (API), on-board clearances and other processes to ease entry.

Infrastructure

- 6.64. *Develop Five Beach Destinations as Tourism Zones.* The government and private sector should develop 5 exclusive tourism zones around beaches. Globally, beach holidays have grown by 18 % over the last five years and remain an important segment of leisure travel with 28 % of all holiday trips⁴⁷. India's zones should be based on master planning including best practices in engineering (drainage, sewage, solid waste management) and sustainability. In developing these zones, we should draw upon examples that have successfully developed tourism around beaches such as Bali, Sentosa and Antalya.
- 6.65. The rules governing Coastal Regulation Zones (CRZs) were revised comprehensively in 2011. Subsequently, based on the January 2015 report by the Shailesh Nayak committee, eight amendments were introduced. Nevertheless, there remains further scope for revision of these rules to facilitate the development of beaches and tourism while also providing for better protection and conservation of coastal and marine areas.
- 6.66. *Develop identified islands by 2020.* The central government has already expressed interest in developing about ten islands in India into global destinations. Of these, 5 have been identified in Lakshadweep and another five in the Andaman Islands. These islands would primarily target foreign tourists. We should partner with investors to start developing hotels and resorts on all 5 islands by 2020.
- 6.67. *Plan and Develop Five National Circuits.* Even though funds have been committed to the development of public infrastructure there are no truly world-class destinations in India. Developing fewer circuits will allow us to shift the focus to quality, creating world class tourism circuits from entry to exit. We should focus efforts on building five globally competitive destinations and complete these by 2020, partnering with state governments and the private sector.
- 6.68. *Swachh Bharat.* It is important that we take the Swachh Bharat campaign to its logical conclusion. For repeat visits, it is important that tourists carry the memories of a clean India with them. They are also more likely to recommend India as a tourist destination to their friends and family if they carry good impression of their visits. Minimally, we need to ensure that the tourist circuits, islands and beach destinations we develop are kept immaculate.

Promotion and Marketing

- 6.69. *Enhance Digital Marketing Efforts.* We should enhance digital efforts by building aggressive digital and social media centric campaigns. The Ministry of Tourism currently has 14 overseas and 20 domestic offices. It should conduct a cost-benefit analysis of these offices relative to the effectiveness of digital marketing efforts. If the physical locations appear ineffective, closing them where appropriate would release funds for digital marketing efforts.
- 6.70. *Promote India Abroad.* A key element in tourism promotion must be targeted advertising abroad. In the richer countries in Asia such as China, Thailand, Malaysia, Singapore and South Korea, prospects of attracting tourists are excellent. Income levels in countries such as Indonesia, Sri Lanka, Bangladesh and Vietnam are also rising rapidly. India also shares cultural similarity with many of these countries with Malaysia, Singapore, Thailand, Indonesia, Sri Lanka and Bangladesh even having substantial populations of Indian origin. Therefore, targeted promotion in these countries using digital media including TV advertisements can have a high yield. With its large population and relatively high incomes, China can be a particularly significant source of tourists.
- 6.71. *Incentivize the Private Sector to Contribute Resources and earmark funds for marketing.* We should create a scheme under which the government matches in equal amount private sector expenditure on tourism marketing. Depending on its star rating, size and other parameters, the government may offer a fixed contribution to each hotel and travel agency. Under 'Experience India,' this is being done but on a small scale. Further, we can also mandate that a pre-defined amount or share of tourism revenues – such as the e-Tourist visa fee – is set aside for marketing and promotion. The Ministry of Tourism can draw upon the experience of the 'Brand USA' campaign where USD 10 of each applicant's visa fee is allocated to marketing.

- 6.72. *Design policies using data.* The campaign should use market statistics and data on consumer usage and dynamics to target its marketing efforts. It should also use data to offer specific products and themes to different segments of the population. For example, based on usage statistics, it could target adventure tourism promotional materials to a younger audience. The campaign can also draw on data from successful strategies in Australia, UK and Turkey.

Skill Development

- 6.73. *Create a dedicated university for leadership in the tourism sector.* A specialized university, which will not only regulate taught courses but also become the fulcrum of professional education, research and advocacy, will help create managers and entrepreneurs in tourism. In addition, courses on tourism may be introduced in the existing universities and vocational education institutions as well.
- 6.74. *Support private sector institutes in tourism regulated by the government.* In addition to the state run or state supported institutes, private institutes should be encouraged to be able to create the required talent pool. India has 21 central institutes of hotel management. A broader set of skills needs to move beyond hotels to other aspects of tourism. The private sector can provide elementary training at the managerial level and we should encourage private institutes to do so formally.
- 6.75. *Update the skills of existing workers.* Current service providers such as taxi drivers, boat operators, guides, restaurant and dhaba workers would benefit from retraining on a regular basis. This can be done by the state tourism departments in association with the local tourism and hospitality institutes with the active participation of the industry as per a fixed schedule.

Cultural Tourism

- 6.76. *Create a National Museum Authority to oversee all museums.* Currently, India's museums fall under different departments and ministries across the central and state governments. There is no overarching body for their management, funding, development and maintenance. Further, although several museums receive technical and financial support from international agencies, funds are often insufficient to maintain the museums and cover new initiatives such as digitization of collections. There is already an existing national expert committee on museums. However, an overarching authority with a broader mandate is needed to sufficiently address the issues faced by museums in a coordinated manner and should be created in the next three years.

Tax Reforms

- 6.77. Tax reforms will be necessary to reduce barriers to trade and tourism. The smooth implementations of the Goods and Services Tax (GST) and related reforms will help facilitate travel and tourism. We should consider placing tourism in the lower tax bracket of the GST to ensure competitiveness with foreign destinations. In addition to the successful rollout of the GST, we should help streamline taxes specific to the tourism sector. This will also improve the ease of doing business and attract investment into the sector.

Soft Power

- 6.78. Soft power, the ability of a country to attract others through its culture, spiritual and political values and foreign policies rather than coercion or economic rewards, occupies an increasingly greater role across the globe. India is no exception. Given our democratic values, rich history, the diversity of languages, cultural practices and crafts we have many sources of soft power. While several aspects of India's soft power such as democratic ideals, yoga, sufi music, literature, traditional textiles and Bollywood are commonly found across the world, India still has a long way to go to maximise the benefits of its cultural treasures. For example, even though a large number of foreign tourists travel to India to learn more about our culture and ancient civilization, low levels of funding and poor maintenance of museums and heritage sites prevent them from realising their full potential. Similarly, the absence of a coordinated strategy to promote and disseminate practices such as yoga and ayurveda also prevents their greater proliferation globally. This section highlights how we can leverage our cultural, creative and human resources more effectively to increase our international presence.

- 6.79. *Establish cultural centres across the globe.* During the next three years, a comprehensive soft power policy must be finalised to leverage India's cultural and creative strengths. Further, we should establish cultural centres in various countries, similar to the Alliance Francaise Centres (France), Goethe Institutes (Germany), Instituto Cervantes (Spain) and Confucius Institutes (China). These centres will serve as symbols of youth and modernity and help leverage Indian culture worldwide, with implementation that involves a wide range of academics, artists and experts. Beyond creating centres abroad, we should also develop and improve museums and heritage sites within India to spread knowledge. Further details related to improving the management of museums and heritage sites within India are discussed previously.
- 6.80. *Create a dedicated humanitarian and relief agency.* A specialized humanitarian assistance and disaster relief agency should be created under the joint aegis of the Ministry of External Affairs and National Security Council Secretariat (NSCS) to deliver humanitarian assistance in less developed countries. Further, along the lines of EXIM Bank's funding of a medical facility in the Cayman Islands, we can launch other initiatives to provide assistance in health in African and Asian countries leveraging Indian human resources in leading hospital chains.
- 6.81. *Create a database of artisans and craft preservation.* We should collect and disseminate information on different craft forms, their preservation and areas where they exist. As part of this exercise, we should also document best practices and create a database of these as well as a list of master craftsmen. This will not only help us preserve practices but also share knowledge with others. We could draw lessons from other countries' experiences. For example, Korea's Development Agency has developed a repository of more than 4,000 traditional skills.
- 6.82. *Increase emphasis on global marketing and promotion.* We should create a uniquely Indian brand around traditional crafts and cultural practices such that it not only has global appeal but it also serves as a source of revenue. For example, Indian animation could be developed using our own visual vocabulary and themes. We should also devise promotional campaigns addressing informational asymmetries on electronic media. Often, trade events, thematic festivals are not promoted extensively both regionally and globally. A more concerted promotion campaign across different media can help increase global outreach and awareness. Furthermore, all government Departments and Ministries should promote the availability of a young skilled workforce as India's key asset across the world. Further details on how various agencies can make a concerted effort for the promotion of Indian skills are discussed in the chapter titled "Education and Skill Development."
- 6.83. *Provide skills training related to cultural practices and vocations.* India will effectively build on its soft power when a significant share of the population has the requisite skills for the preservation and promotion of cultural practices. Various measures for developing skills in the creative and cultural industries are discussed in the chapter titled "Education and Skill Development."
- 6.84. *Enable access to markets for traditional handicrafts producers.* We should help convert traditional skills and crafts into economically viable activities by linking producers to both domestic and global markets. In addition to being important sources of soft power, traditional crafts can also provide an important source of income and employment for local communities. There should be a special focus on traditional skills that are possessed by minority communities e.g. Zardozi work in Bareilly and Chikankari in Lucknow. The government should also encourage export of tribal handicrafts. The National SC/ST Hub should be leveraged for strengthening market linkages for ST entrepreneurs, accessing financial support schemes and disseminating industry best practices. Further details on linking producers of traditional crafts, especially those from tribal areas and communities, can be found in the chapter "Building an Inclusive Society."

Real Estate

- 6.85. The Real Estate and Housing Sector made up 8% of India's GVA in 2014-15 and grew by 9.1% during the same period. Increasing urbanization and rising disposable incomes and investments are driving up the demand for different forms of real estate in the country. The sector is one of the largest generators of jobs after agriculture in India. Its high employment potential stems from its large number of forward and backward linkages through demand in input sectors and real estate services. Historically, the sector has been largely unregulated and has lacked transparency. However, the government has undertaken several measures to increase transparency, promoted standardization and put in place

provisions to enhance consumer protection. The Real Estate (Regulation and Development) Act, 2016, which came into force in May 2016, attempts to improve accountability and reduce litigation in the sector going forward. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Bill, 2015 has been introduced in the Lok Sabha but remains pending⁴⁹. The proposed bill facilitates farmers' compensation for land acquired by the government. It also eases regulations to acquire land for strategic and development purposes such as affordable housing. Beyond these legislative measures, the government has also announced interest rate subventions and increased allocations under the "Housing for All" programme.

- 6.86. Despite these efforts to regulate the real sector and facilitate its growth, the sector remains encumbered by complex and burdensome laws governing land use and conversion, procedural hurdles, challenges in acquiring access to credit, a lack of transparency and a high number of informal transactions. As an example of the procedural challenges, India ranked 138 out of 187 economies in terms of registering property, requiring 47 days and 7.7 % of the cost of the property value to register a property according to the World Bank's Doing Business indicators in 2016. Similarly, in dealing with construction permits needed to build a warehouse, individuals require about 35 procedures and 190 days to obtain a permit. Beyond the immediate steps required to boost the sector, we describe the other necessary land market reforms in detail in the Vision and Strategy document. These reforms must be undertaken as soon as possible even though their completion and full implementation takes longer.

Access to Finance

- 6.87. *Grant infrastructure status to the real estate sector.* Real Estate developers will find it easier to obtain credit if the sector is granted infrastructure status. The Union Budget 2017-18 announced granting infrastructure status to the affordable housing segment. The segment will also be given priority status in lending. This will enable developers to obtain cheaper financing and raise funds from additional sources. We should explore granting infrastructure status beyond the affordable housing segment to other types of real estate, as this will reduce the challenge of accessing credit for developers and boost the sector's growth.
- 6.88. *Provide incentives to Housing Finance Companies (HFCs).* With rising interest rates, Housing Finance Companies find it costly to borrow money. This affects adversely their ability to provide credit to individual homebuyers. Therefore, we should provide incentives to HFCs, such as allowing them to raise funds through External Commercial Borrowing (ECB).

Trade and Investment

- 6.89. Lower customs duties and import tariffs, especially for inputs. Quick access to the materials required to construct affordable houses is important for ensuring completion of the houses. For example, aluminium formwork or precast technologies are critical for construction of houses. Currently, the customs duty and taxes paid for importing these technologies vary in the range of 20-25% of import value. A uniform duty of about 7% suggested earlier will ease builders' access and cost of such inputs.
- 6.90. *Provide export incentives to attract more foreign investment into construction.* Attracting Foreign Direct Investment (FDI) will prove important in driving the sector's growth. We should treat the sale of properties to Non-Resident Indians (NRIs) as "Deemed Exports" such that this group finds it attractive to invest in construction in the country.

Stamp Duties

- 6.91. *Work with states to lower stamp duties on real estate.* Lowering the stamp duty for real estate sales at the state level will limit incentives to carry out transactions using unaccounted wealth. In the long run, lower stamp duties will help create a more efficient property market in India. States often fear that lowering the stamp duty would lower their revenues. While this is a legitimate fear, in cases where the stamp duty is very high, revenues are likely to rise. This is because the decline in the duty would discourage buyers from under-declaring the value of the transactions. The lower stamp duty would also encourage buyers who are otherwise deterred from entering the market. This too would work towards raising revenue. Therefore, at least in the states in which the stamp duty is high, there is a good case for lowering it.
- 6.92. Even then, to the extent that states remain convinced that lowering the duty will lower revenue, we need to provide

monetary or non-monetary compensation in case of revenue loss in the wake of a reduction in the stamp duty. In particular, for resource-constrained states or states where the revenue loss would be non-trivial relative to income, we should identify revenue-neutralizing substitutes to rationalize the action. Gujarat successfully lowered its stamp duty to 3.5 % from about 5%, with increased revenue from other sources making up the lost revenue from the reduction.

Real Estate in Urban Areas

- 6.93. The ‘Housing for All’ mandate can also receive a significant boost by putting rental housing to use, particularly in urban areas with high land prices. The share of rental housing in overall housing has been steadily declining. According to data from the Census, it dropped from 54% in 1961 to 28% in 2011. In 2011, despite a severe shortage of rental housing, 11.09 million urban properties remained vacant across India. Due to low rental yields, developers and investors are often reluctant to develop housing units for rental use. We should consider working with states to amend their Rent Control Acts, easing the dispute resolution process and clearly defining tenant and landowners’ rights. This is discussed further in the “Urban Development” chapter.
- 6.94. A limited supply of land is a key constraint for real estate development in cities. The archaic Land Ceilings and Regulation Act, 1976, unused land under the purview of central or state governments and sick Public Sector Enterprises (PSEs), complex land conversion rules and high compensation for land under the Land Acquisition Act, 2013 restrict the supply of land in urban areas. Resolving pending litigation to free up tracts of land will go a long way in increasing supply and bringing down land prices. Further issues related to housing and inflated land prices, including restrictions on Floor Space Index (FSI), in urban areas are discussed in the detail in the “Urban Development” chapter.

¹ See the National Sample Survey office (NSSO) reports on Employment-Unemployment Survey, various years. Under UPS, an individual who worked or sought work during more than half of the year (183 days or more) preceding the day of the survey person is classified as being in the labour force. All such individuals together define the total labour force. An individual working for more than half of the time or longer of her time in the labour force is considered as employed. Symmetrically, an individual working less than half of the time that she is in the labour force is defined as unemployed. Unemployed individuals as% of the labour force define the unemployment rate.

Under CDS, the reference period is the week preceding the survey. Unemployment under CDS is defined in terms of person days instead of persons. For each person in the sample, we first determine the number of days she was in labour force. For each day preceding the week of the survey, the individual reports the number of hours she worked or sought work. If this is four hours or more, she is classified as being in the labour force for the full day. If this is more than one hour but less than four, she is classified as being in the labour force for half day. The total number of days in the labour force is thus determined for each person in the sample. Combining over all individuals, we get the total number of labour days available. Next, we define employment. Any individual working four or more hours on a day is classified as employed full-time on that day. An individual employed for more than one but less than four hours is defined as employed for half day that day. Combining over the entire week and all workers, we obtain the total number of person days of employment. The person days of employment as a% of the total person days in labour force gives us the employment rate. Subtracting this from 100 gives us the unemployment rate.

² National Sample Survey Organization, 2006-07.

³ Data from Annual Survey of Industries (ASI) and National Sample Survey Organization, Annual Economic Survey, 2015-16

⁴ World Bank, “World Development Indicators”.

⁵ Ibid

⁶ United Nations COMTRADE data. SITC Revision 2, code 84 represents apparel.

⁷ United Nations COMTRADE data. SITC Revision 2, codes 75, 76 and 77 represent Electronics and Electric Goods.

⁸ United Nations COMTRADE data. SITC Revision 2, code 85 represents Footwear.

⁹ Hasan, Rana and Karl Jandoc, “The Distribution of Firm Size in India: What Can Survey Data Tell Us?”, Asian Development Bank, Working Paper Series, No. 213, 2010.

¹⁰ Ministry of Labour and Employment, Labor Bureau, Government of India, “Report on Fifth Annual Employment-Unemployment Survey (2015-16).” Volume I.

¹¹ Press Information Bureau, Government of India, “Fixed Term Employment introduced for Apparel Manufacturing Sector- win-win situation for both Employer's and Employees”, October 7, 2016.
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=151537>

¹² Industrial Employment (Standing Orders) Central (Amendment) Rules, 2016. Published: Gazette of India, Part II, Section 3 (i), New Delhi, August 4, 2016
<http://www.labour.nic.in/sites/default/files/171106.pdf>

¹³ . Lopez-Acevedo and R. Robertson, “Stitches to Riches”, World Bank, Washington, DC, Eds. 2016.

¹⁴ The import values are given for SITC Revision 2, Code 653, “Fabrics, woven,of man-made fibres.” Source: World Trade Organization.

¹⁵ The tariffs reported are the Simple Average Most Favoured Nation tariffs applicable on SITC Revision 2, Code 653, “Fabrics, woven,of man-made fibres.” Source: World Trade Organization.

¹⁶ Technopak, “Textile and Apparel Compendium”, 2012.

¹⁷ World Bank, “Doing Business 2016”.

¹⁸ World Bank, “Stitches to Riches? Apparel Employment, Trade, and Economic Development in South Asia”, 2016.

- ¹⁹ Besley, Tim and R. Burgess, "Can Labour Regulation Hinder Economic Performance?" *The Quarterly Journal of Economics*, vol. 119, issue 1 (2004), pages 91-134.
- ²⁰ Factories (Amendment Bill), 2016.
- ²¹ Rajasthan Industrial Disputes (Amendment) Bill, 2014
<http://rajasthanassembly.nic.in/BillsPdf/Bill17-2014.pdf>
- ²² Industrial Disputes (Madhya Pradesh Amendment) Bill, 2015
- ²³ Industrial Disputes (Haryana Amendment) Act, 2016
- ²⁴ Labour Laws (Gujarat Amendment) Act, 2015. Published: Gujarat Government Gazette, September 30, 2015.
<https://col.gujarat.gov.in/images/lc/Gujarat-Amendment-Act-2015.pdf>
- ²⁵ Labour Laws (Gujarat Amendment) Act, 2015. Published: Gujarat Government Gazette, September 30, 2015.
<https://col.gujarat.gov.in/images/lc/Gujarat-Amendment-Act-2015.pdf>
- ²⁶ United Nations COMTRADE data. SITC Revision 2. Electronics and Electrical Goods are represented by codes 75, 76 and 77. Accessed November, 2016.
- ²⁷ Narain, Ashish, "Electronics in South Asia" in South Asia Competes, 2016.
- ²⁸ Electronics Industries Association of India (ELCINA), 2015.
- ²⁹ Ministry of Food Processing Industries, "Databank on Economic Parameters of Food Processing Sector".
- ³⁰ Central Statistics Organisation. The GDP of the Food Processing Industry for 2014-15 is calculated based on the manufacturing GDP in 2013-14 by the Ministry of Food Processing Industries.
- ³¹ Central Statistics Organisation, "Annual Survey of Industries, 2012-13".
- ³² World Bank, "Agribusiness in South Asia", 2016.
- ³³ Directorate General of Commercial Intelligence and Statistics, Government of India.
- ³⁴ Federation of Indian Chambers of Commerce and Industry, 2012.
- ³⁵ The data on gold imports are from UN COMTRADE. Gold is SITC Rev. 3 code 97. Accessed November 29, 2016.
- ³⁶ Gems and Jewellery Skills Council of India
- ³⁷ Ministry of Finance, Chapter 7, Union Budget 2015-16.
- ³⁸ A substantial share of services firms are in the informal sector. For example, in 2010-2011, 36 percent of unincorporated non-agricultural enterprises (excluding construction) were involved in domestic trading activities. The contribution of these firms is not captured in the gross value added figure.
- ³⁹ Data are from Annual Economic Survey, 2015-16. Calculations are based on Department of Industrial Policy and Promotion (DIPP) data,
- ⁴⁰ Reserve Bank of India, 2010.
- ⁴¹ Reserve Bank of India, "Financial Stability Report", December 2016.
- ⁴² International Monetary Fund, "Global Financial Stability Report", 2016.
- ⁴³ Chavan, Pallavi and L. Gambacorta, "Bank Lending and Loan Quality: The Case of India", Reserve Bank of India, 2016.
- ⁴⁴ The Insolvency and Bankruptcy Code, 2016
<http://www.indiacode.nic.in/acts-in-pdf/2016/201631.pdf>
- ⁴⁵ United Nation's World Tourism Organization (UNWTO), "World Tourism Barometer", January 2016.
- ⁴⁶ Ministry of Tourism, Government of India.
- ⁴⁷ IPK International, "World Travel Monitor 2014".
- ⁴⁸ Real Estate (Regulation and Development) Act, 2016
- ⁴⁹ The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Second Amendment) Bill, 2015
<http://www.prsonline.org/uploads/media/Land%20and%20R%20and%20R/LARR%20%282nd%20A%29%20Bill,%202015.pdf>

Part III

Regional Development

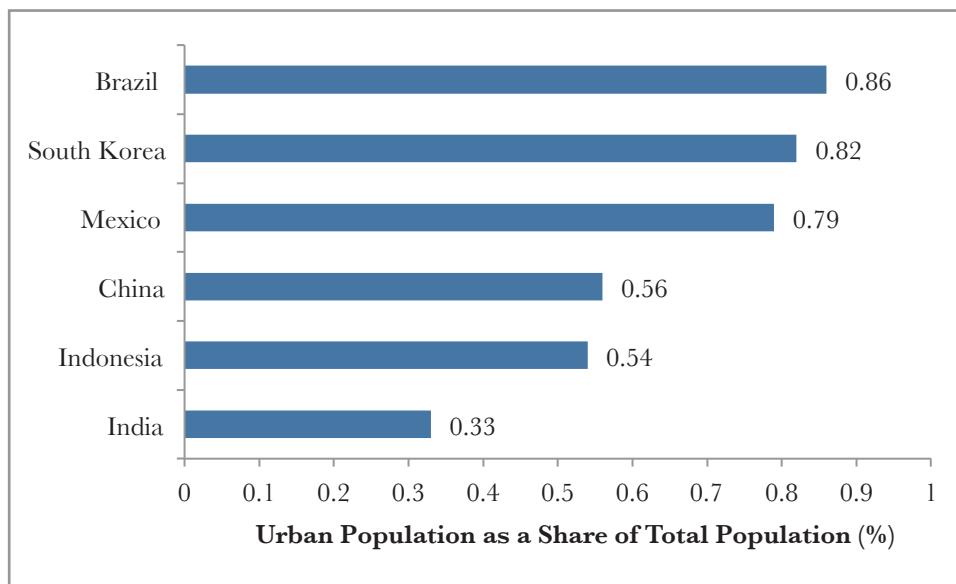
CHAPTER 7.

URBAN DEVELOPMENT

Context

- 7.1. Urbanization is an integral part of economic development. Apart from natural growth of the population, it proceeds along three dimensions. First, industry and services often concentrate in urban agglomerations while agriculture is primarily a rural phenomenon. In a rapidly growing economy, productivity and wages grow faster in the former and pull workers out of the latter. The resulting migration leads to an increased urban population. Fast-growing urban population in cities such as Delhi and Mumbai illustrate this phenomenon. Second, with growth in industry and services, cities expand geographically and absorb the adjacent villages. This phenomenon of urban sprawl has been observed in nearly all of the major cities in India. Finally, creation of new cities may also foster urban growth. New cities may come up through Greenfield projects as in the case of Chandigarh, Naya Raipur in Chhattisgarh and Amaravati in Andhra Pradesh but they may also grow granularly when industrialization in an initially rural region turns it urban. Shenzhen in China offers the most dramatic example of this form of urbanization. Until as recently as 1980, this region consisted of a group of fishing villages. But thanks to rapid growth of industry and services, today, it is among the most urbanized spots on the face of earth.
- 7.2. To ensure smooth flow of rural-urban migration and to maximize the wellbeing of the urban population, it is critical that cities are efficiently managed. Poor management leads to scarcity of commercial and residential space and creation of slums; absence of greenery and common spaces for outdoor activity; inadequate availability of electricity, water and sewage; excessive air pollution, accumulation of solid waste around neighbourhoods and persistence of swamps; and traffic jams and long commutes. These conditions in turn slowdown urbanization and hence growth and development.
- 7.3. As per the Census 2011, 377 million Indians comprising 31.1% of the total population live in urban areas. The United Nations (UN) Habitat World City's 2016 Report estimates that urban population in India reached 420 million in 2015^{1,2}. According to one projection, the urban population in India would reach 590 million by 2030³. While this progress is welcome, the extent of urbanization in India remains significantly below those in other major developing countries (Figure 9-1). According to the World Bank, urban population as a proportion of the total population in 2015 stood at 86% in Brazil, 56% in China, 54% in Indonesia, 79% in Mexico and 82% in South Korea⁴.

Figure 7-1: Urban Population as a Share of Total Population (%), 2015



Source: World Bank, World Development Indicators.

- 7.4. During 1981-2001, urbanization in India was mainly driven by natural increase in the population of cities (around 60%), followed by rural-urban migration, expansion of boundaries of cities and re-classification of rural areas into urban areas⁵. However, between 2001 and 2011, the share of natural increase in the cities' population declined to 44% while the share of reclassification of rural areas into urban areas strengthened and the share of rural-urban migration increased to 24%⁶.
- 7.5. To facilitate economic transformation, India needs to make room for increased urbanization while also improving the quality of urban life. The former requires orderly expansion of existing cities, conversion of larger but as yet rural agglomerations into towns and cities and building of Greenfield cities. The latter requires creation of adequate living and office space; prevention of slum creation; holding down air pollution, municipal solid and creation of swamps; provision of greenery and common spaces for outdoor activity; provision of electricity, water and sewage; and provision of a vibrant transportation system that links suburbs to the centre of the city and has a dense within-city transport network.
- 7.6. Our discussion of the three-year Action Agenda for urban development is divided into two parts. We first describe the existing programmes and then suggest additional measures to speed up progress.

The On-going Schemes and Programs

Affordable Housing

- 7.7. Pradhan Mantri Awas Yojana - Housing for All (HFA) (Urban Mission) was launched in June 2015 to provide housing to all in urban areas by 2022. Under this Mission, it is planned to build two Crore houses for urban poor including Economically Weaker Sections (EWS) and Low Income Groups (LIGs). Along with the targets of 6,15,649 households in 2015-16 and 15,24,360 households in 2016-17, a total 94,97,398 households are targeted to be covered by 2019-20. The targets for 2017-18 to 2019-20 are shown in Table 9-1.

Table 7-1: Deliverables for Pradhan Mantri Awas Yojana – Housing for All

Financial Year	Total Number of Households Targeted
2017-18	23,99,046
2018-19	28,38,895
2019-20	21,19,448

Source: Ministry of Housing and Urban Poverty Alleviation

Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

- 7.8. AMRUT has been launched with the objective to provide hard infrastructure for universal coverage of piped drinking water, sewerage and green spaces and parks. AMRUT also incentivizes governance reforms in the cities. For the next three years, the key actionable items are as under:
1. The State Annual Action Plans (SAAP) of all states and Union Territories (UTs) for the entire mission period are to be approved by Apex Committee at Central level by mid-2017;
 2. States and Urban Local Bodies (ULBs) must complete implementation of all the projects for universal coverage of drinking water and sewerage for all households and in other areas;
 3. The 500 Mission cities are to develop 200 parks with elderly and children friendly features;
 4. States are to pilot the eleven-point urban-sector reform agenda as per the implementation road map in their respective SAAPs;
 5. Capacity building programme for officials and elected representatives is to be implemented as per the plan indicated in SAAPs.

- 7.9. Under AMRUT, the Centre has allocated a total of Rs. 50,000 Crore over a five-year period from 2015-16 to 2019-20 and is administered as a CSS. Of the total amount, 80% constitutes project funding, 10% incentive fund for implementation of reforms and 10% for state and central administrative expenses. Reforms under AMRUT include e-governance at the ULB level; constitution and professionalization of municipal cadres; urban and city-level planning; review of building by-laws; municipal tax and fee improvements; collection of user charges; credit ratings of ULBs; and energy and water audits.

Developing Smart Cities

- 7.10. Launched in June 2015, Smart Cities Mission aims at driving economic growth and improving the quality of life through area based development and city-level smart solutions. The mission would convert 100 existing cities into smart cities. The key actionable items and deliverables for the period 2017-18 to 2019-20 are given below:

Table 7-2: Deliverables for Smart Cities Mission- Number of Cities

Deliverable/Outcome	2017-18	2018-19	2019-20
Formation of Smart Cities Special Purpose Vehicle (SPVs)	40	40	20
Street design in Area Based Development (ABD) area	40	40	-
Development of public parks in ABD area	40	40	-
Rejuvenation of public plazas and water fronts in ABD area	20	40	40
Development of smart parking facilities in ABD area	20	40	40

Deliverable/Outcome	2017-18	2018-19	2019-20
Installing Smart metering of water connections in ABD area	20	20	40
Re-use of waste water in ABD area	20	40	-
Provision of non-motorised transport facilities like cycle tracks in ABD area	-	20	40
Installing energy efficient street lighting in ABD area	-	20	40
Development of pan city intelligent traffic management system	-	20	40
Development of Central Command and Control Centre	-	20 cities	40 cities

Source: Ministry of Urban Development

Swachh Bharat Mission (Urban)

- 7.11. Launched on 2nd October 2014, Swachh Bharat Mission (SBM) (Urban) is the key mission driving the campaign to make our cities clean. The mission aims to eliminate open defecation in all statutory towns by 2nd October 2019. It also proposes to eradicate manual scavenging, introduce modern and scientific solid waste management, induce behavioural change with respect to healthy sanitation practices and generate awareness for sanitation and its link to public health, augment the capacity of ULBs and create an enabling environment for the private sector in waste management. The key outcomes to be achieved in the years 2017-18 to 2019-20 are outlined in the table below.

Table 7-3: Deliverables for Swachh Bharat Mission

Outcome/Deliverable	2017-18 (Cumulative)	2018-19 (Cumulative)
No. of ODF towns	4,041	4,041
Compost Production (Lakh Metric Tonnes)	54	54
Waste to Energy Generation (Mega Watt)	330	511
Wards with 100% door-to-door collection	100 %	100 %

Source: Ministry of Urban Development

Public Transport

- 7.12. Efficient and sustainable urban transport systems and mobility are critical for the smooth functioning of the city economy and labour markets. From 1981 to 2011, the number of total registered vehicles grew at a rate of 11.7% per annum as compared to 2% per annum population growth⁷. In many cities, especially metros, the rapid expansion of vehicles has led to air pollution that has become a serious health hazard. Therefore, the government is committed to promoting public transport, adopting intelligent transportation and encouraging non-motorized vehicles. The following key actions are planned:

1. About 517 km of metro lines is being constructed under 8 on-going metro rail projects funded partly by the Central government. Out of this, in the next 3 years, 200 km of metro rail projects will be commissioned to increase metro rail operation from 325 km to 525 km
2. 200 km of Bus Rapid Transit System (BRTS) would be operationalized
3. Unified Metropolitan Transport Authority (UMTA) would be established in cities having million plus population and will be responsible for preparing an integrated public transport plan. Moreover, it will also ensure that Indian cities follow the global trend of separating planning from operations, wherein a public entity ensures equitable access and contracts operations to private operators.

Livelihood for the Urban Poor

- 7.13. The Union Government aims to address occupational and social vulnerabilities through Deen Dayal Antodaya Yojana – National Urban Livelihood Mission (DAY – NULM). DAY-NULM aims at creating opportunities for skill development leading to market based employment and helping the poor to set up self-employment ventures. This Mission's interventions are implemented through five key components: 1) Social Mobilization and Institutional Development (SMID); 2) Self-Employment Programmes (SEPs); 3) Employment through Skill, Training & Placement (EST&P); 4) Shelter for Urban Homeless (SUH); and 5) Support to Urban Street Vendors (SUSV). The implementation plan of key components of DAY-NULM for the period 2017-18 to 2019-20 is as under:

Table 7-4: Deliverables for Deen Dayal Antodaya Yojana–National Urban Livelihood Mission

Key components	2017-18		2018-19		2019-20		Total	
	Nos.	Amount (Crore)	Nos.	Amount (Crore)	Nos.	Amount (Crore)	Target/ Nos.	Amount (Crore)
SMID								
Self Help Groups (SHG)	40000	40	21361	21.36	1000	10	106361 groups	106.36
Revolving fund	35000	35	40000	40	91737	91.74	201737 groups	191.74
City Livelihood Centres	325	32.5	525	52.5	413	41.3	1313 CLCs	131.3
Training for Community Institutions	4400	33	2349	17.62	1100	8.75	11699 institutions	
SEP								
Micro Enterprise	35000	140	35000	140	35000	140	140000 Micro enterprises	560
EST&P								
Skill Training	220000	330	242000	363	266000	399	928000 persons	1392
SUH								
Shelter Projects (capital cost)	220	14.79	242	16.27	266	17.9	928 shelters (cumulative)	62.41
O&M Cost of shelters		25.2		39.72		55.68	928 shelters (cumulative)	132.6
Year-wise totals of NULM		650.49		690.47		764.37		2105.33

Source: Ministry Of Housing and Urban Poverty Alleviation

Preserving & Restoring the heritage and culture of our cities

- 7.14. National Heritage City Development & Augmentation Yojana (HRIDAY) Mission was launched in January 2015 with an aim to rejuvenate the heritage cities, with special attention to others issues such as sanitation, tourism, and livelihood. The Mission is targeted for completion by November 2018. The HRIDAY mission will be concluded in 12 heritage cities as per the Detailed Project Reports submitted upon commencement.

Additional Necessary Steps in the Existing Areas of Action

- 7.15. In the previous section, we have described the actions already under way along different aspects of urbanization. In this section, we describe a set of complementary actions that can make some of the on-going programmes more effective. The actions relate to three areas: urban housing, Swachh Bharat and urban transportation.

Urban Housing

- 7.16. *Housing and Inflated Land Prices.* A key constraint on rapid expansion of low-income housing is high cost of land. This issue turns even more important from the viewpoint of low-rent housing, which is critical to accommodating migrant population without creating slums. High land prices translate into high property cost and therefore low rental yields. According to the 2013 Report on Policy and Interventions to Spur Growth of Rental Housing in India by Task Force on Rental Housing, rental yields in Mumbai fell from 6% in 2006 to 3.5% in 2009 and just 1.5% in 2011. With borrowing rates at substantially higher levels, these yields are too low to recoup the value of the investment. The problem turns particularly serious when the target rental group consists of low-income families.
- 7.17. A key factor contributing to inflated land prices in India has been the flow of illicit money into real estate. Therefore, attacking black money would have the important beneficial side effect of bringing land prices down and making housing more affordable for low-income families. One important factor encouraging the flow of black money into land is high stamp duty. Working with states to lower this duty would help bring land prices down. Further details on working with states to lower stamp duties are included in Chapter 6.
- 7.18. At least four supply side factors have also contributed to the artificially high urban property values in India. First, as a legacy of the Urban Land Ceilings and Regulation Act, 1976, large chunks of vacant land have disappeared from urban land markets. Although most states have now repealed this act, many large pieces of land remain tied up in litigation. Releasing this land for commercial use should be a priority. Expediting the resolution of existing and new cases will help free up this land. Second, many sick public sector enterprises (PSEs) own large pieces of unused land in prime urban areas. Closure of these units can help bring substantial land on the market. The closure of a number of identified sick PSEs is already underway and should be expedited. Third, central and state governments own substantial urban land that remain unused or subject to encroachment. For example, railway, defence and civil aviation ministries of the central government own valuable unused urban land that they could monetize to finance infrastructure and other critical expenditures while also making the land available for housing and other uses. Finally, the Land Acquisition Act, 2013 fixes compensation for acquired land at rather high levels. In turn, this makes land acquired for affordable housing expensive and contributes to high costs. Short of amending the Land Acquisition Act 2013 for the purpose of acquiring land for affordable housing, there is no simple solution to this source of high price of land.
- 7.19. A further constraint on the supply of urban land is the stringency of land conversion rules. Vast tracts of land on the outer periphery of cities are potentially available for urban expansion. But this requires conversion of the tracts from agricultural to non-agricultural uses. For historical reasons, the power for such conversion has been vested in the state revenue departments, which are reluctant to allow the conversion. Shifting this power to agencies in charge of urbanization and making conversion transparent and flexible would go a long way towards creating a vibrant land market in Indian cities.
- 7.20. Another dimension of conversion rules concerns flexibility in converting urban land from one use to another. Efficient allocation of the available urban space requires that land use is able to flexibly respond to shifts in demand across its various uses. It should be possible to convert warehouses into residential buildings and factories into offices as demand shifts. In many cities, land use is highly constrained in this respect. It also means that all workers must commute long distances, unnecessarily burdening the already strained transport system while also adding to the pollution problem facing the cities.
- 7.21. Scarcity of horizontal space, discussed above, can also be countered by expanding space vertically through the construction of taller buildings. The availability of this avenue depends on the permitted floor space index (FSI), which measures the floor-space in a building as a proportion of the area of the plot on which the building stands. Unfortunately, permitted FSI in Indian cities is extremely low, ranging from 1 to 1.5. Consequently, tall buildings are virtually absent from Indian cities. The topology of Mumbai closely matches that of Manhattan and Singapore but it has few tall buildings when compared to the latter cities. Available urban space can be expanded manifold by relaxing the permitted FSI.
- 7.22. A related perverse feature of city planning in India is that unlike in most countries, when a higher FSI is allowed, it

applies to periphery rather than the centre of the city. The result is a shortage of space in the central business district, which is then reserved for commercial use only. With residential units thus pushed exclusively to the periphery, this FSI pattern leads to heavy burden on the transportation system. Delhi illustrates this point. To the extent that the city has permitted tall buildings in recent decades, it has done so outside of the city centre with the latter reserved predominantly for commercial activities.

- 7.23. A comparison of Mumbai and Shanghai best illustrates the deleterious effects of the restrictive FSI. In 1984, Shanghai had only 3.65 square meters of space per person. But the Shanghai Municipality then decided to make liberal use of the FSI. Despite large increase in population since 1984, by 2010, the city had increased the available space to 34 square meters per person. In contrast, in 2009, Mumbai on average had just 4.5 square meters of space per person⁸.
- 7.24. Removal of many of the constraints discussed above will admittedly take more than three years. Action is further hampered by the fact that urban spaces and land issues fall under the jurisdiction of the states and will require action by each state individually. Nevertheless, a beginning in this direction must be urgently made. States must be sensitized to the benefits of policies that would help bring land prices down. Where the central government needs to take action, it must do so within the next three years.
- 7.25. *Low-rent Housing*. The discussion so far has highlighted the ultra-high land prices, which lead to low rental yields, as the key barrier to the emergence of institutional investors in low-rent housing. But there remain other barriers as well, which have contributed to a steady decline in the share of rental housing in total housing. According to census data, this share fell from 54% in 1961 to 28% in 2011. In 2011, despite a severe shortage of rental housing, 11.09 million urban properties remained vacant across India.
- 7.26. In most states in India, traditionally, rent control laws have disproportionately protected the tenant. Rent is held at low levels and eviction is difficult. In the absence of conclusive ownership titles, with sufficiently long occupancy, a tenant can even claim ownership of the property. These factors have played a critical role in a large number of urban properties being left vacant. Consequently, we have the paradoxical situation of unsatisfied demand for rental housing while many units lie vacant.
- 7.27. Although some states have lifted rent control above a threshold limit with the limit varying according to location of the unit, most states have not done so. Among the reforming states, Rajasthan has been most liberal. Its 2001 law, originally applied to divisional headquarters only, was amended in March 2017 to apply to all cities. The law provides for eviction if the tenant fails to pay rent for four months. It also leaves the tenant and the owner free to determine the rent. Only units with rents below a threshold level, which varies between Rs. 2,000 to Rs. 7,000 per month depending on the city or location of the units, are subject to rent control. A handful of other states such as Delhi and West Bengal have also liberalized rent control laws but they link rent to some fair rent price based on the market value of the property. Most states also control increases in rent and eviction remains a long-drawn process.
- 7.28. There is clearly need for replacing the current rent control laws by a modern tenancy law, which would give full freedom to tenant and owner to negotiate the rent and the length of the lease. Rules with respect to eviction also need to be reformed to restore balance between the rights of the tenant and the owner. There is often opposition to reform of rent control laws by powerful commercial tenants. Therefore, the reform may be politically more acceptable if the policy for residential tenants is separated from that for commercial tenants. In April 2015, the Ministry of Housing and Urban Poverty Alleviation had drafted a Model Tenancy Act. This draft Model Act may be appropriately modified for adoption by the states.
- 7.29. Without meaning to play down the importance of these reforms, two qualifications to them may be noted. First, while liberal tenancy laws promise to bring at least a subset of the currently vacant 11.09 million empty units on the rental market, they are unlikely to make these units available to low-income families. In all likelihood, these units would predominantly attract rents that only middle- and high-income families would be able to afford. For instance, Maharashtra, accounts for nearly one-fifth of the country's vacant units. The bulk of these units are likely to be located in Mumbai. It is inconceivable that low-income families and migrants will be able to afford the potential rent on any of these units.
- 7.30. Second, without correction to land prices, rental yields will remain low in relation to the interest rate so that there will

be at best limited response of new units to rent control reform. Reform of land markets to better align the rental yields to the interest rate remains critical to low-rent commercial housing.

- 7.31. *Ownership Titles*. In the longer run, there is also need for legislation providing for conclusive ownership titles. This would shield the owner fully against any potential claims to ownership by the tenant. Currently, Rajasthan is the only state, which has passed a law providing for the conferment of a conclusive title. But so far titles have been issued on a limited scale.
- 7.32. *Dormitory Housing*. Mention may also be made of dormitory housing for migrant workers who come to cities without their families, often for short periods. Most states treat these dormitories as commercial hotels and subject them to commercial water and electricity tariffs, higher property taxes, trade-license fee and luxury tax. These charges greatly increase the rent on dormitory housing forcing the migrants to look for alternatives, which inevitably encourages the growth of slums.
- 7.33. *Rental Voucher Scheme*. A final point concerns rent subsidy currently under consideration. The government is considering a rental voucher scheme for the urban poor in the 100 smart cities. In view of the fact that urban poor receive very limited government assistance currently, this is an important positive step. In addition to assisting the poor, the voucher scheme will also encourage the supply of low-income rental housing. What is required is that the voucher be given to the beneficiary instead of owner of the rental property so that the former receive its full value. It may also make sense to make the subsidy conditional on the state reforming the rent control law at least in the city receiving vouchers.

Swachh Bharat

- 7.34. *Municipal Solid Waste (MSW) Disposal*. As discussed in the previous section, the government has initiated action on combating the problem of solid waste in the cities under its Swachh Bharat programme. But action in this area must be accelerated. Rapidly rising prosperity has resulted in the generation of vast volumes of solid waste in our cities. The cities have been slow to develop effective ways to dispose of this waste. The resulting mountains of waste, which can now be seen in nearly all cities, have become a serious public health threat. As per Census 2011, 377 million people living in 7,935 urban centres generated 170,000 tonnes per day of municipal solid waste resulting in 62 million tonnes MSW annually⁹. ULBs spend about Rs. 500 to Rs. 1,500 per tonne on solid waste management. Out of this expenditure, about 60% - 70% is spent on the collection of waste and 20% - 30% on transportation but almost nothing on treatment and disposal¹⁰.
- 7.35. On methods of final disposal, options such as biogas and composting are not sustainable solutions in larger cities since they generate by-products or residues in large volumes that these cities will find difficult to dispose of efficiently. Only incineration (also called Waste to Energy), thermal pyrolysis and plasma gasification technologies offer the sustainable disposal solutions. However, pyrolysis is not suitable for MSW due to its diverse composition and plasma technology remains too costly to adopt so far. Hence, incineration or “Waste to Energy” is the best option. Singapore and other countries have waste incinerators. Report of the Sub-Group of Chief Ministers on Swachh Bharat Abhiyan of October 2015 also recommends Waste to Energy plants for bigger municipalities and cluster of municipalities and composting method of waste disposal for smaller towns and rural areas.
- 7.36. To speed up the process of cleaning up municipal solid waste, it may be worth exploring the possibility of an authority at the Centre to spread the use of Waste to Energy plants. Such an authority can be called Waste to Energy Corporation of India (WECl) and placed under the Ministry of Urban Development. Just as the National Highway Authority of India (NHAI) has been instrumental in developing high quality National Highways through Public Private Partnership (PPP) across the country, the WECl may set up world class Waste to Energy plants through PPP across the country. It can play a key role in fast-tracking coverage of waste to energy plants across 100 smart cities by 2019. Its mandate may include key functions of preparing standard tender documents, prequalify vendors and allot to ULBs and cluster of ULBs, and ensure priority clearance for qualified vendors, among others.

Urban Transport

- 7.37. The quality of housing and transport are two key determinants of a comfortable city life. If a city is planned so as to

provide housing next to workplace, it minimizes the time spent on daily commute. Symmetrically, if suburbs and city centre are connected by well-functioning rapid transit system and the central business district has a dense in-city transportation system, residents have the choice to locate in the suburbs where they can afford larger spaces. Housing and transportation are thus intimately connected.

- 7.38. The design and maintenance of city roads is a major challenge in Indian cities. The roads are notorious for being pedestrian-unfriendly, poorly surfaced, congested, and constantly dug up. An important and urgent transformational reform is to draw up national design standards and contracting standards for city roads to address these challenges. Enforceable design standards can ensure that urban utilities are provided ducts under footpaths with inspection chambers, utility networks are mapped, and uniform lane width can be maintained. The possibility of a joint tender between ULB and civic agencies operating underground utilities can also avoid constant road digging. A PPP model whereby a private player builds city roads and is in turn paid usage charges by utilities for usage of underground ducts over the concession period may be piloted. Such a project has the advantage that it eliminates the need for state utilities to raise capital for building their own underground ducts. The Tender S.U.R.E (Specifications for Urban Roads Execution) model in Bengaluru provides useful lessons for such an experiment.
- 7.39. The flow of traffic also needs special attention in Indian cities. Unlike western cities, motorized vehicles in India change lanes with high frequency and in unpredictable ways. This creates unnecessary traffic jams and delays. It may be worth running pilots to see if strict enforcement of traffic rules through fines in case of violations can induce behavioural change and persuade drivers to the benefits of obeying all rules. If such a change is possible, it could greatly reduce both the travel time and pollution. Additionally, incentives may be created to encourage vehicle-sharing systems such as Ola and Uber. This will reduce the number of vehicles on the road reducing both congestion and pollution.
- 7.40. Metro rails can be an efficient source of public transportation in many cities. The success of some initial metro projects has led to demands for the same in other cities. This highlights the need for a national metro rail policy that will ensure that metro projects are not considered in isolation, but as part of a comprehensive plan of overall public transportation. Further, the policy should provide clear guidelines on various aspects of metro projects, such as planning, financing, PPP, etc.

Conclusion

- 7.41. In this chapter, we have described the major programmes currently under way in the area of urban development and offered additional suggestions for action during the coming three years. Over the longer term, India needs to introduce more fundamental changes to turn our cities into 21st century spaces. We need to introduce spatial planning that simultaneously addresses developmental needs of metropolitan, municipal and ward-level areas. We need to genuinely devolve power to urban local bodies and financially empower them. Well-run ULBs should have the power to raise financial resources including through municipal bonds. Introduction of Standardised, time-bound, audited balance sheets across 4,041 ULBs would help improve financial management as well as spur further reforms in this area. Indian cities also need to overhaul their municipal staffing and introduce appropriate skills to achieve administrative efficiency. These and other long-term issues are taken up in greater detail in the Vision and Strategy Document 2031-32.

¹ India Profile, Census 2011; http://censusindia.gov.in/2011census/censusinfodashboard/stock/profiles/en/IND_India.pdf

² United Nations Habitat, "Urbanization and Development: Emerging Futures: World Cities Report 2016."

³ McKinsey Global Institute, "India's Urban Awakening: Building inclusive cities, sustaining economic growth".

⁴ See <http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS> (accessed on 5th March 2017).

⁵ Ahluwalia, Isher, High Powered Expert Committee (HPEC), "Report on Indian Urban Infrastructure and Services", 2011.

⁶ Panagariya A., Chakraborty P., Govinda Rao M., "Urban Development" in State Level Reforms, Growth, and Development in Indian States, 2014.

⁷ Ministry of Housing and Urban Poverty Alleviation, Government of India, "India Habitat III National Report".

⁸ Bertrand, Alain, "Mumbai FAR/FSI conundrum, The perfect storm: the four factors restricting the construction of new floor space in Mumbai", 2011.

⁹ Report of the Sub-Group of Chief Ministers on Swachh Bharat (Oct 2015)

¹⁰ Ibid

CHAPTER 8.

RURAL TRANSFORMATION

Context

- 8.1. As per the Socio-Economic Caste Census (SECC), 2011 there were 244.9 million households in the country out of which 179.7 million households (833 million people) were living in rural areas across 640,930 villages¹ and 240,618 Gram Panchayats². While considerable progress has been made in lifting households out of poverty, 87.2 million (48.5%) rural households³ reported one or more deprivations according to the SECC, 2011. A majority of the rural households (92 million)⁴ are engaged in manual casual labour and agricultural activities.
- 8.2. The rural landscape has been transforming, with a clear distinction between rural and urban areas disappearing. This has resulted in a more integrated economy. Job creation, however, has not kept pace with the shift from agriculture towards non-farm sectors. Other challenges facing rural areas include low literacy levels, inadequate access to health, drinking water and sanitation as well as insufficient linkages with and use of formal financial services.
- 8.3. Over the next three years, the focus should be on strengthening the implementation and monitoring of existing schemes for boosting skill development and employment generation as well as providing basic services to all villages. There should also be an emphasis on ensuring digital connectivity and literacy. Further, as institutions of self-government, strengthening of Panchayats should be prioritised to enable them to respond to local needs effectively.

Convergence Between Schemes and Transparency in Implementation

- 8.4. The SECC 2011 is becoming the basis for determining beneficiary level entitlements for several programs. Given that the SECC started as a census, a mechanism for updating the data on a regular basis needs to be institutionalised. There is also a need to correct for any significant discrepancies between Census 2011 and SECC 2011.
- 8.5. The availability of the SECC list coupled with the focus on Aadhaar-based payments to the bank accounts of beneficiaries could pave the way for greater convergence among various government schemes in rural areas. The SECC dataset should be updated with information about the various types of benefits availed by household members including pension, assets acquired and Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA) work. This data could be analysed at the Panchayat level to ensure convergence among schemes for addressing the challenge of multi-dimensional poverty faced by vulnerable households. The State Institutes of Rural Development (SIRD) can play an important role⁵ in facilitating this convergence because they are responsible for supporting the implementation of various programs in the area of rural development as well as training elected representatives at the Panchayat level. There should therefore be a focus on building the capacity of these Institutes.
- 8.6. The use of Geographical Information System (GIS) for tracking assets and houses created under MGNREGA and Pradhan Mantri AwasYojana - Gramin [PMAY (G)], respectively, should be ensured. This will help bring about greater transparency and accountability with respect to the implementation of these schemes. Steps for strengthening the monitoring of specific schemes for rural areas are discussed in the subsequent sections of this chapter.

Skill Development and Employment Generation

- 8.7. Beyond expanding the number of Self-Help Groups (SHGs) promoted under the Deen Dayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM), several measures are needed for strengthening the scheme. In

2016, a Common Review Mission (CRM) constituted by the Ministry of Rural Development revealed certain implementation challenges⁶ following their review of the program across 8 diverse states. These included human resource issues and lack of funds.

- 8.8. In order to address some of the human resource challenges, efforts should be made to ensure a longer term⁷ (say 3 years) for the CEOs of the State Rural Livelihood Missions (SRLMs). While it cannot be made mandatory, directives in this regard could help to stabilise the tenure of the CEOs. Additionally, emphasis needs to be placed on the retention of project staff at the district and block levels as well as filling up of vacant posts.
- 8.9. The CRM team found that while the program has achieved success in accelerating SHG-Bank linkages and promoting economic activities at the individual level in several areas, more organised support is necessary for forming and strengthening Producers Groups and Producers Companies in areas like sustainable agriculture and non-timber forest products. This could be facilitated by the engagement of the SRLMs with technical and sector specialists empanelled at the National level⁸ for developing commodity value chains for livelihood expansion.
- 8.10. A mechanism for measuring key indicators for SHGs including household savings, income, asset creation, debt reduction and productivity needs to be developed. For strengthening bank linkages, up to two Bank Correspondents should be appointed for a Panchayat and one Bank Mitra for a branch. Jan Dhan accounts should be opened for all SHG members and linked with their Aadhaar numbers. Stronger bank linkages will also help to ensure the timely payment of wages without leakage under schemes such as MGNREGA. An app-based loan approval system could also be developed for SHGs for expanding bank linkages. With a three-year timeframe, efforts should be made to provide banking services to at least 50% of the uncovered villages.
- 8.11. With respect to the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), the focus should be on monitoring and improving the quality of placements. An integrated IT platform should be developed which can be linked with the IT platforms of the project implementing agencies at the state level⁹. This will help to generate data about placements in a comprehensive manner and also streamline the process for data submission by project implementing agencies.
- 8.12. The Sub-Group of Chief Ministers on Skill Development has suggested some additional measures¹⁰ for strengthening DDU-GKY and NRLM. Their suggestions include modifying the operational guidelines to include self-employment in agriculture and allied vocations at par with placement in a job. The Report highlights that providers of skill development initiatives focused on agriculture do not participate in schemes like DDU-GKY and NRLM due to the placement requirements, which might not be suitable for Agriculture and Allied Sector vocations. The recommendations also emphasise the need for leveraging Recognition to Prior Learning (RPL) under the National Skills Qualifications Framework (NSQF). All state departments should develop plans for assessment and certification of semi-skilled and skilled workers in agriculture and allied fields by the Agriculture Skill Council of India (ASCI).
- 8.13. With respect to MGNREGA, one of the areas that should be strengthened over the next three years is monitoring. This includes the use of geo-tagged photographs of assets created under the scheme. Additionally, social audits facilitated by an independent unit should be made compulsory. Training programs for social audit functionaries should also be developed. Further, there should be an emphasis on establishing linkages between MGNREGA and skill training programs, as envisaged in the Livelihoods in Full Employment project launched in 2015.
- 8.14. In the absence of a dedicated fund for the maintenance of assets under MGNREGA, a number of assets fall into disrepair and become unusable over time. It might therefore be helpful to create a separate maintenance fund for community assets created under MGNREGA. A maximum of say 10% of the MGNREGA budget could be set aside for this fund with an equal contribution being mobilised from the community. This will need to be accompanied by putting in place a set of clear operational guidelines so that it does not serve as an incentive for construction of low quality assets.
- 8.15. Andhra Pradesh's experience provides a fine example of how asset creation under MGNREGA and infrastructure creation under other schemes can come together to produce durable assets. Over the last two years, the state has successfully laid down nearly 9,900 km of Cement Concrete roads by synergising these schemes.

- 8.16. Another step that needs to be taken on a priority basis is ensuring that all the technical staff vacancies in MGNREGA are filled and personnel have adequate capacity to supervise the quality of assets constructed under the scheme.
- 8.17. Data¹¹ indicates that the benefits of MGNREGA have been reaped disproportionately by some of the more prosperous states. Therefore, there is a need for developing a set of inclusion, exclusion and deprivation criteria for targeting the program in favour of the poorest households. A starting point for the development of these criteria could be the Report¹² submitted by a panel of experts to the Ministry of Rural Development. The Report highlights the need for evolving an institutional arrangement for supporting states that have a higher concentration of deprived households.

Housing

- 8.18. As per the PMAY-G scheme, houses will be provided to all by the year 2022. In order to meet this goal, 10 million houses will need to be constructed by March, 2019. This is a fairly ambitious objective and will stretch the capacity of the states considerably.
- 8.19. To ensure that the goal is met, it is crucial that state specific plans are developed along with a work schedule and explicitly defined targets. These plans should include details of various types of low-cost and disaster resilient housing models which can be designed with materials that are available in various parts of the country. Another important step that should be taken on a priority basis is the creation of dedicated project management units at the state level¹³ supported by the Technical Support Agency at the National level. These units could help to coordinate the progress being made as per the state plans as well as build the capacity of the field staff and masons. Training of 75,000 masons should be undertaken in rural areas over the next three years.
- 8.20. Another priority is to ensure that funds are released in a timely manner based on evidence of completion of each stage of construction. Due to delays in the release of payments, there is a back-log of half-finished structures¹⁴ in several areas. The monitoring mechanism should be strengthened by the introduction of geo-tagged photographs of house construction as well as compulsory social audits.
- 8.21. A scheme for the provision of interest subsidy to every rural household that is not covered under PMAY-G has recently been approved by the Union Cabinet¹⁵. Steps should be taken to ensure convergence of this scheme with PMAY-G, including the provision of technical support to beneficiaries by leveraging the existing structures.

Drinking Water and Sanitation

- 8.22. Under the National Rural Drinking Water Programme (NRDWP), continuous uninterrupted water supply should be provided to a minimum of 179,000 partially covered habitations during the next three years. Additionally, at least 26,500 arsenic and fluoride affected habitations should be treated.
- 8.23. In order to achieve the target of becoming Open Defecation Free (ODF) by 2019, 55 million household toilets and 115,000 community toilets will need to be constructed under the Swachh Bharat Mission (Gramin). Special attention should be paid to addressing inequalities with respect to sanitation access for women, children, senior citizens and the differently abled. Additionally, systems will need to be developed for comprehensive operationalization of safe management practices for solid and liquid waste.
- 8.24. Over the next three years, efforts should be made to promote the adoption of improved sanitation practices and hygiene behaviours, in addition to focusing on the hardware aspects. One of the recommendations¹⁶ made by the Sub-Group of Chief Ministers on Swachh Bharat Abhiyaan is to engage a professional agency for designing and monitoring an extensive media campaign which encourages people to maintain and use toilets as well as pay for the usage of public toilets. It is crucial, however, for these campaigns to acknowledge that when it comes to sanitation, one size definitely does not fit all. There is a diverse and complex set of factors, including religious and social, that influence household decisions pertaining to sanitation. Communication campaigns are more likely to be effective if they are tailored to the prevailing local context in different states. Efforts should be made to involve political, social and religious leaders for emphasising the importance of hygienic practices. For instance, Rajasthan has made it

mandatory that those contesting the Panchayati Raj elections furnish an affidavit that they have a toilet in their homes. This has produced local Government leaders who can legitimately lead by example and promote the importance of sanitation in villages. Further, as children are agents of change, inculcating sanitation practices should be made an integral part of the school curriculum.

- 8.25. A comprehensive analysis should be undertaken to assess why the Community-Led Total Sanitation (CLTS) approach which has been very successful globally¹⁷ and in states like Himachal Pradesh¹⁸ in India, has not scaled-up across the country. CLTS has been implemented in over 65 countries and has been incorporated into the national policy of over 35 countries. CLTS does not involve any upfront hardware subsidy for individual households or specify any toilet models. It emphasises on igniting behaviour change from within the communities themselves and recognises that simply providing a household with a toilet does not guarantee its use or an improvement in sanitation related outcomes.
- 8.26. Another priority should be to train and incentivise a cadre of community-based sanitation workers or Swachhta Doots as envisaged in the Swachh Bharat Mission (Gramin) guidelines for overseeing the construction of sanitation facilities in villages as well as spreading messages about hygiene.
- 8.27. The validity of data pertaining to the numbers of toilets constructed should be confirmed through periodic checks and audits by government and non-government assessors. Additionally, sufficient numbers of data entry operators should be ensured at the block and district levels. Data on toilet functionality and usage by households should also be captured as it will be useful for undertaking mid-course corrections and designing effective behaviour change programs. An objective framework for assessing the ODF status of villages should be developed. Villages that have been certified as ODF should be re-sampled periodically to assess whether the positive behavioural practices have persisted or if a change in strategy or incentives is required. Drinking water and sanitation issues have also been discussed in the chapters on “Health” and “Urban Development.”

Energy

- 8.28. Over the next three years, the goal as part of the Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) is to bring electricity to every household in all villages across the country. In order to ensure this, there will need to be a focus on the quality, reliability, affordability and legality of supply, in the absence of which electrification of villages might not necessarily translate¹⁹ into rural households actually getting power.
- 8.29. The introduction of GARV, a dashboard and mobile app for making data available to the public on a real-time basis has been a positive step in ensuring greater transparency. Continued efforts should be made to engage adequate numbers of Gram Vidyut Abhiyantas (GVAs) for monitoring the electrification process and resolving any discrepancies²⁰ between official data and realities on the ground.
- 8.30. Further, 50 million BPL households, a large number of which are in rural areas, should have access to Liquefied Petroleum Gas (LPG) by 2019 under the Pradhan Mantri Ujjwala Yojana (PMUY). Additional details are included in the “Energy Sector” chapter.

Roads

- 8.31. Over the three-year timeframe, the goal should be to connect all villages in rural areas with all-weather roads under the Pradhan Mantri Gram Sadak Yojana (PMGSY). In 2016, following an audit conducted by the Comptroller and Auditor General (CAG) on the performance of PMGSY across 29 states, several recommendations²¹ were made for strengthening the implementation of the scheme.
- 8.32. One of the important suggestions was the creation of a GIS database with information on rural roads. This should be developed on a priority basis in states which do not already have one. Additionally, any discrepancies and deficiencies in the District Rural Road Plans should be addressed so that eligible unconnected habitations can be covered under PMGSY.

- 8.33. Further, quality control and monitoring under PMGSY should be strengthened as highlighted in the CAG Report. This includes completing work with the requisite bridges and cross drainage structure for ensuring all weather connectivity. Additionally, State Level Standing Committee meetings should be held on a regular basis in all states and the concept of social audit should be introduced as a part of the PMGSY guidelines. Data captured in the Online Management, Monitoring and Accounting System (OMMAS) should be updated on a regular basis so that the reports that are generated are accurate.

Digital Connectivity and Literacy

- 8.34. Tele-density in rural areas is one-third that of urban areas. An estimated 55,619 villages²² do not have mobile coverage. Developing enabling infrastructure in rural areas is therefore a priority as discussed in the “Digital Connectivity” chapter.
- 8.35. Along with improving connectivity, ensuring digital literacy is also crucial. The recent approval of the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) by the Union Cabinet²³ for making 6 Crore households in rural areas digitally literate is an important step in that direction. It will help to enable the more widespread use of the Jan Dhan, Aadhaar, Mobile (JAM) trinity. This in turn could replace the current cumbersome and often leaky distribution of benefits under various schemes in rural areas with Direct Benefit Transfers. Eventually, this could pave the way for replacing multiple schemes with consolidated cash transfers²⁴, especially in the absence of other compelling reasons for continuing with in-kind transfers.

Rurban Growth Clusters

- 8.36. The 300 clusters²⁵ selected for development under the National Rurban Mission should be established by 2020. The institutional structures envisaged in the Mission's implementation framework should be operationalized at the state, district and cluster levels on a priority basis. This includes the State Nodal Agencies; the state and district Project Management Units as well as the state, district and cluster level Committees. Dedicated teams are important for ensuring time-bound implementation and facilitating convergence between various government schemes. Effective convergence is at the core of the cluster development approach outlined in the Mission guidelines. In Gujarat, for instance, a Rurban Cell²⁶ was set up under the Panchayat, Rural Housing & Rural Development Department for the implementation of the programme.
- 8.37. Another area that should be strengthened is capacity building of officials and elected representatives of the Panchayats so that they are fully aware of the steps that need to be taken for fulfilling the Mission objectives. Active engagement of stakeholders at the local level will also enable modern technology to be combined with traditional knowledge and practices for effective and sustainable implementation of the Rurban model. Further, dashboards could be created at the national, state and district levels for monitoring the progress of all essential components of cluster development. Summary reports from these dashboards could be reviewed regularly by the Committees at every level of implementation for undertaking the necessary course corrections.

Panchayats as Institutions of Strong Local Governance

- 8.38. Several steps should be taken over the next three years to develop Panchayats as institutions that are capable of providing strong governance at the local level. Panchayat buildings should be equipped with the requisite facilities including electricity and computers with a functional internet connection. States should confer on the Panchayats full administrative and financial control over staff working with them. They should also have the authority to recruit staff, with at least one staff member dedicated to administrative work.
- 8.39. An annual study on the Panchayat Devolution Index (PDI) has been conducted by the Ministry of Panchayati Raj since the year 2006. Examining the underlying reasons²⁷ for the superior performance of certain states on this Index reveals that while devolution has a number of dimensions, some elements are especially critical for increasing its effectiveness. These include “effective transfer of functions based on the principle of subsidiarity,” “unambiguous control of the Panchayat over the functionaries discharging the functions,” “financial authorisation of the Panchayat commensurate to the functional responsibility” and the “ability of the Panchayat to function as cutting edge partners

- with the line department as autonomous agencies in decision making.” Efforts to strengthen Panchayats across various states should focus on these elements.
- 8.40. A limitation of the PDI is that it is based primarily on the outputs of devolution. Efforts should therefore be made to include outcomes, wherever possible, to achieve a better understanding of whether greater devolution is making local economic development and social progress more effective. A percentage of the fund allocation to states under Centrally Sponsored Schemes could be linked to performance on this Index.
- 8.41. Panchayats should also be supported for acquiring the ISO certification. For instance, in Kerala²⁸, a state that has consistently ranked highly on the PDI, the Local Self-government Department has extended support for bringing Panchayats under the ISO class.

¹ Census of India, 2011

² Ministry of Panchayati Raj

³ Socio-Economic Caste Census, 2011

⁴ Socio-Economic Caste Census, 2011

⁵ Ministry of Rural Development, “Report of First Common Review Mission (Volume I)” Thematic Report, 2016.

⁶ Ministry of Rural Development, “Report of First Common Review Mission (Volume I)” Thematic Report, 2016.

⁷ http://rural.nic.in/nertrual/rural/sites/downloads/latest/PRC_Agenda_for_AGENDA1314.pdf

⁸ <http://aajeevika.gov.in/sites/default/files/Ltr%20to%20SRLM-%20Empanelment%20of%20TSA%20Development%20of%20Commodity%20Value%20Chain%20SRLMs.pdf>

⁹ Ministry of Rural Development, Government of India, “Programme Guidelines – Deen Dayal Upadhyaya Gramin Kaushalya Yojana”, 2016.

¹⁰ NITI Aayog, “Report of the sub-group of Chief Ministers on Skill Development”, 2015.

¹¹ NITI Aayog, “ Eliminating Poverty: Creating Jobs and Strengthening Social Programs, Occasional Paper No. 2”, 2016.

¹² “Expert panel asks govt to revise criteria for MGNREGS funding”, Livemint, January 2017.

¹³ Ministry of Rural Development, “Framework for Implementation – Pradhan Mantri Awas Yojana – Gramin”.

¹⁴ Ministry of Rural Development, “Report of First Common Review Mission (Volume I)” Thematic Report, 2016.

¹⁵ Press Information Bureau, “Cabinet approves a New Scheme for promotion of Rural Housing in the country”, January 2017.

¹⁶ NITI Aayog, “Report of the Sub-Group of Chief Ministers on Swachh Bharat Abhiyaan”, 2015.

¹⁷ <http://www.communityledtotalsanitation.org/country/india>

¹⁸ Press Information Bureau, “Himachal Pradesh declared India’s Second Open Defecation Free State”, October 2016.

¹⁹ Jain, A., Ray, S., Ganesan, K. et al, “Access to Clean Cooking Energy and Electricity Survey of States”, 2015.

²⁰ The Hindu, “Providing transparency in rural electrification”, March 2016.

²¹ <http://www.prsindia.org/parliamenttrack/report-summaries/cag-audit-of-pradhan-mantri-sadak-yojana-4414/>

²² Telecom Regulatory Authority of India, 2016

²³ Press Information Bureau, “Cabinet approves ‘Pradhan Mantri Gramin Digital Saksharta Abhiyan’ for covering 6 crore rural households”, February 2017.

²⁴ NITI Aayog, “ Eliminating Poverty: Creating Jobs and Strengthening Social Programs, Occasional Paper No. 2”, 2016.

²⁵ Ministry of Rural Development, “Shyama Prasad Mukherji Rural Mission – Integrated Cluster Action Plan”.

²⁶ Archna, Jyoti, “Rurbanising Gujarat: A Model Approach to Relocate Urban Elements in Rural Gujarat” REMARKING : VOL-1, ISSUE-7, 2014.

²⁷ Tata Institute of Social Sciences, “Devolution Report 2015-16”.

²⁸ <http://www.panchayatgyan.gov.in/documents/20181/76396/Facts+and+Best+Practices.pdf/50466cf3-dda0-4155-8ec3-e004222d4795>

CHAPTER 9.

REGIONAL STRATEGIES

Context

- 9.1. Elimination of poverty, increased prosperity and improved education and health indicators are all shared objectives across India. There is also broad agreement that rapid growth and creation of well-paid jobs are important stepping-stones for these objectives. Yet, India's geographical diversity and different levels of development across regions mean that targeted action would be required in less prosperous regions to ensure that a minimum acceptable level of prosperity may be brought to them sooner rather than later. In effect, the common set of national policies must be complemented by policies and programmes targeted at specific regions.
- 9.2. The case for region-specific action based on bringing a certain minimum level of prosperity for all regions at the earliest is reinforced by the fact that within democratic polity, growth and prosperity must exhibit regional balance. That a democratic government must strive to achieve such balance is a given. Unsurprisingly, even though success in this matter has been at best limited, the objective of Balanced Regional Development has consistently featured as an important agenda item in nearly all our Five Year Plans. Special programmes for the Northeast, hilly states and drought-prone regions have been integral to our development effort.
- 9.3. Among recent measures aimed at achieving regional balance at the national level, the Fourteenth Finance Commission recommended a significant 10 percentage point increase, from 32% to 42%, for the states' share in the divisible pool of tax revenues. The principal criteria for the allocation of this enhanced devolution across states are indicated in Table 9-1. The large weight given to "Income Distance" is an important step towards plugging the gaps in per-capita income between states.

Table 9-1: Criteria and Weights for Horizontal Tax Devolution¹

Criteria	Weights(per cent)
Population	17.5
Demographic Change	10
Income Distance	50
Area	15
Forest Cover	7.5

- 9.4. As in other large countries such as the United States and China, geography is a key differentiator in India. Several regions in the country exhibit geographical characteristics that are different from the rest of the country. These characteristics require region-specific policies and programmes. The case for geographically targeted action becomes particularly salient when certain regions suffer from persistently lower incomes and higher incidence of poverty. Targeted action may also make sense if absent such action the economic potential of a region would remain underexploited. With these factors in view, in the following, we focus on targeted actions in four regions of India:
 1. North Eastern Region (NER)
 2. Coastal Areas and Islands
 3. North Himalayan States
 4. Desert & Drought prone areas

North Eastern Region

Context

- 9.5. NER of India includes Sikkim and the Seven Sister states of Assam, Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Tripura and Nagaland. The region constitutes 3.07% of the population and 7.97% of India's total geographical area². These states together share 5,300 km of international borders³ with key regional and international players such as China, Bangladesh, Myanmar, Nepal and Bhutan. The region is rich in natural resources like water, petroleum and natural gas. 52% of the NER is covered with forests and is endowed with exotic flora, fauna and a rich mineral resource base⁴. However, physical isolation of the region post-1947 and a pause in infrastructure development after the India-Pakistan war of 1965 has hampered the region's economic growth.
- 9.6. In terms of infrastructure, the NER has approximately 2,600 km of railway lines, but only two state capitals are connected by rail (Assam and Tripura)⁵. The road network is characterized by low density and poor quality of roads. The 11 airports⁶ in the region do not provide interstate connectivity and Kolkata serves as the only hub for the NER. The inland waterway transportation network, a traditional mode of cheap and fast transportation in the region has suffered immensely since independence.
- 9.7. This lack of connectivity and infrastructure has also led to low trade activity in the region. 95% of India's exports to neighbouring states of Bangladesh, Bhutan and Myanmar are from regions other than North East India. This is so despite the fact that the region is the natural gateway (with 98% international borderlines) for India to the East Asian, South East Asian and South Asian economies⁷.
- 9.8. The region has a huge potential for generation of hydropower, solar power and wind energy. The region also boasts of significant shale oil reserves⁸. Despite this, the region lacks in energy self-sufficiency. The main factors contributing to this are low capacity utilisation of power generation units, weak connectivity with the eastern grid and a limited carrying and distribution capacity. The per capita electricity consumption of the region was around 292 kilowatt hour (kWh) compared to the national average of 884 kWh as of 2011-12⁹.
- 9.9. In summary, the region has immense unexploited potential for development.

Action Agenda

- 9.10. A top priority for the next three years is ironing out the transit treaties and the development of physical infrastructure between the NER and neighbouring countries. We must forge digital connectivity, distribution of power and transport links with the latter.
- 9.11. On-going transport connectivity projects including the East West Corridor, Special Accelerated Road Development Project (SARDP-NE) and Trans Arunachal Highway should be closely monitored. The following measures should be taken to stimulate the progress.
 1. Enabling expedited approvals with Ministry of Road Transport and Highways (MoRTH) officials making frequent visits to NER and some meetings of the high powered committee (HPC).
 2. Pro-active assistance and cooperation from the State Governments along with capacity building in the relevant departments.
 3. Setting up dedicated Project Implementation Units (PIUs) exclusively for projects under SARDP-NE and Arunachal Package of Roads.
 4. PIUs should be provided with financial and administrative powers to improve speed of decision making.
- 9.12. There is an on-going major rail construction programme in the NER. 25 rail projects are under way in the region of which 11 are national projects¹⁰. These projects are now on a firm footing with accelerated funding provided to NER projects. This should be continued to achieve the vision of connecting all state capitals by 2020, which should also be closely monitored. The Central Government should continue the high level of funding at around Rs. 6,000 Crore per annum. Furthermore, to fulfil the requirement of fast, reliable and frequent intercity services to connect the intra-regional hubs:

1. The speed and frequency of Rajdhani services should be improved from Guwahati.
 2. Diesel Multiple Units (or DMUs which are multiple-unit trains with on-board diesel engines) should be augmented for the Northeast Frontier Railway.
 3. The State Governments should get involved pro-actively to address local issues like law and order (e.g. in the Jiribam-Imphal project) and land acquisition issues among others.
- 9.13. A key project for international connectivity is the rail link from Imphal to Moreh and further from Moreh to Kalay (in Myanmar). This will link the NER to the Trans Asian Railway network. Cost estimate as per survey done by Indian Railways is Rs. 5,500 Crore for Imphal–Moreh (Rs. 3,000 Crore for Moreh to Kalay)¹¹. The Ministry of Railway (MoR) and Ministry of External Affairs (MEA) should discuss and concretize further action on this project with the intention to commence construction by 2018.
- 9.14. The Agartala-Akhaura rail project is an important project of 15 km which would reduce the distance between Kolkata and Agartala by 1,200 km¹². This has already been sanctioned. The Ministry needs to put the project on fast track with the aim of completing the construction by 2020.
- 9.15. The 4-5 km stretch between the border city of Zokhawthar in Mizoram and Rih in Myanmar, is important for connectivity between the two countries up to Mandalay. Upgradation of this stretch should be prioritised and completed in the next three years¹³.
- 9.16. Indo-Bhutan connectivity could be enhanced by entering agreements to construct the 12km stretch on the Bhutan side which would connect Bhutan to Tawang in Arunachal Pradesh
- 9.17. National / State highways and rural roads in the NER come under intense pressure given the region's exposure to heavy rains and landslides. The share allocated for road maintenance from the Central Road Fund (CRF) remains small and should be increased. Further details on this recommendation can be found in the chapter titled "Transport and Connectivity."
- 9.18. The government should ensure that key regional connectivity projects are either cleared for execution or are tweaked to accommodate the concerns of the related parties. These projects include:
1. Kaladan Multi-Modal Transit Transport Project
 2. India-Myanmar-Thailand Trilateral Highway
 3. Bangladesh China India Myanmar Corridor
- 9.19. Up gradation of Guwahati to an inter-regional aviation hub will be an important milestone for the region which should be expedited. Additionally, Agartala, Itanagar, Imphal and Dibrugarh should be developed as intra-regional hubs by 2020 by approving project proposals for developing hangars at Agartala, Imphal and Dibrugarh. Furthermore, regional governments should collectively aim to increase the frequency of intra-regional services by using a hub and spoke model with the use of small aircrafts like ATRs and helicopters.
- 9.20. Brahmaputra and Barak rivers were pivotal river connectivity routes prior to 1947. By 2018, concerned departments should commission feasibility studies followed with the commencement of dredging and channel stabilization works for creating around 20 new ports in these rivers. Such river port and ancillary facilities would enhance the connectivity across the region and bring down the freight movement costs. More importantly, in 2017, the protocol for Inland Waterways between Bangladesh and India should be extended for at least 10 years and not from year to year which leads to high level of uncertainty. MEA should take this up with Bangladesh on high priority.
- 9.21. A significant improvement in the region's sea connectivity, within three years, can be achieved by taking follow-up action on the recent agreement for transit through Chittagong and Mongla ports and executing infrastructure investments at Ashuganj and Akhaura, Bangladesh. This will add to the existing benefits of the revised India-Bangladesh Protocol on Inland Water Transit & Trade.

- 9.22. Over the next 3 years, the government should move ahead with securing motor vehicles agreements with key nations of Myanmar and Thailand. The aim should be to further expand these agreements to other Southeast nations of Cambodia, Laos, Vietnam and Malaysia. Although still to be fully implemented, the Bangladesh-Bhutan-India-Nepal (BBIN) Motor Vehicle Agreement in 2015 should be used as a benchmark.
- 9.23. Currently, various laws restrict the felling and transit of tree species which are grown on Non-Forest or Private land. In November 2014, the Ministry of Environment and Forests issued “Guidelines for Liberalizing Felling and Transit Regime for Tree Species Grown on Non-Forest / Private Land.” The aim was to encourage private land owners, farmers and industries among others to invest in tree plantations who are currently discouraged to grow trees on their land owing to these restrictions. Adoption of these Guidelines, along with the recently introduced “Wood-Based Industries (Establishment and Regulation) Guidelines, 2016,”¹⁴ would help in meeting the growing domestic demand for wood and paper based products, increase employment and help achieve the government’s goal of 33% forest and tree cover¹⁵. States, especially resource rich North Eastern states, should be encouraged, depending on their local conditions, to liberalise as many tree species as possible from the felling and transit rules by adapting the recommended Guidelines.
- 9.24. The government should implement Centrally Sponsored Schemes for the development of special industries including sericulture, floriculture, tea plantations and the silk industry. Artisans and handicraft industry of the region should also be promoted. A dedicated Action Agenda, which aims at securing a shelf for Northeast products in national and international exhibitions and boost the visibility and sales uptake of products from this region, should be put in place over the next three years. A focus should also be on developing existing and new vocational and industrial training institutions in order to develop the skills needed to support the above mentioned special industries.
- 9.25. Steps should be taken to boost milk production in North East India where, as of 2015-16, the per capita availability of milk for North East states, i.e. Arunachal Pradesh: 105 grams per day, Assam: 70 grams per day, Manipur: 76 grams per day, was significantly lower (except Sikkim with 282 grams per day) than the national average at 337 grams per day¹⁶. This has acted as one of the main deterrents to the development of the dairy industry in the region which suffers from poor processing infrastructure, lack of distribution networks among others. A well-developed dairy industry would enable balanced growth within the region especially for small farmers without land and for people in the hilly areas. Over the next three years the goal should be to bring the average productivity of cattle in the region at par with the national average. This can be done by engaging cooperatives and private players from other parts of the country to conduct research on increasing milk production yield.
- 9.26. Public-Private Partnerships (PPPs) and Private Projects should be used as a near term tools to boost power generation capacities. Furthermore, by 2020, Sikkim should be connected to the North East grid whereas the link between Eastern and North East grid should be strengthened. In addition, a Shale Oil and Gas Authority should be set-up by 2018 to exploit the shale oil and gas reserves in Assam and Arunachal Pradesh.

Coastal Regions and Islands

Overview

- 9.27. The Indian coastal zone comprises (i) east and west coasts of the mainland (Gujarat, Maharashtra, Goa, Daman & Diu, Karnataka, Kerala, Tamil Nadu, Puducherry, Andhra Pradesh, Odisha, West Bengal), (ii) three groups of islands, the Lakshadweep in the southern Arabian Sea and the Andaman and Nicobar island groups in the eastern Bay of Bengal. Together, they constitute a coastline of 7,516.6 km (mainland accounts for 5,422 km, Andaman and Nicobar Islands 1,962 km and Lakshadweep coast extends 132 km) which is endowed with a rich mix of coastal ecosystem. Approximately 250 million people live within 50 km from the coast¹⁷.
- 9.28. The Andaman group consists of 324 islands of which 24 are inhabited while the Nicobar group includes 28 islands of which 12 are inhabited. The major coastal issues observed in Andaman Islands are a) Loss of Coral Reefs, b) Mangrove Deforestation, c) Loss of Sandy Beaches and d) Loss of Forest. In Andaman & Nicobar Islands, approximately 87% of the land is notified as reserve/deemed forest with only 6% of the land available for development¹⁸.

- 9.29. The Lakshadweep group has 10 inhabited islands¹⁹, which boast of an egalitarian and homogenous society²⁰. Limitations and constraints in Lakshadweep include limited landmass, lack of freshwater resources, typology of soil, exposure to natural disasters, and flat, sandy terrain leading to sanitation and drainage problems among others.
- 9.30. There are 77 cities²¹ in the coastal region of India, including major cities like Mumbai, Kolkata, Chennai, Kochi and Visakhapatnam. Traditionally, coastal areas are highly populated and developed because they are the places where trade, transport, communication and civilization are well developed. Furthermore, the population density per square km in most of the coastal cities is usually higher which increases population pressure leading to resource depletion and environmental degradation.
- 9.31. Among recent initiatives, in 2015, the government of India gave approval for the Sagarmala Project. The Sagarmala Project will be used as a vehicle to: 1) use institutional framework to push for port-driven development along the Indian coastline; 2) upgrading the port infrastructure to meet the present day demands; 3) developing integrated transport infrastructure for connecting the coast to the rest of India. The project aims to deliver over 150 projects and expects to mobilise over Rs. 4 Lakh Crore, creating around 1 Crore new jobs²².

Action Agenda

- 9.32. Recently 26 islands²³ were selected for holistic development by the Department of Border Management under the Ministry of Home Affairs. These islands should submit their development proposals and conclude feasibility studies by 2018. The studies should include areas like infrastructure, tourism, agriculture and sustainable energy generation. The tourism proposals should focus on eco-tourism given the nature of geography. Thereafter, third parties should be selected to develop them as tourist destinations.
- 9.33. In line with the Tourism Section of the “Trade, Industry and Services: Creating Well-Paid Jobs” chapter, the Central Government has expressed interest in developing 10 of the 26 islands mentioned above into global tourist destinations. The development of these island destinations, which would primarily target foreign tourists, would be facilitated by focusing on three areas: i) attracting private investment to develop facilities, ii) creating jobs for local communities through training and knowledge transfers and iii) developing the islands in a sustainable manner.
- 9.34. The Ministry of Shipping along with the Directorate General of Lighthouses and Lightships identified 78 lighthouses in coastal states and the islands of Andaman and Nicobar and Lakshadweep in order to develop them as centres of tourism under the PPP route²⁴. Proposals and feasibility studies for the selected 78 lighthouses should be completed by 2018.
- 9.35. Beach holidays across the globe have grown by 18% over the last five years and remain the most important segment of leisure travel constituting 28% of all holiday trips²⁵. India’s long coastline presents a significant opportunity in this space. Steps should be taken to promote beach tourism via an integrated effort from coastal states and islands. Details of the planning and development of five tourism zones around beaches are included in the Hospitality, Travel and Tourism Section of the “Trade, Industry and Services: Creating Well-Paid Jobs” chapter.
- 9.36. India wants to remove the regional disparity between the western and the eastern coast by creating India’s first industrial corridor, a 2,500-kilometre-long East Coast Economic Corridor. The Asian Development Bank has already approved USD 631million²⁶ for this corridor, which will run along the Vishakhapatnam-Chennai coastline. By 2020, SPVs focused on creating dedicated connectivity of this corridor with the other trade routes within India should be formed. Also, in the next three years, corridor developers should submit their findings on climate change and resilient infrastructure to the Government of India, State Governments and the Urban Climate Change Resilience Trust Fund, which has provided a grant of USD 5 million and technical assistance worth USD 1 million²⁷.
- 9.37. The National Sagarmala Apex Committee (NSAC) 2015 meeting proposed to create Special Purpose Vehicles for the 14 Coastal Employment Zones (CEZs)²⁸. These CEZs are inspired by China’s development strategy where Special Economic Zones (SEZs) were created along the Chinese coast in the early 1980s. Shenzhen provides the best example of such a zone. Now a city with 2,050 square kilometres in area, 11 million population and per-capita income of USD 24,000, Shenzhen was a group of fishing villages with a population of 300,000 in May 1980, which is when it was

declared an SEZ. This strategy should be replicated in India and it is recommended that two CEZs are created within the next three years, one on the east coast and the other on the west coast. A limited number of initial CEZs have better chances of capturing agglomeration economies and producing results over a relatively short period. More details, including the main features of these zones are given in the chapter “Trade, Industry and Services: Creating Well-paid Jobs.”

- 9.38. Vulnerability and risk assessment of the coastal and island regions for natural calamities, particularly cyclone, flooding, earthquake and tsunami should be completed by 2018. State Governments should adopt the urban resilient infrastructure policy to contain the losses of any natural calamity by 2020.
- 9.39. The coastal municipalities and islands’ local municipalities should either through third party or through PPP mode devise and implement waste disposal plans by 2020. Focus should be laid on generating employment, adopting sustainable waste disposal mechanisms and generating revenue.
- 9.40. Widespread use of Integrated Coastal Zone Management (ICZM) as an effective tool for sustainable management of the coast should be encouraged²⁹.

Northern Himalayan States

Overview

- 9.41. The Northern Himalayan states in India include Jammu & Kashmir, Uttarakhand and Himachal Pradesh. The common problems across these states include harsh weather conditions, poor connectivity, low land availability for development purposes due to high proportion of forest cover and inaccessible terrain, among others. These constraints lead to difficulties in public service delivery, which restrict development.
- 9.42. However, the per capita incomes in 2013-14 at constant prices for Himachal Pradesh, Jammu & Kashmir, and Uttarakhand were Rs. 54,494, Rs. 31,448 and Rs. 59,161, respectively, as against the National Per Capita Income of Rs. 39,904³⁰. With the exception of Jammu and Kashmir wherein the income is depressed due to security concerns, the incomes of the remaining Northern Himalayan states fare well overall. Similarly, in terms of infrastructure, as of March 2011, Jammu and Kashmir had 0.56 km of highway length per 100 sq. km whereas Himachal Pradesh and Uttarakhand stand at 2.53 and 3.82 respectively versus a National average of 2.42³¹.
- 9.43. Disparities are seen at a granular level where in Uttarakhand and Himachal Pradesh, the development has predominantly been in the plains and the hill districts have been left behind. For example, Uttarakhand fails to provide yearlong connectivity to towns and villages at higher altitudes. Furthermore, all the hill districts have subsistence farming as their main economic activity. Due to subsistence livelihood, migration and remittance economy operate in the hill districts.
- 9.44. At the national-level, the wastelands occupy 19.4% of the total geographical area whereas in the Himalayan states (including the North-East states) wastelands occupy one-third of the area. In addition, one-fifth of the land in these states is either under snow or barren³². These states are also close to the Himalayan glaciers that are an important source of fresh water for India.
- 9.45. Jammu and Kashmir has experienced unrest in the form of terrorism and insurgency for a long time. However, opportunities for development exist as the state has an unparalleled environment for making horticulture and floriculture as key economic drivers. The predominantly agrarian economy benefits from its agro-climatic diversity which varies from sub-tropical in Jammu to cold arid in Ladakh.

Action Agenda

- 9.46. Jammu and Kashmir’s handicraft industry is fast gaining prominence in the global markets and should be looked as being developed as an industrial cluster. The State Government should focus on incentivising exports by small-scale industries such as carpet weaving, silks, shawls, copper and silverware among others.

- 9.47. The State Government of Jammu and Kashmir should also focus on finalising the current tourism policy in 2017. The policy is in its draft form and has the vision of positioning Jammu and Kashmir as a leading global destination by 2025³³.
- 9.48. By 2019, the state universities of this region should establish research centres on developing and spreading the use of technology/instruments/materials agreeable to the hill economy and ecology. Furthermore, a Centre for Excellence should be created at a reputed university that focuses on advancing the knowledge on the impact of climate change on Himalayan states. Launching separate courses in mountain hospitality and tourism, sustainable economic development in Himalayan states, and mountain-specific planning, administration, engineering, social sciences will create a cadre to better administer these regions.
- 9.49. Alternative industries like animal husbandry, fruit and timber plantation and floriculture among others where the region has a comparative advantage should be identified. By 2018, policies to boost and organise these areas should be put in place. These industries will help complement existing income and diversify sources of revenue for these states.
- 9.50. A state level plan should be created on dealing with the by-products of development work, including waste, disposal of excavated earth, cutting of hillsides, etc. in a manner that minimizes the vulnerability of the area to natural calamities.
- 9.51. The Himalayan states should accord approval for infrastructure projects involving diversion of forestland up to an area of 10 ha from the present limit of 5 ha³⁴.
- 9.52. A feasibility study on establishing a railway line for the Western Himalayan region connecting Jammu & Kashmir, Himachal Pradesh, and Uttarakhand should be planned and conducted. This should also be connected with the North Eastern states.

Desert and Drought Prone Areas

Overview

- 9.53. The desert region in India comprises 7 hot and cold deserts. The cold desert is mainly present in Jammu and Kashmir whereas the hot deserts are spread across six states, Rajasthan, Gujarat, Punjab, Andhra Pradesh, Karnataka and Haryana. The cold desert in Jammu and Kashmir is restricted to Ladakh district but covers more than 70,000 sq. km of the area³⁵. The key features of these deserts are harsh weather conditions, wind erosion, shifting of sand dunes (in hot desert), and unsuitability for agriculture and water scarcity, among others. These conditions together do not provide suitable conditions for healthy economic growth.

Action Agenda

- 9.54. New tourist circuits should be created in the desert regions and closer ties with neighbouring circuits should be established to increase footfall. For e.g. tourists visiting Delhi, Agra and Jaipur have easy access to the Desert Circuit in Rajasthan (through Jaipur) which includes places like Bikaner, Ajmer and Jodhpur. Other such circuits should be identified and developed. A pool of people trained in tourism activities such as guides, travel organizers, chefs, and artisans, among others, should be created and expanded. A detailed action point for skill development in the tourism sector is included in the Tourism section of the “Trade, Industry and Services: Creating Well-paid Jobs” chapter.
- 9.55. Alternate livelihoods will increase the adaptive capacity of the population. Eco-tourism, handicrafts and culture based products could provide for alternative means of livelihood in cold desert. Additionally, wool processing industries can be set up under the small-scale sector in the Ladakh region. The available sheep and goat wool can support units for manufacturing shawls, blankets and carpets. Finally, a feasibility analysis on using medicinal plants in Ladakh for commercial scale use should be conducted.

- 9.56. The deserts, both cold and hot, face the issue of inaccessibility to basic education. Provision of education, i.e. school and vocational training, will help the people move out from primary occupation engagement.
- 9.57. Both power and water supply are inadequate in Ladakh, particularly in the far-flung areas. Provision of these public services must be prioritised to increase the living standard of residents.
- 9.58. The government should provide public investment and research over the three years for rejuvenating the water stressed horticulture crops under Mission for Integrated Development of Horticulture (MIDH). Interventions focusing on fodder production in drought affected districts/blocks should also be explored.
- 9.59. The 50% ceiling enhancement on seed subsidy should be continued till 2020. Furthermore, the Diesel Subsidy Scheme which enables farmers in affected areas access irrigation through diesel pump sets in drought areas should also be continued. Finally, the allocation of additional guaranteed work days of unskilled labour in drought affected areas should be maintained³⁶.
- 9.60. Greater credit availability for solar power generation in the desert areas should be provided. Increased role of PPP format projects is needed to expedite development of mega solar power plants. Moreover, the Ministry of Power should continuously monitor the progress of these projects.

¹ Fourteenth Finance Commission Report, 2014

² Ministry of Home Affairs.

³ KPMG, "Emerging North-East India - Economically and socially inclusive development strategies", 2015.

⁴ Ministry of Development of North Eastern Region - Vision 2020 (http://mdonergov.in/sites/default/files/silo2_content/ner_vision/Vision_2020.pdf)

⁵ Ministry of Railways, "Master Plan for development of Rail Infrastructure in the North East Region", 2011.

⁶ Ministry of Development of North Eastern Region. <http://mdonergov.in/node/1317>.

⁷ PwC, "Gateway to the ASEAN, India's north east frontier", 2014.

⁸ KPMG-FICCI, "Emerging North East India", 2015.

⁹ <https://data.gov.in/catalog/capita-consumption-electricity>

¹⁰ http://www.unescap.org/sites/default/files/5.2_Manoj_Singh_NITI_Aayog.pdf

¹¹ http://www.unescap.org/sites/default/files/5.2_Manoj_Singh_NITI_Aayog.pdf

¹² http://www.unescap.org/sites/default/files/5.2_Manoj_Singh_NITI_Aayog.pdf

¹³ Ministry of Development of North Eastern Region. <http://www.mdoner.gov.in/node/1505>

¹⁴ Wood-Based Industries (Establishment and Regulation) Guidelines, 2016.

¹⁵ <http://pib.nic.in/newsite/PrintRelease.aspx?relid=93492>

¹⁶ <http://www.nddb.org/information/stats/percapitavail>

¹⁷ <http://www.moef.nic.in/sites/default/files/nlcp/C-%20Biodiversity/C-2.pdf>

¹⁸ http://demsme.gov.in/dips/state_wise_dips/State%20Industries%20Profile%20of%20A&N%20Islands.pdf

¹⁹ <http://lakshadweep.nic.in/>

²⁰ Planning Commission, "State Development Report – Lakshwadeep", 2007.

²¹ Senapat, S., Gupta, V., "Climate change and coastal ecosystem in India: Issues in perspectives", International Journal of Environmental Sciences, Volume 5, No 3, 2014. Mumbai

²² Press Information Bureau, "Sagarmala National Perspective Plan Released", April 2016.

²³ NITI Aayog, "Preparation of Concept Development Plans and Detailed Master Plans for Holistic Development of 10 Islands."

²⁴ Press Information Bureau, "Ministry of Shipping to develop 78 lighthouses as tourism centers", April 2016.

²⁵ ITB, "World Travel Trends Report 2014/2015"

²⁶ <https://www.adb.org/news/adb-approves-funds-build-india-s-first-coastal-industrial-corridor>

²⁷ <https://www.adb.org/news/adb-approves-funds-build-india-s-first-coastal-industrial-corridor>

²⁸ Press Information Bureau, "14 Coastal Economic Zone identified Under Sagarmala," November, 2016.

²⁹ <http://projects.worldbank.org/P097985/integrated-coastal-zone-management?lang=en>

³⁰ <http://niti.gov.in/content/capita-nsdp-constant-2004-05-prices-2004-05-2014-15>

³¹ Basic Road Statistics of India

³² Planning Commission, "The committee to study development in Hill states arising from management of Forest lands with special focus on Creation of infrastructure, livelihood and Human development," November 2013

³³ Department of Tourism, Jammu and Kashmir. "Draft Tourism Policy," February 2015 <http://www.jktourism.org/draft-tourism-policy.html>

³⁴ Planning Commission, "The committee to study development in Hill states arising from management of Forest lands with special focus on Creation of infrastructure, livelihood and Human development", November 2013

³⁵ Basant Ballabh, OP Chaurasia, PC Pande & Z Ahmed, "Raw edible plants of cold desert Ladakh."

³⁶ Press Information Bureau, "Steps Taken by The Central Government for Relief to Farmers in view of Deficit Monsoon", September 2015.

Part IV

Growth Enablers

CHAPTER 10.

TRANSPORT AND CONNECTIVITY

The Context And Challenges

- 10.1. India's transportation sector has seen accelerated growth since Prime Minister Atal Bihari Vajpayee launched the four-lane Golden Quadrilateral highway connecting the four Metros, Delhi, Mumbai, Chennai and Kolkata. This acceleration has been a key factor in India's 8.3% average growth from 2003-04 to 2011-12. The transport sector facilitates trade and migration, thereby raising productivity in other parts of the economy. As a large sector in itself, it also contributes to growth directly. It accounts for a large part of construction activity. The movement of people, which this sector facilitates, is also a key source of social integration and transformation. For these reasons, transport and connectivity are central to India's economy and society.
- 10.2. Nevertheless, transport and connectivity in India face several challenges that lead to inefficiencies and below-potential attainment of productivity:
 1. *The transport network is not planned holistically.* The lack of interconnectedness and synergies in the transport network prevent the efficient movement of people and goods. Intermodal connectivity also remains weak with a particular lack of connectivity between ports and inland modes of transport.
 2. *Maintenance of different modes of transport infrastructure is poor.* The Indian Railways find it challenging to maintain and service their existing capacity. Maintenance of national highways and roadways is done largely after problems occur and are reported instead of pre-emptive maintenance being an integral part of service. This leads to non-uniform standards, hinders service quality and lowers productivity.
 3. *The capacity of physical transport infrastructure is limited.* Congestion on roads and railways is common due to capacity constraints. At times, the limited rail capacity for carrying goods prevents the transport of inputs such as coal in a timely manner.
 4. *The transport network has severe modal imbalances.* For example, over time, roadways have become the dominant mode of transport of goods at the cost of railways, despite the latter's economic and environmental advantages over the former. Similarly, inland waterways remain underutilized as a mode of transport. In freight carried by surface transport, the share of roads rose from 13.8% in 1950-51 to 38.1% in 1990-91 and 64.5% in 2011-12. The trend was similar in passengers carried by surface transport with the share of roads rising from 25.7% in 1950-51 to 72.2% in 1990-91 and 85.9% in 2011-12. The share of railways in 2011-12 stood at 35.5% in freight and 14.1% in passenger traffic¹.
 5. *Transport safety, particularly road safety, remains poor.* In 2015, 146,133 deaths occurred due to road traffic crashes. In normalized terms, 930 accidents occurred per 10,000 km of road length in 2013². Over 3 % of India's GDP is lost to road accidents annually, amounting to Rs. 3.8 Lakh Crore in 2014.
 6. *The transport sector remains highly dependent on conventional sources of energy.* In 2014, the sector accounted for 18 % of commercial energy use and 55 % of the use of petroleum products. By 2020, the expected increase in the sector's demand for energy could affect India's energy security.
- 10.3. In the next three years, we should enhance the transport and connectivity network such that it facilitates the efficient movement of people and goods, is accessible, affordable, safe, environmentally sustainable and develops in a manner that is aligned with industry demands. This chapter lays out practical steps to achieve this in the major modes of transport: roadways, railways, civil aviation, shipping and ports and inland waterways. The action items under each

of these modes highlights access to transport, infrastructure, logistics, service delivery, safety, finance and international connectivity.

Roadways

- 10.4. India had the second largest road network in the world with over 4.24 million km of roads in 2013-14, consisting of National Highways, Expressways, State Highways, major district roads, other district roads and village roads. In 2014-15, national highways alone made up 97,958 km, a 50% increase in length since 2004-05. The National Highways Development Program (NHDP), the Bharatmala Project and Special Accelerated Road Development Programme-North East (SARDP-NE) focus on the development and improvement of national highways. The Pradhan Mantri Gram Sadak Yojana (PMGSY) and Bharat Nirman focus on the construction and maintenance of rural roads. The development of secondary road networks falls under the purview of state governments.

Road Connectivity and Mobility

- 10.5. *Increase connectivity, especially in Rural India and with Ports by expanding the road network.* The Ministry of Road Transport and Highways (MoRTH) announced a target of awarding 25,000 km of National Highways and constructing 15,000 km in FY2017. Construction is underway for the Delhi-Mumbai Industrial Corridor (DMIC), connecting the two cities via a 1504-km-long Dedicated Freight Corridor (DFC) that will run parallel to the Delhi-Mumbai leg of the Golden Quadrilateral Highway. The Special Purpose Vehicle (SPV) for the Project, the Delhi-Mumbai Industrial Corridor Development Corporation Limited (DMICDC), should ensure that construction is completed on time by 2019 to enhance connectivity. While the increase in road construction and freight corridors will help increase connectivity broadly, additional attention should be paid to enhancing connectivity to rural areas. By 2020, we should achieve universal connectivity in rural areas under the PMGSY, which should complete the remaining 35% of road core network. Additionally, the Union Budget 2017-18 identified 2,000 km of coastal connectivity roads to facilitate better connectivity with ports and remote villages. The construction of these coastal roads will also help connect the proposed Coastal Employment Zones (CEZs) to the hinterland as discussed in the chapter on “Trade, Industry and Services: Creating Well-Paid Jobs.”
- 10.6. *Enhance Public Transport in the road segment through allowing private providers.* We should augment capacity of road-based public transport by hiring buses on long term leases and permitting private providers to operate inter-state buses. This will help reduce state governments’ financial stress while providing an additional revenue stream. The Motor Vehicles (Amendment) Bill, 2016 proposes that private sector providers should be allowed to operate in the passenger vehicle segment. In particular, states should be able grant exemptions in stage carriage and contract carriage permits for promoting public transport. The Bill has been introduced but remains pending in both houses of parliament. The passage of the bill should be expedited to increase the capacity of public transport in the road segment.
- 10.7. *Increase the coverage of Electronic Toll Collection (ETC) in National and State Highways.* Equipping lanes with ETC will improve the flow and efficiency of traffic. The National Highways Authority of India (NHAI) has already rolled out a program for ETC on Toll Plazas on National Highways known as “FASTag.” The system uses Radio Frequency Identification Device (RFID) technology for paying tolls directly from a linked prepaid account. It is currently operational at about 240 of the 300+ designated National Highway toll plazas. We should ensure that by 2018, all the designated toll plazas have been equipped with FASTag. We should introduce “RFID Only” lanes to ensure that those using the device can quickly pass through toll plazas. This is a standard practice in the developed countries. Allowing vehicles paying by cash or other means in RFID lanes slows down traffic and works as a disincentive to use the automatic payment facility. We should also track usage of the devices and use the data to improve the system in the future. Further, by 2020, the ETC systems operational on the national highways should be linked with the state highways to ensure a seamless road transport experience and increased productivity. Additionally, the process of checking papers of commercial vehicles traveling across states should be digitized so that they are not stopped repeatedly for physical checking of papers.

Road Maintenance

- 10.8. Improve maintenance of highways and expressways. The quality and maintenance of transport varies across different modes and regions. By 2020, the NHAI must lead the development of an action plan to measure road quality, particularly the riding quality and performance of pavements and bridges. The details of the plan should form part of the basis of awarding future contracts for development and maintenance. Maintenance of national highways and expressways is particularly critical. While Highways and Expressways make up only about 1.7% of the length of all roads in India, they carry about 40% of the road traffic in 2014-15. We should also encourage research and innovation in road construction technology and the use of durable materials. Further, we should impose heavy penalties on contractors for poor quality of Operations and Maintenance.
- 10.9. Allocate additional funds for maintenance of all roads. Across the country, roads are found in varying states of disrepair due to natural causes as well as heavy use. For example, landslides often wash out roads in the North East states during the monsoons while excessive wear and tear can render them unusable even in flat terrains. The Central Road Fund (CRF) Act, 2000, creates a Central Fund that is administered and managed by the Centre. The non-lapsable fund can be used for the development and maintenance of national highways, state highways, the development of rural roads, construction of roads near railways and prescribed projects. Although road maintenance is included in the CRF's mandate, the funds allocated for this purpose remain relatively small. In 2017-18, the MoRTH allocated Rs 3,108 Crore towards the maintenance of roads and highways, including the amount under the CRF. This amount makes up about 5% of the Ministry's expenditure. In contrast, the US government allocated about 48% of its total budget for roads and highways towards maintenance of existing facilities. Even recognizing that the bulk of road network in the United States is already constructed, this contrast is stark. Additional funds from the CRF should be earmarked specifically for maintenance activities with pre-emptive rather than reactive approach to maintenance encouraged.
- 10.10. *Define criteria for converting state to national highways.* While converting state highways into national highways is a cost-effective way of expanding the national highway network, it also expands the central government's maintenance responsibilities. Going forward, we need to specify a set of criteria for this conversion.

Road Safety

- 10.11. *Strengthen rules governing road safety by passing the Motor Vehicles (Amendment) Bill, 2016.* The Bill proposes amending the Motor Vehicles Act, 1988 to address issues such as third party insurance, regulation of taxi aggregators, and road safety. As of February 2017, the Parliamentary Standing Committee on Transport, Tourism and Culture has cleared the Bill and proposed revisions. The changes should be incorporated and the passage of the Bill should be expedited to ensure that stronger provisions are in place to ensure road safety.
- 10.12. *Create Road Safety Boards to reduce accidents.* Although the Motor Vehicles (Amendment) Bill, 2016, addresses important issues related to road safety, it does not provide for any road safety agencies at the central or state level. At the state level, we should establish road safety boards to set and enforce rules. The Report of the Parliamentary Standing Committee on Transport, Tourism and Culture recommends creating a National Road Safety Board to ensure that funds are available for upgrading standards. In line with this recommendation, at the central level, an independent National Safety Board that covers different modes of transport headed by outside experts should be established. By 2020, the priority should be to improve road safety in states and union territories exhibiting high death rates per 100 accidents (i.e., Mizoram, Punjab, Dadra & Nagar Haveli, Daman & Diu, Uttarakhand and Nagaland). By 2020, we should also aim to cut in half the 700 blind spots identified by the MoRTH.
- 10.13. *Use data to monitor accidents.* We can do this by use of data to monitor accidents in real time and use this input to direct efforts towards correction on specific points. For example, Tamil Nadu developed software called the Road Accident Data Management System (RADMS) to map road accidents on national and state highways and on urban and district roads. The resulting experience needs to be studied and if successful replicated across states and at the national level.
- 10.14. *Standardize reporting of accidents and enhance preparedness through better logistics.* In addition to pre-emptive actions such as the setting of safety rules, we also need to enhance our preparedness to transport-related accidents. We should introduce

provisions to ensure that whenever an emergency situation occurs, the victims are rushed to a nearby medical centre within 10 minutes of the accident. Creating a standardized format for reporting the treatment of accidents will also help deal with accidents in a more efficient manner. We should also start providing skills training to all employees in the field of safety and raise awareness about safety issues through various media.

- 10.15. *Create supporting infrastructure and economic models to support better safety and efficiency*: Auxiliary infrastructure such as adequate truck stops, truck parking bays, driver rest rooms and highway amenities play a critical role in smooth functioning of the road network. The absence of these facilities fosters driver fatigue, unhygienic eating conditions and can cause accidents. We should thus build these supporting facilities and also explore alternative models to ensure that driver fatigue is minimized and efficiency maximized. A technology-based logistics company, Rivigo, uses one such model. The company creates a relay system where drivers end their shift before getting fatigued and hand their truck to the next driver without interrupting Rivigo's 24-hour route operations.

Railways

- 10.16. In 2014-15, the Indian Railways transported 1,140 billion-passenger km and 682 billion net-tonne km, making it the largest passenger and fourth largest freight transporting railway system globally. Despite its extensive reach and scale, as noted earlier, the share of railways in the total surface freight carried has declined from 86.2% to 35.5% between 1950-51 and 2011-12. The railways also suffer from low capacity, poor utilization of existing capacity, safety issues and lack of quality service delivery in the passenger segment. While the merging of the railway budget with the union budget in 2017-18 will help increase funding for the railways, improving financing to address several of these challenges will require specific actions.

Freight Segment

- 10.17. *Rationalize railway fares to increase capacity utilization along non-major routes in the freight segment*: Currently, freight fares in railways are kept high to cross-subsidize the passenger segment. By 2020, we should substantially rebalance fares such that freight fares are more affordable to increase the usage of railways for freight transport especially in non-major routes. A National Rail Regulatory Authority can be created to determine rail fares and rebalance passenger and freight charges to enhance affordability and utilize capacity in an efficient manner. Rationalizing rail freight tariffs can also help divert cargo traffic from roads to railways, which is more environmentally friendly.

- 10.18. *Implement and plan DFCs*: At the same time as capacity is not fully utilized in non-major routes, inadequate expansion of key corridors and trunk routes has led to congestion and disruptions in the timely delivery of raw materials and intermediate inputs in supply chains. In particular, routes by which coal and iron ore are transported often operate at 100% capacity. A rail route is considered congested if capacity utilization increases beyond 80%. The railway capacity of these routes should be augmented. The completion of proposed freight corridors will help achieve this. By 2020, we should complete and implementation of the two DFCs that are already underway. As regards new DFCs, they must be planned in concert with the rest of the road network. It is also important that we begin new DFCs only after the on-going DFCs are in advanced stages. Starting too many projects results in all of them taking a long time to complete as investible resources get spread thin leading to reduced rates of return.

Connectivity

- 10.19. *Build additional infrastructure for railways to augment capacity and connectivity*: The railways currently suffer from low capacity relative to demand. We need to create additional capacity, drawing lessons from the NHDP. Although any major increases in the rail network size will extend beyond a three year period, we should develop the engineering plans for this expansion by 2020. The goal should be to plan for an increase in network size from 66,000-route km to 80,000-route km by 2032. We should also plan for an increase in the length of routes with multiple electrified lines to approximately 40,000 km and increase gauge conversion by 3,700 km by 2032. We should engage world-class experts and involve the private sector for technical advice and support in building new rail lines and developing new stations.

- 10.20. *Fast track the development of the Mumbai-Ahmedabad High Speed Rail (MAHSR)*: In February 2016, the Government of India formed the National High Speed Rail Corporation Ltd. (NHSRC) as an SPV. The current mandate of the NHSRC

is to implement the MAHSR project. To be carried out in collaboration with the Government of Japan, this project will bring the first Bullet train to India. This is a high priority project, whose progress must be closely monitored to ensure that it is completed as its current schedule. In the next three years, feasibility and desirability of additional similar projects should be studied.

10.21. *Develop semi high-speed trains to enhance connectivity.* We should also enhance semi high-speed rail regional connectivity such as Regional Rapid Transit System (RRTS). This can be done through the introduction of semi high speed lines in sections where the DFCs are planned. The lines should be introduced in a phased manner so that all the High-Density Network (HDN) routes can run passenger services with a travel time of 10-12 hours for cities located within a distance of 1,400 to 1,500 km. The trains should have potential speeds ranging between 160 and 200 km per hour. We should also explore semi high-speed trains that facilitate the completion of overnight travel in 10 to 12 hours and intercity travel of up to 500 km in 3 to 4 hours. This will be important for the tourism sector and has been discussed further in the chapter titled “Trade, Industry and Services: Creating Well-Paid Jobs.”

Service Delivery and Efficiency

10.22. *Enhance service quality in passenger railways.* To increase capacity utilization on passenger trains, we should make reserved accommodation on trains more easily accessible. Additionally, we should facilitate the process of acquiring unreserved accommodation through Automatic Ticket Vending Machines (ATVMs) and mobile applications. We should also develop a system for prompt and real time redress of passenger grievances. This can be achieved by creating round-the-clock call centres to solicit passenger feedback and complaints. To reduce the direct discharge of human waste from trains to zero, we should fit all coaches with bio-toilets by 2020. We should also outsource cleaning, if feasible, to ensure the cleanliness of trains and stations.

10.23. *Improve efficiency of freight railways.* We need to enhance credibility of service commitments in freight trains. A first step for this could be through creating timetables for container trains running on the DFCs. We should also work towards increasing the speed of selected freight trains from 25 kmph to an average of 50 kmph by 2020. We should aim to increase the locomotive Horsepower to Trailing Ratio (HTT) from 1 to 1.2 by 2018 and 1.5 by 2019. We should also explore the potential for universalizing the 25 tonne axle load for progressive adoption of longer and heavier trains for bulk cargo.

10.24. *Improve the quality of railway stations and trains.* Upgrading technology and ensuring cleanliness at railway stations will make the rail experience more comfortable and convenient for passengers. For instance, providing wireless Internet connectivity across stations and trains and sockets with charging points will improve customer’s experience at stations. Stations and trains should be maintained well and cleanliness should be ensured to improve customer satisfaction.

10.25. *Redevelop and modernize railway stations.* The availability and quality of passenger amenities, station buildings, platform surfaces and circulating areas need to be enhanced to better serve the needs of rail passengers. For example, railway stations should also be equipped with modern technologies such as self-service ticketing counters, digital signage, luggage screening machines and escalators and elevators, ensure the availability of wheelchairs and sticks, and follow environmentally friendly practices. The Ministry of Railways has already announced its program to redevelop 400 Stations through a PPP model. It has also given the Indian Railway Stations Redevelopment Corporation Ltd. (IRSRC), an SPV formed in 2012, a mandate to redevelop 8 stations as of 2016. The first phase of this redevelopment project, consisting of redeveloping 23 stations, was launched in February 2017. We should ensure that the project first phase proceeds on schedule and is implemented smoothly. Subsequent phases should be expedited to ensure redevelopment of all 400 stations.

10.26. *Improve the punctuality of trains.* The Ministry of Railways should develop a comprehensive program to improve asset reliability by 10% by 2019. Train punctuality can be improved by developing an integrated block management system. Drawing lessons from turnaround times at key junctions can also help analyse and address barriers to timely operations. In case of inevitable delays, we should minimize the inconvenience caused to passengers. Developing a data-driven, real time system to tabulate potential delays that can also automatically inform passengers of these in advance can help achieve this.

Railway Safety

- 10.27. *Achieve zero fatalities in railways by 2019 by upgrading infrastructure.* Currently Infrastructural upgrades in the railways and adoption of new technologies will help reduce the number of accidents and alleviate safety concerns. By 2019, the Railways should eliminate 6,113 Unmanned Level Crossings (UMLCs) on Broad Gauge Lines. The elimination of these unmanned crossings will reduce accidents and fatalities while also increasing average speed of trains. Other infrastructure updates such as expediting the renewal of overdue tracks of 5100 km and upgrading rolling stock to be more accident-resistant, for example, to Center Buffer Couplers (CBCs), will also enhance safety.
- 10.28. *Improve safety by adopting new technologies.* State of the art technologies can help augment safety in railways. Three key technological interventions can help reduce accidents. First, implementing the already-developed Train Collision Avoidance System (TCAS) technology across the high-density network over the next three years will help bring down the number of accidents manifold. Second, adopting a flood warning system at major bridges and flood-affected locations will help prevent weather-related incidents. Third, the adoption of a technology to enhance mobility during fog or low visibility conditions will also increase safety of passengers.
- 10.29. *Strengthen the institutional framework to ensure safety.* Within the Ministry of Railways, each department defines its own safety parameters for assets. A Standing Committee on Railways submitted its report on Safety and Security in Railways in December 2016 and recommended the creation of a separate department on safety and security. This recommendation should be adopted by 2018 and a designated officer should be appointed to focus on railway safety and address concerns.

Shipping and Ports

- 10.30. India currently has 12 major and 205 non-major ports located across about 7,500 km of coast. Coastal shipping remains largely underutilised, accounting for only 6.5% of the total freight traffic in India in 2014-15, relative to 30% by rail and 57% by road. The total export-import (EXIM) trade handled at all ports increased from 815 MT in 2010-11 to 1,052 MT in 2014-15, registering a Compound Annual Growth Rate (CAGR) of 4.4 %. During the period, the growth in volume of cargo traffic handled at non-major ports has been much higher at 10% than that at major ports (0.5%). The non-major ports in Gujarat and Andhra Pradesh account for a large share of increase in traffic.
- 10.31. The key challenges faced by the sector include a strict regulatory regime, lack of infrastructure and investment and the absence of a competitive ship building industry. By 2020, we should improve the standards in Indian ports to improve logistics and boost export efficiency. We can achieve this by easing the regulatory environment, digitizing the customs process, improving the technology used in the tracking of consignments and adopting additional technology systems to ensure timely deliveries. A uniform Goods and Services Tax (GST) will reduce internal barriers to trade. The improvement of standards and infrastructure in Indian ports will also be crucial in the functioning of the proposed CEZs described in the chapter, “Trade, Industry and Services: Creating Well-Paid Jobs.”
- 10.32. *Increase competition through easing cabotage.* Currently, India does not practice absolute cabotage, or the reservation of coastal cargo transportation for Indian flag vessels. Foreign vessels can carry cargo from one Indian port to another with prior approval from the Director-General of Shipping in case Indian ships are unwilling or unavailable to carry the cargo, exercising their Right of First Refusal (ROFR). Given the inadequate capacity of the Indian coastal fleet and the need for growth in containerization, we should consider further relaxing cabotage laws at least until the coastal shipping sector expands to meet existing demand. Easing Cabotage Laws beyond allowing Indian flag vessels the ROFR at all container handling ports will foster competition in the short term. We could also consider adding certain conditions while relaxing cabotage laws to ensure the development of India’s coastal shipping segment. For example, cabotage could be relaxed for foreign vessels that operate on the coast for at least a minimum duration or number of voyages rather than for a single trip.

- 10.33. *Increase the capacity of and eliminate discriminatory provisions for Indian vessels.* In 2013-14, Indian flag vessels carried 8.5% of cargo. The remaining 91.5% was carried by foreign flag vessels. We need to increase the number and capacity of Indian flag vessels by levelling the playing field between them and foreign flag vessels. First, foreign vessels are exempt

from duty on bunker fuel while Indian vessels have to pay this duty. We should waive duties on bunker fuels for Indian vessels so that they are not at a cost disadvantage. Second, seafarers aboard Indian flag vessels are subject to Indian income tax while those working aboard foreign vessels are not subject to this tax. We should consider relaxing these tax requirements for individuals working on Indian vessels to ensure that they manage to attract enough skilled workers as well as remain cost competitive.

10.34. *Explore creating deep-water ports or barges for ports with low drafts.* The average draft at Indian ports ranges from 8m to 12m, lower than the draft range of 12m to 23m at most international ports. Larger vessels with capacities greater than 10,000 twenty-foot equivalent units (teu) and tankers are not able to navigate into most ports. The few larger Indian ports with deep drafts and infrastructure capabilities are oversubscribed. This reduces operational efficiency of ports, increasing waiting times and reducing efficiency. Delivery times are also longer because of the need for transhipment to larger foreign ports due to the lack of domestic draft capacity. We should explore coastal locations where we can create deep draft ports. In locations where it may not be technically or financially feasible to create deep draft ports, the possibility of creating barges with low drafts should be explored.

10.35. *Facilitate minor/non-major port connectivity to hinterland areas.* Providing rail and road connectivity to major and minor ports will help ensure seamless multimodal transport and improve efficiency. Expediting the development of logistics parks close to ports will also help enhance connectivity.

Inland Waterways

10.36. India has about 14,500 km of navigable inland waterways, including rivers, canals, backwaters, and creeks. Despite its potential to transport large volumes of goods and connectivity to rural areas, inland water transport accounts for a small amount of freight movement relative to other modes. Currently, the bulk of freight traffic is carried on three national waterways, NWs I, II, and III, and the Mumbai and Goa waterways. The traffic on the Mumbai and Goa waterways, which is mostly short lead, is heavier than the traffic on the national waterways. Traffic on NW-I is long lead. Traffic on the National Waterways is dominated by over-dimensional cargo and coal. There has been a significant push towards improving the traffic on inland waterways. The “Jal Marg Vikas” project involves the development of River Ganga stretch between Allahabad to enable commercial navigation of at least 1,500 tonne vessels. Multi-modal terminals are currently being developed at Varanasi, Haldia and Sahebganj, and a new navigational lock at Farraka is also planned. The Inland Waterways Authority of India (IWAI) has a target of achieving 9,286 km of National and State Waterways as well as feeder routes by 2020. The following action points will help increase the connectivity and efficiency of inland waterways in India.

10.37. *Streamline the governance of inland waterways.* Currently, inland waterways are governed by multiple authorities including the Central Inland Water Corporation Limited (CIWTC Ltd), port authorities and state governments. Streamlining the regulatory structure and bringing an overarching body to oversee Inland Water Transport such as the IWAI will bring more consistency in the rules and strategy of the sector.

10.38. *Develop measures for year-round navigation.* Currently, due to weather conditions, several inland waterways are only serviceable during a part of the year. The seasonality of this mode of transport reduces its adoption. Efforts should be made to develop deeper stretches of the river, i.e., at least 2.5 m to 3 m. The development of adequate depth will help achieve round the year navigation. Additionally, we should ensure adequate maintenance of rivers, including continuous dredging to maintain adequate water depth for servicing shipping lines, to facilitate year round serviceability.

10.39. *Ease restrictions on river-sea movement.* River-sea movement, utilizing a single vessel for both inland and coastal waters, lowers transport costs and minimizes handling. However, differences in regulations, construction and operational standards and different survey and certification requirements prevent seamless movement across inland and coastal waterways. By 2020, state authorities should draw up coordinates for inland vessel limits under the Inland Vessel Act for their coastal waters, in accordance with the direction provided by the Directorate General of Shipping. The Ministry of Shipping should also issue notifications for inland vessel limits under the Merchant Shipping Act, 1958. Coordinating the limits by both parties under the two acts will help facilitate river-sea movement.

10.40. *Develop inland waterways transport to facilitate movement of goods to neighbouring countries and the Northeast.* By 2018, state governments should commence work on dredging and channel stabilization to create about 20 new ports in the Brahmaputra and Barak rivers. The inland waterways will enhance regional connectivity and reduce freight costs. The protocol for Inland Waterways between Bangladesh and India should be extended for at least 10 years to reduce uncertainty. Further details on developing inland waterways to improve connectivity in the Northeast are included in the chapter, “Regional Strategies.”

Civil Aviation

10.41. The Civil Aviation sector transported 85 million passengers and 590,793 tonnes of freight in India in 2015-16. The sector also has a significant impact on the productivity and growth of other sectors. Civil Aviation directly and indirectly contributed USD 7,192 billion to India’s GDP and created 9.64 Lakh jobs in 2016. Beyond the direct and indirect effects, the sector also contributes to income and employment through increasing tourism and its supply chain. The sector has grown significantly over the past few years, growing by nearly 22 % between 2014 and 2016 in terms of the number of passengers carried. The government has undertaken several measures to strengthen infrastructure and create a favourable regulatory environment for civil aviation. Given rising disposable incomes, a growing economy and supportive policy environment, the sector expects further growth.

10.42. High costs of flying through metropolitan airports, traffic rights and high aeronautical charges hinder the development of Indian airports as major hubs and slow down the sector’s growth. Four key policy actions can facilitate the development of the civil aviation sector: (1) Aligning the excise duty on Aviation Turbine Fuel (ATF) with international levels (2) adopting a consistent model for tariff determination, (3) removing bottlenecks for the implementation of the second control period in Delhi and Mumbai, (4) allowing credit for aviation infrastructure under the GST and (5) including provisions for domestic hub development while auctioning traffic rights. These actions will help reduce aviation costs, thereby promoting the sector’s growth and help develop hub airports.

10.43. *Align excise duties on ATF to international levels to bring down its cost.* On average, ATF accounts for about 40% of airlines’ total costs, making up the majority of airlines costs. ATF costs in India are among the highest globally and the high costs are exacerbated by a host of duties and taxes. Airlines pay an excise duty of 14% and a Value Added Tax (VAT) ranging between 5 and 30%. Thus, the total effective tax on ATF is between 19 and 44%. Currently, ATF is not included in the scope of GST and the taxes will remain the same going forward. In contrast, the EU does not tax ATF and also does not allow its member states to tax fuel for international flights. To lower the overall cost of ATF, the central government should align the excise duty on it with global benchmarks.

10.44. *Adopt a consistent model for tariff determination.* Currently, Public Private Partnership (PPP) airports in India –Delhi, Mumbai, Bangalore and Hyderabad – operate under a hybrid till mode, where aeronautical revenue and a share of the non-aeronautical revenue are used to determine tariffs. In contrast, Airports Authority of India (AAI) airports operate under a single till structure where all revenues – aeronautical and non-aeronautical – determine tariffs. The Ministry of Civil Aviation has mandated that all airports now move from a single to a hybrid till structure. Conventionally, a single till structure is associated with lower tariffs. Although the hybrid till model is beneficial in that it incentivizes infrastructure investment into airports, it raises costs for airlines and passengers. In the short and medium term, more efficient airline operations, expanded routes and lower airfares will be critical in developing hub airports. Keeping passenger charges low will be critical in maximizing traffic flow in the civil aviation sector. Thus, we should consider the merits of each model and recommend a consistent policy for all airports (PPP and AAI).

10.45. Although airports in the US, Australia, Belgium and New Zealand currently do not include non-aeronautical charges in the calculation of their tariffs, it is important to note that these countries already have well-established hub airports. Australia started out with a single till model and only now has moved to a dual till structure. India could also move to a hybrid or dual till structure once its hub and spoke model is established. This would also encourage further infrastructure investments to expand airports in line with increases in demand.

10.46. *Remove bottlenecks for the second control period to be implemented in Delhi and Mumbai.* Appeals from the DIAL (Delhi International Airport Ltd.) and MIAL (Mumbai International Airport Ltd.) on tariffs are currently with the aeronautical appellate body, the Airports Economic Regulatory Authority Appellate Tribunal (AERAAT). The

appeals have been pending since 2012 and have resulted in tariff structure for the “second control period,” 2014-19, still not being implemented. As a result, these airports continue to charge tariffs applicable in the first control period, originally slated to end on March 31, 2014. They continue to charge higher tariffs making it more expensive for passengers to fly. The bottlenecks for the decision should be removed and the issue should be resolved such that the tariff structure is appropriately adjusted.

10.47. *Allow credit for aviation infrastructure under the GST.* The GST does not provide a tax credit for input taxes on aviation infrastructure. This credit could help reduce airport costs and encourage infrastructure development. The government has already made a similar proposal for cell phone towers and pipelines.

10.48. *Include provisions for domestic hub development while auctioning traffic rights.* The current proposal to offer open skies to countries beyond 5000 km and auction traffic rights to countries within a 5,000 km radius will increase connectivity. However, it may also lead to foreign carriers using their own hubs rather than the Indian hubs. In the past, countries such as Singapore, Turkey and the U.K. have negotiated traffic rights to balance the development of their local hub airports. India should also build in provisions around the use of Indian hubs while auctioning traffic rights. The bidding for slots through the hub airports could also be linked with the bidding for non-hub or non-major routes. This will help cross-subsidize the less frequented routes.

10.49. *Improve service delivery in airports.* For operational airports, we should improve customer satisfaction indices of AAI airports to measure service delivery. Data should be collected on these indices at regular intervals to improve service delivery.

Cross-cutting Issues

Seamless Transport across Modes

10.50. *Increasing Intermodal Connectivity:* For each mode of transport, we need to design plans for achieving complete and seamless access from start to end point. This would also ensure intermodal connectivity. We should shift the coverage of public transport systems to clusters rather than individual locations (cities, towns or villages). By 2020, we also need to develop plans for feeder services such that they connect remote places to main transit routes.

10.51. *Explore the feasibility of logistics parks and expedite the completion of these parks.* The MoRTH has already announced its intention to adopt an integrated transport and logistics framework. As part of this policy, a number of logistics parks around existing industrial clusters are to be built. The master planning for these parks should be expedited and construction on the initially identified parks should begin by 2018.

Logistics and Technology Adoption

10.52. *By 2020, we should improve our logistics performance and witness an improvement in our ranking in the Logistics Performance Index (LPI).* In 2016, India was ranked 35 out of 160 economies along the World Bank’s LPI. In contrast, China was ranked 27th. Logistics efficiency drives a country’s export competitiveness. The implementation of multimodal parks planned to be developed as part of the Logistics Efficiency Enhancement Program (LEEP) should be prioritized, enhancing rail connectivity to the proposed parks. Developing such Multimodal Logistics zones would reduce the cost of production improving India’s logistics performance.

10.53. The adoption of an integrated systems-based approach for logistics along with increased technology-use will help improve efficiency. We should also encourage automation and the use of technology to enhance logistics. For the shipping sector, a Comprehensive Cargo Database should be created. For roads, as discussed previously, ETC should be rolled out on national and state highways under a single technology standard such as “FASTag.”

International Connectivity

10.54. *To enhance transport connectivity with neighbouring countries through various modes, we should work on streamlining standards, technologies and improving the transportation infrastructure.* International connectivity could be greatly enhanced by reclassifying the last few kilometres of all road corridors up to international borders to National Highways. We should standardize

technologies, including track, signalling and rolling stock, in order to introduce commodity specific freight wagons that ply across national borders in South Asia. Furthermore, details on increasing connectivity with the countries adjacent to the North East Region of India are discussed in the “Regional Strategies” chapter.

Access to Finance

10.55. Since the transport sector has direct and indirect effects on economic growth, we should work to ensure increasing investment in the sector. Because public investment is constrained by limited revenues available, we need to explore avenues to mobilizing private investment in a major way. The following steps will help increase private investment into the sector, including through the PPP route: (i) Increasing the technical capacity of government entities that award PPP projects; (ii) Adopting enforcement and monitoring systems to ensure adherence to standardised documentation and regulations. Further, putting in place robust dispute resolution mechanisms will avoid project delays and stalling; (iii) Incentivizing private bidders to adopt international best practices; (iv) Undertaking taxation reforms; and (v) Augmenting institutional financing through innovative mechanisms including the National Investment and Infrastructure Fund (NIIF). We should also use financing and taxation as a tool to facilitate multimodality. The implementation of the GST provides an opportunity to push for this. We should aim to replace various road transport and user taxes with a single composite tax, creating a uniform and transparent tax regime. We should also integrate the administration of taxes related to the interstate movement of freight and passengers by using information and communication technologies (ICT).

¹ See <https://data.gov.in/catalog/freight-and-passenger-movement-road-transport-and-railways>

² Ministry of Road Transport and Highways (2015)

³ Ministry of Road Transport and Highways (2015)

⁴ National Transport Development Policy Committee, “India Transport Report: Moving India to 2032”, 2014.

⁵ Ministry of Statistics and Programme Implementation, “Roads – Statistical Year Book of India”, 2016.

⁶ Press Information Bureau, “Ministry of Road Transport & Highways sets steep targets for 2016-17”, April 2016.

⁷ Delhi-Mumbai Industrial Corridor Development Corporation.

⁸ Motor Vehicles (Amendment) Bill, 2016.

⁹ National Highways Authority.

¹⁰ National Highways Authority of India, “Annual Report 2014-15”.

¹¹ Central Road Fund Act, 2000

¹² Ministry of Road Transport and Highways, “Outcome Budget 2015-16”.

¹³ US Government, “Federal Highway Administration (FHWA) FY 2016 Budget”.

¹⁴ Motor Vehicles Amendment Bill, 2016

¹⁵ Department-Related Parliamentary Standing Committee on Transport, Tourism and Culture on the Motor Vehicles (Amendment) Bill, 2016. Report No. 243. Submitted on February 8, 2017.

¹⁶ <http://www.prsindia.org/uploads/media/Motor%20Vehicles,%202016/SCR-%20Motor%20Vehicles%20Bill,%202016.pdf>

¹⁷ Rivigo website.

¹⁸ <https://rivigo.com/about-us/our-story>

¹⁹ National Transport Development Policy Committee (NTDPC). “India Transport Report: Moving India to 2032”, 2014.

²⁰ National Transport Development Policy Committee (NTDPC). “India Transport Report: Moving India to 2032”, 2014.

²¹ Press Information Bureau, “Revamping Railway Stations Under PPP Model”, September 2015.

²² Press Information Bureau, “Minister of Railways Shri Suresh Prabhakar Prabhu Launched the first Phase of the Station Redevelopment Program comprising 23 major Railway Stations of Indian Railways”, February 8, 2017.

²³ Ministry of Railways, “Presentation on ‘Indian Railways: Vision and Plans 2017-2019’ ”.

²⁴ Parliamentary Standing Committee on Railways 2016-17, “Safety and Security in Railways”.

²⁵ Ministry of Shipping, Government of India.

²⁶ Ibid.

²⁷ Merchant Shipping Act, 1958. PART XIV Control Or Indian Ships And Ships Engaged In Coasting Trade, Section 407.

²⁸ Ministry of Statistics and Program Implementation, “Shipping Statistical Year Book 2016”.

²⁹ ICAO ATR Form 'A' provided by all scheduled airlines in India, Ministry of Civil Aviation.

³⁰ Air Transport Action Group (ATAG), “Oxford Economics analysis”, in Aviation Benefits Without Borders, July 2016.

³¹ A single regulatory till structure includes all costs and revenues at an airport in determining airport charges or tariffs. It includes the overall level of costs required to provide all services at the airport, not just those related to aeronautical services such as charges for runway landing/take-off, aircraft parking and the use of an air bridge. Non-aeronautical sources of revenue include car parking, retailing and renting property. In contrast, a dual regulatory till structure only includes aeronautical costs in determining the tariff.

³² A hybrid regulatory till structure include all costs related to aeronautical services and a pre-specified share of non-aeronautical costs accruing to non-aeronautical services in determining tariffs.

³³ Airports Economic Regulatory Authority of India (AERA) Order No. 47 and Order No. 6

<http://aera.gov.in/upload/order/5707a2fc978dCorrigendumtoOrderNo.47201516.pdf>

<http://aera.gov.in/upload/order/574d6a921cb87Orderno.06201617.pdf>

³⁴ World Bank, “Logistics Performance Index”, 2016.

CHAPTER 11.

DIGITAL CONNECTIVITY

The Context And Challenges

- 11.1. Digital connectivity facilitates the communication and commerce that drives economic growth. Individuals cannot transfer payments digitally, use e-governance portals to connect with the government, access information or make online purchases without continuous and reliable Internet or telephone access. The Digital India Programme, an inter-ministry campaign launched in 2015, has made significant progress in its nine growth areas. The areas of focus include building broadband highways, providing universal access to mobile connectivity, a public internet access program, e-governance, electronic service delivery, access to information, increasing electronics manufacturing, providing information technology skills for jobs and early harvest programs.
- 11.2. Despite significant progress in the past decade, digital connectivity in India remains low, particularly with respect to Internet connections. Currently, India has only 151 million broadband subscribers relative to nearly 1,060 million telephone subscribers¹. Tele-density, or the number of telephone connections for every 100 individuals, is 83. In rural areas, the tele-density is one-third that of urban areas. Approximately 55,619 villages do not have mobile coverage.
- 11.3. The Action Agenda for enhancing digital connectivity is based on the following strategic objectives:
 1. **Enhancing digital infrastructure.** Soft and hard digital infrastructure such as network and cloud computing, fibre optic cables, mobile network penetration and regulatory framework including digital standards, are critical for enhancing connectivity and, more generally, promoting economic development.
 2. **Developing software for services that can be provided digitally.** Digital provision of services for individuals and firms will help reduce transaction costs. Electronic databases and online applications for government departments will increase efficiency, automation and transparency.
 3. **Empowering citizens digitally.** In the long term, digital connectivity will be important in empowering citizens by enhancing engagement, knowledge sharing, collaboration and providing opportunities for participative governance.

Access to Broadband Internet to Rural Households

- 11.4. Rolling out broadband access² is among the highest priorities of the government. The government has already commenced a large-scale initiative, BharatNet, implemented by the Bharat Broadband Network Limited (BBNL), to create a high-speed digital highway for providing 100 Mbps connectivity to all 2.5 Lakh Gram Panchayats using optical fibre. In the first phase, ending on 31 March 2017, 2.2 Lakh km underground optical fibre was to be laid down to connect one Lakh Gram Panchayats. But as of 5 March 2017, only 1.76 Lakh km of fibre had been laid down with 77.8 thousand Gram Panchayats connected.
- 11.5. In the second Phase of the BharatNet, which is to be completed by December 2018, all 2.5 Lakh Gram Panchayats are to be provided fibre optic connectivity. During this phase, underground fibre, fibre over power lines, radio and satellite media are to be optimally mixed. In this phase, use will also be made of the electric pole network on which electric power lines are mounted.
- 11.6. The access to Internet to be made available under BharatNet is a prerequisite for enhancing other aspects of digital connectivity. For example, two of the pillars of the Digital India campaign – e-Kranti and Information for All – require Gram Panchayats to access the Internet. In this respect, the current progress of BharatNet is less than satisfactory.

- 11.7. To speed up bringing the fibre to the Gram Panchayats, the option to carry the cable on electric poles should be more aggressively pursued. In Andhra Pradesh, the state government has exercised this option on its own and has already connected all Gram Panchayats. The state is also poised to give 15-kbps-bandwidth connection with access to Internet, TV and phone services for a small charge to one million households. In addition to increasing the pace of Internet expansion, carrying fibre cable on electric poles will help bring connectivity to areas that have difficult terrain. Laying fibres over electric poles can help access such areas. In such terrains we may also explore the prospects for alternative technologies such as that based on satellite.

Wireless Connectivity

- 11.8. Wi-Fi networks often offer a more affordable and flexible option than mobile Internet or broadband services for scaling up Internet access. From the perspective of an Internet Service Provider (ISP), Wi-Fi technology uses unlicensed spectrums, requires relatively cheap and readily available equipment, allows the offloading of mobile traffic and involves lower maintenance and operational costs. The lower production costs imply lower costs for the end-consumer³.
- 11.9. If we are to fully exploit the benefit of digital technology, we must rapidly complete the BharatNet project. Following the Andhra Pradesh model, greater speed in implementation can be achieved by making use of the existing electric poles to carry the fibre optic cable. It is also important to plan for last-mile connectivity. For this purpose, we must urgently provide policy support to ISPs such as Right of Way permissions and permissions to promote access at select locations. We should also explore commercial models to deploy Wi-Fi services. For example, we could facilitate arrangements between different ISPs to share infrastructure or transfer assets at the end of the contract period. With the supporting policies and models in place, by 2018, we must ensure that wireless networks created under the Bharat Net project are used to provide last-mile connectivity to households in rural areas. Our goal should be to bring 15-kbps connections to at least 30% of the rural households by December 2019.

Enabling Infrastructure for Connectivity in Rural and Remote Areas

- 11.10. While rural residents accounted for 68 % of India's population in 2011, they made up 73 % of the offline population⁴. The high cost of Internet services deters many low-income households from accessing the Internet. Although the absolute costs of locally manufactured devices and data plans are low relative to other countries, they remain unaffordable for the poorest segments of the population. In 2013, even the cheapest data plans would have cost about 13 % of this segment's total spending⁵. To increase rural residents' connectivity, we must put in place enabling infrastructure such as reliable and continuous access to electricity, increase mobile network penetration and improve access to mobile devices and data plans by lowering costs. Keeping regulatory barriers to the minimum necessary would lead to healthy competition in the mobile sector driving down the costs of devices and data plans.

Differential Pricing

- 11.11. Differential pricing for data services has been a controversial topic in India over the past two years. While there are no laws enforcing net neutrality – or equal pricing for all data services – the Telecom Regulatory Authority of India (TRAI) promotes it. Net neutrality presents a trade-off between promoting competition and providing individuals with access to data services. We should prioritize resolving this debate and issue a clear policy on net neutrality. There are creative ways to marry net neutrality with free or low-price access to Internet.

Digital Literacy and Awareness

- 11.12. A 2013 survey highlights that 69 % of Indian respondents cited a lack of awareness of the Internet as a key reason for not being online⁶. Access to digital services does not necessarily imply digital involvement. To ensure take-up of the proposed services, we need to make sure that citizens are able to navigate them easily. In parallel to other activities, schools, gram panchayats and vocational training institutes should provide basic training in using digital services and the Internet and cyber security awareness. The curriculum for this training should be developed taking into account the focus areas of the Digital India campaign and the skills needed to use its programs. The curriculum should also include the use of digital financial services. Our aim should be to implement the curriculum in 30% or more schools by the beginning of the academic year 2018.

Electronics Manufacturing

11.13. The Digital India campaign aims to increase electronics production for domestic and foreign markets. Currently, 65% of the demand for electronics products is fulfilled by imports. By 2020, we should lower duties on key inputs of final electronics, reduce the administrative burden required to obtain tariff exemptions and work with states to offer electronics-specific tax incentives and facilities for firms. These action points are discussed in greater detail in the chapter “Trade, Industry and Services: Creating Well-Paid Jobs.”

Cyber Security and Data Protection Laws

11.14. We should explore the coverage of existing data protection laws, assess the extent of their applicability to different services and put in place any measures to prevent the misuse of data. Cyber security could be particularly important for digital financial services. Currently, India has no comprehensive privacy or data protection laws that cover digital payments specifically. An existing law for data protection, section 43(A) of the Information Technology Act (ITA), offers basic protection. Data related to digital transactions could be sold and the consequences would be unpredictable. Increasing the number of digital transactions also means the generation of data around these transactions. From a transparency perspective, the additional data will help with better governance and prevent tax evasion. However, without any clear guidelines on ownership, use and sharing of the data, there is a large scope for misuse. This should be addressed as early as possible as an increasing number of people transact digitally.

Digital Financial Services

11.15. We should create a digital friendly environment for financial services including payments, credit and remittances⁷. The benefits of adopting a digital payments instrumentality include lower expenses for banks, merchants and individuals and increased transparency. We can improve the environment for digital transactions in two ways: maintaining the regulatory structure and emphasizing financial literacy.

11.16. Maintain the current regulatory structure providing payment bank licenses. The Reserve Bank of India (RBI) regulates the payments system. In 2015, it issued payment bank licenses to several players and issued guidelines for the new players. Eight non-banking payment service providers, including telecom companies such as Airtel, Vodafone, Reliance and m-Pesa, entered the market. These changes are significant advances over the previous system. The existing regulatory structure will incentivize competition, spur innovation, drive lower costs and encourage adoption of digital payments platforms. We should assess the performance of the regulatory structure in 2018, once the payments banks have been operational for some time.

11.17. Increase financial literacy through specific programs. We should emphasize financial literacy, especially around digital financial services. The increased emphasis of non-cash transactions presents an opportunity to increase financial involvement, especially for Pradhan Mantri Jan Dhan Yojana (PMJDY) account holders and digital payment platforms. A lack of awareness around the different digital financial services limits take-up. An increased emphasis on financial literacy over the next three years will help drive wide participation in financial markets.

E-Governance

11.18. E-Governance constitutes one of the nine pillars of the Digital India campaign⁸. Since the approval of the National e-Governance Plan (NeGP) in 2006, e-Governance has evolved from the digitization of government records to the efficient, transparent and reliable delivery of government services using Information Technology. Currently, government ministries and departments offer more than 3000 different e-services⁹. The National Informatics Center hosts about 7000 government websites¹⁰. The use of biometrics to track public employees’ attendance, the creation of an Aadhaar-linked digital database of beneficiaries across welfare schemes and the use of Point-of-Sale (PoS) machines for beneficiary authentication have increased accountability and transparency in service delivery. E-taal, a web portal aggregating the electronic transactions statistics for e-Government projects, has hosted 3.75 billion transactions since January 1, 2017¹¹.

11.19. Despite India’s progress in e-Governance, the pace of its adoption lags in technologies such as mobile phones and

messaging applications. Globally, India ranked 107 out of 193 countries in the E-Government Development Index (EGDI) in 2016¹². In contrast, Brazil and China ranked 51 and 63, respectively, in the same year. e-Governance in India faces several challenges that lead to its slow spread and below-potential citizen engagement:

1. **E-services often do not provide end-to-end solutions.** Despite forms being available online, customers may still need to submit printed documents as hard copies or in-person.
 2. **Interfaces may not be available in vernacular languages.** The absence of websites and portals in local and vernacular languages limits adoption.
 3. **Technologies are limited in scale in terms of infrastructure and adoption by public authorities.** Approximately one million digital lockers, which provide shareable private spaces to store and access documents in the public cloud, exist presently. Further, a relatively small number of public authorities are issuing documents in these lockers. The number of eSign users and providers also remain limited.
 4. **Connectivity and enabling infrastructure to access e-services remains limited.** The lack of reliable internet or telephone connectivity and enabling infrastructure such as computers or mobile phones, especially in rural areas, lowers the take-up of e-services.
 5. **Digital literacy remains poor.** The low levels of digital literacy prevent citizens from accessing online government services.
- 11.20. To improve e-governance over the next three years, we should create reliable Information Technology (IT) infrastructure up to the Gram Panchayat level such that it facilitates round-the-clock access to government services. At the citizen level, along with connectivity, enhancing digital literacy will be important in encouraging take-up. We should encourage different ministries and departments to adopt inter-operable e-government platforms to ensure their availability and ease of access for citizens. Inter-operability will prevent citizens from having to provide the same information to access different services. The creation of reliable enabling infrastructure such as broadband and wireless internet has been discussed in the previous sections of this chapter. The following action points focus on steps to improve e-Governance through specific platforms or features.
- 11.21. *Scale up grievance redressal portals at the state level and utilize data to improve the resolution of grievances.* The Department of Administrative Reforms and Public Grievances (DARPG) has developed an online system known as the Centralized Public Grievance Redress and Monitoring System (CPGRAMS) to effectively manage grievances¹³. To be an effective mechanism to address grievances, the system needs to be scaled up at the central level and integrated across ministries. Nine state or union territory governments, including Rajasthan, Haryana and Odisha, are also using a version of CPGRAMS to monitor grievances. Additional states should be encouraged to adopt the system. We should use data from CPGRAMS to analyse patterns in the areas, number and sources of grievances.
- 11.22. *Ensure the adoption of e-office by different ministries and departments.* E-office can improve the operational efficiency of various departments and ministries by reducing paper transactions, cutting processing delays and increasing transparency. The DARPG, the central nodal department implementing the e-Office Mission Mode Project, should ensure that at least 25 Ministries/Departments and autonomous institutions adopt e-Office by 2020.
- 11.23. *Central Government Ministries/Departments should provide services electronically, where possible, by December 2018.* The online portals should be equipped with appropriate authentication features, allow citizens to store information and make payments digitally. Individuals should not be required to provide physical copies of documents, authenticate documents in person or make cash payments.

Box 11-1: Service Delivery through e-Mitra in Rajasthan

In 2004, the Government of Rajasthan partnered with several private entities to develop e-Mitra, an online service-delivery platform operating in 33 districts. It delivers about 250 e-government services (e.g., forms, birth certificates, information) to individuals via dedicated centres and kiosks. Through the kiosks, the platform overcomes the challenge that many individuals do not have access to mobile phones, computers or the internet. The e-Mitra system has reduced the footfall in government offices, made service delivery more timely and convenient for individuals and eased the system of document management for the government¹.

11.24. *Develop end-to-end service delivery through common back-end applications.* Service delivery systems should be end-to-end to ensure a seamless and standardized user experience through the adoption of three main pillars: Aadhaar numbers, eSign and digital lockers.

1. *Ensure that the remaining population receives Aadhaar numbers.* About 1.1 billion residents of India have been issued a 12-digit Aadhaar number by the Unique Identification Authority of India (UIDAI) after they completed a verification process¹⁴. We should ensure that the remaining population receives Aadhaar numbers by 2018. New-born children should be concurrently enrolled in the system. We should also migrate to Aadhaar based service delivery platforms where possible.
2. *Use eSign for authentication.* We should use eSign to authenticate and securely verify documents in real time. Where possible, we should also encourage states to adopt eSign in their service provision applications.

11.25. *Use Digital Lockers to store and share information.* Digital lockers provide shareable private space in the public cloud. Citizens can store and share their documents in these lockers. Various central ministries and departments should store copies of relevant documents issued by them into individuals' lockers. The documents shared by citizens through these lockers should be treated as originals. The Ministry of Electronics and Information Technology (MEITY) should facilitate the creation of digital lockers by notifying the necessary rules for lockers by 2018 and putting in place 4-5 additional digital lockers by 2019.

¹ Telecom Regulatory Authority of India, 2016.

² According to the Telecom Regulatory Authority of India, “Broadband” refers to a data connection that can support interactive services, including Internet access, with the capability of a minimum download speed of 512 kbps. It is a means of delivering high-speed Internet access.

³ Telecom Regulatory Authority of India (TRAI), Consultation Paper on “Proliferation of Broadband through Public Wi-Fi Networks.” 2016.

⁴ Census of India, 2011.

⁵ McKinsey Global Institute, “Offline and Falling Behind: Barriers to Internet Adoption”, 2014.

⁶ IAMAI and IMRB International, “Internet in India 2013”, June 2013.

⁷ Alliance for Financial Inclusion, “Digital financial Services: Basic Terminology.”

⁸ Digital India, Programme Pillars, “e-Governance – Reforming Government through Technology”

⁹ National e-Governance Division (NeGD), Department of Electronics and Information Technology (DeitY)

¹⁰ National Informatics Center, “Annual Report 2014-15”.

¹¹ Electronic Transaction Aggregation and Analysis Layer (E-Taal). Accessed April 6, 2017.

¹² United Nations E-Government Knowledge Database.

¹³ Centralized Public Grievance Redress and Monitoring System (CPGRAMS) portal.

¹⁴ Unique Identification Authority of India Website.

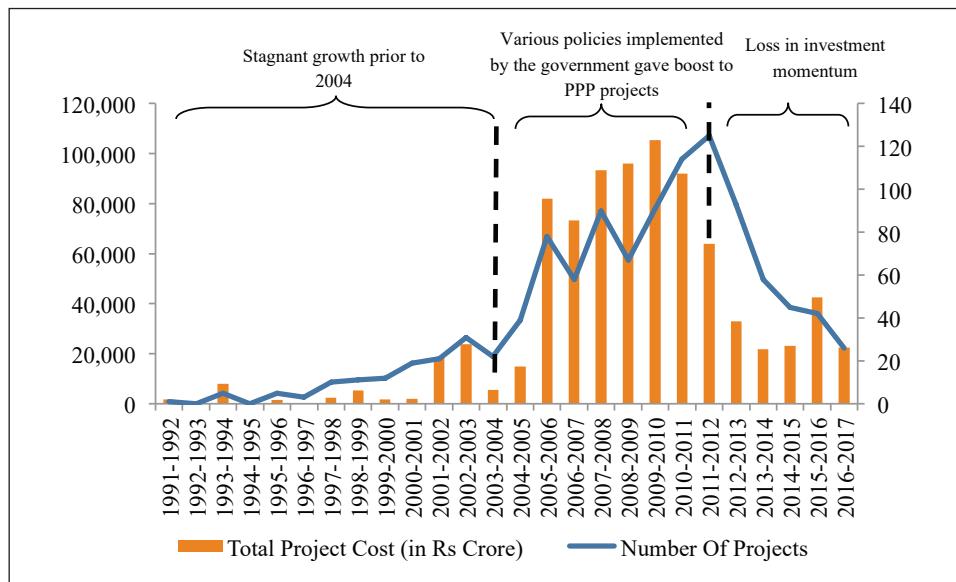
CHAPTER 12.

PUBLIC PRIVATE PARTNERSHIPS

The Context And Challenges

- 12.1. According to the PPP Knowledge Lab¹, a “public-private partnership (PPP) is a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance”.
- 12.2. India has significant experience with private sector participation in infrastructure which traces its roots back to the liberalisation era in the early 1990s. Its evolution can broadly be classified in three phases:
 1. The **first phase** marked the inception of PPPs and saw key projects primarily in the transport and power sectors. However, the early initiatives failed to scale up PPP projects in the absence of an integrated approach, clear policy framework, lack of an institutional mechanism and detailed road map for future growth.
 2. The **second phase**, from 2004 to 2011, saw private partnerships scale up significantly. Strong political will to scale up PPP in infrastructure led to the formation of the Committee on Infrastructure chaired by the Prime Minister. This ensured engagement at the highest level of government. Streamlining the appraisal and approval processes as well as standardizing of documents enabled fast roll out of projects. Launch of new initiatives like the Viability Gap Funding (VGF) Scheme, setting up of India Infrastructure Finance Company Limited (IIFCL) helped increase financial flexibility and capacity in the ecosystem. Performance during the Eleventh Five Year Plan (2007 – 2012) exceeded expectations when the private sector contributed 36.6%² of the total infrastructure investment while the total infrastructure investment as a percentage of GDP increased from 5% to 7%³.
 3. The **third or the current phase** has seen a decline in the momentum gained during the second phase. Encouraged by the performance during the Eleventh Five Year Plan, targets for the Twelfth Year Plan (2012 – 2017) were set with a view to continue on the upward trajectory. However, as per second report of the High Level Committee on Financing Infrastructure (HLCFI)⁴, achieving the projected investment goal of Rs. 55.7 Lakh Crore is highly unlikely. Instead, based on the data for the year 2012 -13, the report projected a total investment of Rs. 30.9 Lakh Crore⁵ for the period from 2012 to 2017. Various issues have led to stalled projects in different stages of award, construction and operation. Significant dilution in important terms of the standard bidding documents, over engineering of project design, aggressive bidding by project developers, financing issues, especially bank funding as well as lack of equity funding led to a series of stalled projects, lack of investor interest and overall slowdown in roll out of PPP projects.
- 12.3. The figure below provides a graphical view of the PPP ecosystem since the early 1990s.

Figure 12-1: Development of the PPP landscape in India through different phases



Source: infrastructureindia.gov.in (as seen on 14.12.2016) filtered for project cost > Rs. 5 Crore for Information available as on November 30, 2016

- 12.4. India witnessed various rollouts of major projects being awarded on the basis of PPP and the Indian PPP program emerged as one of the largest globally⁶. In view of the demands placed on the limited fiscal space and the substantial scale of investments required in meeting the infrastructure gaps there remains a need to reinforce the drive to promote private participation through the PPP mode. Towards this end, critical analysis of the factors that undermined the implementation of PPP projects over the last few years and making necessary course corrections is required. The current scenario is conducive to this approach as one can tap the liquid international financial markets, which are flush with cash in the low interest rate environment. It is important to place proper monitoring mechanisms and reinforce various institutional reforms to ensure strict adherence to the set processes to reboot PPPs in the country.
- 12.5. To achieve the growth target India needs to overcome its infrastructure deficit which requires substantial investments that cannot be met through fiscal spending. Basic building blocks like strong connectivity through land, air and water, adequate distribution facilities for power and water and waste management facilities among others play an important role as growth enablers in the economic growth of a country.
- 12.6. Thus, various sources of funding, including equity markets, debt financing and private investment need to be deployed. Given India's previous success with the PPP model, this mode needs to be encouraged and scaled up to achieve quick and efficient results in sectors like highways, power, ports and airports both at the Central and state levels. Further sectors like health and education also need to be opened up for viable PPP models to accelerate sustainable development of these sectors.
- 12.7. The successful roll out of a large number of projects has established the resilience of the institutional framework for PPP projects. For the purposes of the Action Agenda, which looks at a three year horizon, there is need to adopt a series of initiatives to reinforce the existing framework. The action points recommended are as below.

Ensuring Adherence to Procedures and Documentation

- 12.8. *Constitute an Infrastructure Committee.* For sustained implementation of PPP policies, strong political will is required. This would be facilitated by the constitution of an Infrastructure Committee with the Finance Minister or Prime Minister

as the chairman and secretaries from relevant departments as members. The Committee could aim to resolve inter-ministerial policy issues on a fast track mode. It could also consider unblocking all projects stalled for two years or longer.

- 12.9. *Increase Enforcement and Monitoring Efforts.* PPP projects are usually based on concession agreements, which define quantifiable outputs and quality standards. Proper management and enforcement of service delivery is important for ensuring timely and efficient services to the end user, i.e. the citizens of India. After extensive inter-ministerial consultations, detailed guidelines, institutional arrangements and formats for monitoring of PPP projects were issued in August 2012 with the approval of the Cabinet. These guidelines provide for a two-tier structure comprising of PPP Project Monitoring Unit (PPP PMU) at the project authority level and PPP Performance Review Unit (PPP PRU) at the Ministry level coupled with guidelines on periodic compliance reporting to ensure successful implementation of PPP projects. The above monitoring framework should be adopted by all the Ministries/Departments by the end of 2017 to make it fully effective.
- 12.10. *Strengthen Dispute Resolution Mechanisms.* Infrastructure projects are prone to disputes which can cause protracted delays in case of slow resolution processes leading to cost escalation that eventually makes the project commercially unviable leading to stranded assets. Further delays in court can cause uncertainty and deter international investors from investing in Indian infrastructure projects. Efforts should be made to encourage alternative dispute resolution mechanisms like amicable settlement, mediation and conciliation. Therefore, it is proposed that an internal dispute resolution committee with stakeholders from both the public and private side and a neutral third party, appointed at the beginning of the project, be set up with the aim to resolve disputes through mediation. Following the recommendation to introduce a Public Utility (Resolution of Disputes) Bill in Union Budget speech for 2016-17, a meeting has been held to discuss "Dispute Resolution Mechanism for Public Contracts" where suggestions to alter the Arbitration and Reconciliation Act, 1996 were put forward. Work on implementing these changes has been initiated and should be followed up and expedited.
- 12.11. *Curb Aggressive Bidding* Instances of aggressive bidding by developers have been common and they eventually lead to delays in the delivery of projects due to renegotiation. Currently, the bidding process is divided into two stages. The first stage, referred to as the Request for Qualification (RFQ), is aimed at short-listing the bidders based on technical and financial capacities. The short listed bidders are then invited to the second stage, generally referred to as Request for Proposal (RFP) where they are selected based only on the financial bids. It is understood that restricting the RFP stage to just financial offers leads to a race to the bottom where private players often tend to make commercially unviable bids. By 2018, standardized documentation should be updated to include weightage for technical qualification parameters (such as a technical score) used in the RFQ stage to the RFP stage in order to avoid aggressive, unviable bidding.
- 12.12. *Recommendation on Financing of Infrastructure by the HLCFI.* Private financing for infrastructure projects is largely provided by commercial banks in India. This presents a constraint due to the inherent limits in the financial capacity of domestic lenders. Thus, the HLCFI, which was set up to review the existing framework and to make recommendations, highlighted the following points which still need to be implemented.
1. One of the important recommendations was to incentivize commercial banks to refinance their medium term debt from the construction and initial operation period by insurance and pension funds, which can take on longer-term maturities through Infrastructure Debt Fund (IDFs) structures. This should complement or eventually replace IIFCL take out scheme freeing up sovereign exposure on account of guarantees.
 2. Reorient the role of IIFCL. The IIFCL was set up by the government in 2006 with a view to provide long term financing support for infrastructure projects that the commercial banks could not provide. However, IIFCL has been functioning almost like a commercial bank and has therefore deviated from its primary mandate. Given the strong government support that the institution enjoys, IIFCL's role should not be limited to replication of bank lending. The report of the HLCFI has recommended a slew of measures to "Reinvent the IIFCL for a larger role" much of which still needs to be implemented. This includes:
 - i. Credit enhancement to enable bond issuance in infrastructure sector. This would help deepen the Indian bond market and unlock insurance funds, pension funds, household savings and foreign debt.

- ii. Instead of just relying on sovereign guarantees, IIFCL should also leverage its balance sheet to extend guarantees.
 - iii. IIFCL's role in providing subordinate debt has not been leveraged yet. The institution should provide subordinate debt up to 10% of the project cost with a moratorium of 12 years on repayment of principal.
 - iv. IIFCL should discontinue its scheme for take-out finance which relies on sovereign guarantees and engage in refinancing activities via an IDF structure which would raise capital from the market without the sovereign guarantee.
- 12.13. *Provide low cost debt instruments.* By 2017, start consultations with the Reserve Bank of India (RBI) to encourage financial institutions to issue Deep Discount Bonds or Zero Coupon Bonds for providing long-term debt at low costs, as recommended in the Kelkar Committee Report¹⁰. The aim should be to launch the first bond in the market by 2020
- 12.14. *Build the Capacity of Lending Institutions.* To sustain the growth rate required for PPPs as discussed above, the gap in skills required for project risk assessment and appraisal techniques in private and government institutions needs to be plugged urgently. Over the next three years, financial institutions should be required to have in place customised programmes for the development of skills in their institutions to appraise project proposals for PPP projects in infrastructures sector.
- 12.15. *Resolve the Bank Non-performing Asset (NPAs) Issue.* Between March and September 2016, the Gross Non-Performing Advances Ratio (GNPAs), i.e. the NPAs as a share of total gross advances, increased from 7.8% to 9.1% for Scheduled Commercial Banks' (SCBs) in India¹¹. In contrast, the global ratio of non-performing loans (NPLs) to total gross loans was less than 4.0%¹² in March 2016. Indian public sector banks have the highest exposure to NPAs. A high volume of NPAs limits the capacity of the banking system to take on further risk thus hampering credit growth. Furthermore, the infrastructure sector and core industries have particularly contributed to the growth of NPAs. PPPs are currently highly dependent on commercial bank loans and thus are adversely affected by the choking of the credit market. For PPPs to flourish, the issue of bank NPAs needs to be tackled and bank lending needs to become more transparent. It is encouraging that tackling the problem of bank NPAs is already high on the government's agenda. The government has been launching a slew of measures like increasing the allowable provision for NPAs from 7.5% to 8.5% in the 2017-18 Budget¹³. However, given the magnitude of this issue, additional measures need to be taken over the next three years. Further details on this issue and the measures required to tackle the bank NPA problem are included in the Financial Services section of the chapter "Trade, Industry and Services: Creating Well-Paid Jobs."
- 12.16. *Operationalize the National Investment Infrastructure Fund (NIIF).* The NIIF was announced with Union Budget 2015-16 with a view to provide impetus to infrastructure investments in India¹⁴. NIIF was proposed to have a corpus of Rs. 40,000 Crore where 49% or approximately Rs. 20,000 Crore would be contributed by the Government of India. The NIIF is mandated to make long term investments in commercially viable Greenfield and Brownfield projects and has been registered with Securities and Exchange Board of India (SEBI) as a Category II Alternative Investment Fund as of 28 December 2015¹⁵. The Chief Executive Officer (CEO) of NIIF Ltd was appointed on 27 June 2016. However, despite these initial developments and various Memoranda of Understanding (MoUs) signed with international investors, the fund is yet to receive any capital and become fully operational. Furthermore, as per the Output-Outcome Framework for Schemes 2017-18, the financial outlay for NIIF at Rs.1,000 Crore is much lower compared to the expected government outlay that was envisaged at the time of its launch. Steps should be taken to increase inflows into the NIIF by taking measures such as increasing the capacity for investor due diligence and project selection and appraisal which could be potential bottlenecks in the process. It is also recommended that a more efficient use of public funds would be for the government to use its outlay for providing guarantees to infrastructure projects instead of investing directly into the projects. Alternatively, a capital structure where the government equity ranks lower to that of the external investors could also help mitigate potential risks for these investors.

Sector Specific Measures

Highway Sector

12.17. Streamline clearances:

1. To avoid putting developers and banks under stress, ensure strict adherence to clearances being available before the project is awarded.
2. Expedite clearance processes by the constitution of an Infrastructure Committee which has been recommended above.
3. Develop a shelf of upcoming projects where land acquisition/environmental clearance are available.

12.18. Expand the current use of Hybrid Annuity Model and the Operation & Maintenance Models in the Highway sector wherever feasible, to provide an impetus to private participation in highway construction in low traffic areas

Power Sector

12.19. Distribution Companies (DISCOMs) are the major concern area in the power sector. While the Ujwal DISCOM Assurance Yojana (UDAY) launched by the government in 2015 aims to iron out operational inefficiencies and financial stress for these companies, private partnership needs to be encouraged simultaneously. The inter-ministerial Task Force on PPP in the Distribution of Electricity has recommended a framework for PPP projects. This framework needs to be adopted by states with Central Government providing VGF.

Ports

12.20. Reorient the Model Concession Agreement (MCA) on the basis of models followed in some minor ports in Gujarat.

12.21. Expedited clearance processes facilitated by the Constitution of an Infrastructure Committee which has been recommended above.

Airports

12.22. Set up an appropriate PPP mechanism for encouraging private participation in the development of brownfield and Greenfield airports. This should include:

1. Creating a robust framework for ensuring appropriate capital expenditure monitoring by the regulator and approval of capital expenditure only after due ex-ante analysis. This should involve stakeholders such as airlines and users as is best practice globally
2. Removing regulatory uncertainty in 2017 by adhering to a consistent policy as discussed in the “Civil Aviation” section of the “Transport and Connectivity” chapter.
3. Strengthening the regulatory capacity and streamlining judicial review to ensure timely implementation of the decisions of the regulator

Telecommunications

12.23. Expedite the implementation of BharatNet by engaging private partnership through the PPP model as per the recommendations of Telecom Regulatory Authority of India (TRAI) released in February 2016 .

Other sectors

12.24. Relevant Ministries related to other key sectors such as Healthcare, Education, Waste Disposal and Storage should also draft appropriate PPP policies, including standard documentation, by 2020. Ministries should focus on:

1. Streamlining the PPP processes for faster execution of projects
2. Designing viable business models where private investments are constrained due to lack of clarity in revenue streams
3. Consider implementation of initiatives like VGF in their respective sectors

¹ PPP Knowledge Lab is an online resource formed from the collaboration between Multilateral development agencies from around the world (<https://pppknowledgelab.org/>)

² Planning Commission, “Twelfth Plan overview”, Page 18

³ Source: http://planningcommission.gov.in/plans/mta/11th_mta/chapterwise/chap14_invest.pdf

⁴ Published in June 2014

⁵ At 2011-12 prices, as stated in the second report of the High Level Committee on Financing Infrastructure

⁶ Department of Economic Affairs, “Committee on revisiting and revitalising public private partnership model of infrastructure” chaired by Dr. Vijay Kelkar, November 2015, Para 2.2.2, Page 10.

⁷ NITI Aayog, “Investment in Infrastructure: Strengthening PPP Policy framework”, NITI Brief #5.

⁸ Status as of 31.12.2016. Source: <http://indiabudget.nic.in/ub2017-18/impbud/impbud.pdf>

⁹ Press Information Bureau, “High Level Committee on Financing of Infrastructure”, November 2010.

¹⁰ Department of Economic Affairs, “Committee on revisiting and revitalising public private partnership model of infrastructure” chaired by Dr. Vijay Kelkar, November 2015.

¹¹ Reserve Bank of India, “Financial Stability Report”, December 2016.

¹² <http://data.worldbank.org/indicator/FB.AST.NPER.ZS>

¹³ Budget Speech 2017-18

¹⁴ Budget Speech 2015-16.

¹⁵ First meeting of the Governing Council of the NIIF.

¹⁶ As recommended by the Kelkar Committee. Department of Economic Affairs, “Committee on revisiting and revitalising public private partnership model of infrastructure” chaired by Dr. Vijay Kelkar, November 2015.

¹⁷ <http://www.trai.gov.in/WriteReadData/Recommendation/Documents/Recommendations%20on%20BharatNet%2001.02.2016%20FINAL.pdf>

CHAPTER 13.

ENERGY

- 13.1. The energy sector is fundamental to growth and development. Availability of electricity, petrol, diesel and gas at competitive prices is essential for the efficient functioning of energy user sectors, which include households, transportation, industry, agriculture and the government and comprise nearly the entire economy. But being a large sector, energy also contributes directly to the growth of the economy in a major way.
- 13.2. With multiple markets (coal, gas, oil, renewables, electricity, petrol and diesel) and infrastructure requirements for delivery to the final consumer (transmission and distribution grids, gas pipeline and petrol pumps), energy is one of the most complex sectors of the economy. The presence of scale economies in many sub-sectors, inter-connected nature of different sources of energy, different environmental implications of different fuels and social objective of access to energy at affordable prices greatly add to the complexity of policy making in this sector. Therefore, it is no surprise that the sector is characterized by myriad, often highly inefficient, policy interventions.
- 13.3. Presently, 304 million Indians do not have access to electricity and around 500 million Indians are dependent on solid biomass for cooking¹. Moreover, India's per capita electricity consumption remains a fraction of major economies. Average Transmission and Distribution (T&D) power losses stand at 23%². As India fulfils its ambition of 8% plus growth in the coming fifteen years, its energy needs will multiply manifold even taking into account enhanced energy efficiency. There is also a need to bring down the energy intensity of the Gross Domestic Product (GDP) to the level committed under the Paris Agreement.
- 13.4. The following action agenda for the next three years is suggested against this background.

Initiatives Related to Energy Consumption by Businesses, Households, Transportation and Agriculture

- 13.5. It is widely acknowledged that energy is one of the key inputs in raising the standard of living of citizens of a country. For example, per capita electricity consumption and development indicators including Human Development Index (HDI) are highly correlated³.
- 13.6. Presently, per capita electricity consumption in India stands at 1,010 KWh⁴ against the world average of 3,200 KWh⁵. Therefore, there is considerable scope for growth in energy consumption in India. There are four major end users of energy: households, businesses, transportation and agriculture.
- 13.7. India has already committed to bring electricity to every village by May 2018 and to every household by 2022. An even more ambitious goal would be to provide electricity to all households on 24x7 basis.
- 13.8. We are already committed to bringing LPG to 50-80 million households by 2019 under the Pradhan Mantri Ujjwala Yojana (PMUY). As of 6 April 2017, 20.3 million connections had already been released under the programme⁶. Within the existing LPG network, we must launch a campaign to bring LPG connections down to one per family. We must also target the 100 smart cities for the provision of gas via the City Gas Distribution (CGD).
- 13.9. To bring additional relief against black carbon in cooking, the PMUY programme should be complemented by: 1) Setting up of biomass pelletising units; and 2) launch of a scheme to distribute 'forced draft efficient biomass chullahs' supported by a modest subsidy for the vulnerable sections. Using these instruments, we should aim to fully eliminate black carbon by 2022.
- 13.10. For streamlining the demand in the industrial sector, the cross-subsidy in the power sector must be substantially reduced so that industry may receive electricity at competitive prices. Moreover, the reform to reduce the price differential between diesel and petrol should be continued.

13.11. On the agricultural front, solar irrigation pump distribution target must be stepped up and financed through credit support from NABARD and government subsidy. The option to connect irrigation pumps to feeder level small solar plants must be explored and, if found cost effective, should be exercised.

13.12. Finally, the government should explore the prospects for switching over to electric cooking in areas where reliable supply of electricity already exists. It must also study the costs and benefits of adoption of electric vehicles in the coming years. Though the cost of electric battery has declined recently, it still remains high. At the same time, its operating cost per kilometre driven is lower and it contributes to cutting city pollution.

Energy Efficiency

13.13. Energy efficiency refers to reduction in energy use for the same product or service. For example, a more fuel-efficient car uses less petrol per mile travelled than a less fuel-efficient car. Likewise, a Light Emitting Diode (LED) bulb consumes less electricity per hour for a given level of illumination than a conventional bulb.

13.14. If more energy-efficient technology also costs less per unit of product or service, it will be adopted automatically. If the opposite is the case, it will not be adopted automatically. Nor is it the case that it should be necessarily adopted. Desirability of adoption in such a case depends on whether the higher cost is more than offset by the social benefit via reduced pollution. If the social benefit from reduced pollution is judged to be higher than the cost of higher energy efficiency, it is desirable for the government to intervene to implement the higher energy efficiency standard. This can be done either by mandating the higher standard or giving a subsidy in the product embodying the higher standard.

13.15. This analysis leads to the conclusion that the promotion of energy efficiency through intervention must depend on cost-benefit analysis. De-carbonization alone cannot be the justification for promoting a more energy efficient technology. The benefit from de-carbonization must outweigh its cost.

13.16. In the near to medium term, India must adopt cost-effective energy efficiency policy solutions. It should intervene in the market only when it is clear that the benefits from cutting pollution outweigh the extra cost of the energy efficient solution. Such an approach will lay the groundwork for making India a more energy efficient economy by 2031-32. The following are possible action points in the coming three years.

13.17. First, the National Mission for Enhanced Energy Efficiency (NMEEE) must conduct a thorough cost-benefit analysis of the available energy-efficient technologies and products across all sectors, especially agriculture, housing and transportation. Based on this analysis, we must extend the reach of the energy efficiency programmes to sectors not presently covered. A nation-wide awareness programme to build confidence in energy efficiency gains must be a part of this mission.

13.18. Second, India should focus on continuing the success of Cycle I of the Perform, Achieve and Trade (PAT) policy into the recently launched Cycle II. The PAT policy exemplifies India's priority in terms of achieving energy efficiency in a manner that also concurrently delivers economic benefits. PAT Cycle I (2012-15), which focused on 478 Designated Consumers (DC) in eight energy intensive sectors, achieved energy saving of 8.67 Million Tonnes of Oil Equivalent (Mtoe)⁷. This achievement was 30% higher than the energy saving target of 6.886 Mtoe. It led to emission reduction of 31 million tonnes of CO₂ while cutting the need for electricity generation by 5,635 MW and thus resulting in cost saving of Rs 37,685 Crore.

13.19. The PAT cycle II will run from 2016 to 2019 covering 621 DCs from 11 sectors and targeting energy saving of around 8.869 Mtoe. Cycle II also includes three additional sectors of Refinery, Railways and Electricity Distribution Companies (DISCOMs). The regulator Central Electricity Regulatory Commission has already approved the trading of Energy Savings Certificates (ESCerts) in February 2017. We recommend that the trading of ESCerts should commence at the earliest. Moreover, if found cost effective, the PAT policy should be aligned to Best Available Techniques (BAT).

13.20. Third, since majority of energy generation in India is through thermal plants, even a small improvement in efficiency at such plants will help India yield large gains. Majority of the Indian coal-fired power plants operate on 30% - 32% energy efficiency and average CO₂ emissions of 1.08g kg/kWh – both indicators put India on the lower band of the

world comparison table⁸. By 2019, the following actions may be undertaken to increase the efficiency of the thermal plants:

1. The efficiency of existing thermal plants should be raised through Renovation and Modernization (R&M).
2. The old plants with high station heat rate, especially when located in or near heavily populated regions, should be phased out.
3. The collaborative research and development on Integrated Gasification Combined Cycle (IGCC) between NTPC Limited and Bharat Heavy Electricals Limited (BHEL), and other agencies should be actively pursued.
4. New power projects to be initiated during the Action Agenda period, especially if located in or near heavily populated areas, should be on ultra- super critical technology which uses 20% less coal per unit of electricity as compared to a subcritical coal plant⁹.

13.21. Fifth, at the institutional level, the national and state designated agencies working in the area of energy efficiency should be strengthened. The strong institutions will ensure that proper cost-benefit analysis is applied when promoting energy efficient technologies and the emission norms for power sector are strictly complied with in specified timelines.

13.22. Sixth, the momentum of gains through the use of LED lightning through Domestic Efficient Lighting Programme (DELP) for LEDs should be extended to ACs, fans and pumps by 2019. Also, all the appliances should be brought under Standards and Labelling programme.

13.23. Finally, to enhance vehicle fuel efficiency gains, the auto fuel quality should be upgraded to BS VI norms for nation-wide launch in 2020.

Increasing Coal Production and Improving the Efficiency of its Distribution

13.24. The reality of India's energy sector is that around three-quarters of our power comes from coal powered plants and this scenario will not change significantly over the coming decades. Thus, it is important that India increases its domestic coal production to provide energy security and reduce its dependence on imports. The energy security may be further enhanced through diversification of the import sources and reduced energy requirement. The following steps needs to be undertaken to boost coal production and distribution.

13.25. First, by 2019, the government will explore 25% of the untapped 5,100 sq km balance coal bearing area to ensure availability of more coal mining blocks. Also, it will step up the efforts to convert 25% of the 139.15 billion tonnes of coal reserves as on 31st March, 2016 in the 'Indicated' category into 'Proved' category by engaging top exploration companies with attractive contractual provisions. Moreover, Coal India Limited (CIL) has to raise its production from the current level of 536.5 million tonnes (MTs) in 2015-16 to 1 billion Tonnes by 2019-20, depending on coal demand. Similarly, the current annual production level of Singareni Collieries Company Limited (SCCL) is envisaged to increase from 60.40 MTs to 80 MTs by 2019-20.

13.26. Second, at the institutional level, an independent organisation will be created to develop and maintain the repository of all coal related geological information in the country. The proposal to set up a Coal Regulator for fostering competition in the coal sector apart from advising Central Government on the formulation of the principles and methodologies for determination of price of raw coal and washed coal will be implemented.

13.27. Third, we must use market mechanisms to open the coal-mining sector for commercial mining. Allowing specialized mining firms to mine coal can go a long way towards improving the efficiency of mining. We must also take steps to transition to coal pricing on commercial lines. There is need to end the current practice of segmenting coal markets between power and non-power sectors with subsidy being given to the ultimate intended beneficiary through direct benefit transfer. The implementation of the proposal to spin-off the subsidiaries of CIL as separate public sector entities must also be implemented so that they may independently develop their own strategies and business models.

13.28. Fourth, efforts must be made to improve labour productivity, increase coal production and enhance efficiency of

distribution. The output per man shift (OMS) from underground mines should be raised to increase coal production from underground coalmines, which is currently around 8% of the total coal production¹⁰.

13.29. Fifth, we must leverage the critical role of railways in coal distribution. In 2014, 50 million tons of coal could not be distributed in a timely fashion due to rail limitation¹¹. By 2019 we must complete the three critical Railway lines namely Tori-Shivpur, Jharsuguda-Barpalli and Mand-Raigarh to significantly augment coal evacuation.

13.30. Sixth, the government must employ more Coal-Handing and Preparation Plants (CHPP) that wash coal before shipping. This process removes ash and debris, thereby increasing the energy content per tonne by 10-20%. Thus, 15 new Coal Washeries, including 6 Coking Coal washeries with a capacity of 18.60 MTPA and 9 non-coking Coal washeries with a capacity of 94 MTPA should be commissioned to meet the Ministry of Environment, Forest and Climate Change (MoEFF & CC) Guidelines. This objective can be met more efficiently if we permit commercial mining of coal with foreign investors allowed to participate so that the state-of-the-art technologies are introduced.

13.31. Seventh, on the lines of China, the Indian government must take steps to reduce the use of low quality coal. The quality used in India has high ash content and low energy content. Based on this quality, India uses 650 grams coal per kWh. Whereas, in 2015 China reported use of 308 grams coal per kWh and further targets less than 300 gms coal per kWh under 2014-2020 State Council Energy Action Agenda¹².

13.32. Eighth, steps need to be taken to adopt clean-coal technologies including coal gasification.

13.33. Finally, to boost production, the on-going auction process and transfer of mining lease and other related activities of captive mines to the new successful bidders should be expedited by 2018. The production from captive blocks has been targeted at 400 MT by 2020; the yearly targets should be devised and, where required, coalmines should be re-allocated to achieve the above target.

Increasing electricity generation and streamlining transmission and distribution

13.34. To accelerate growth and bring electricity to all at the earliest, India needs to take several steps aimed at increasing electricity generation, overhauling transmission and improving distribution.

13.35. For boosting electricity generation, India is also betting on nuclear energy. As of 31st March 2016, India had 21 operating nuclear reactors with an aggregate capacity of 5.8 Giga Watt (GW). This capacity accounted for 1.9% of India's total installed electricity generation capacity in 2015-16. Nuclear energy sector also has additional six reactors with 4.3 GW installed capacity under various stages of construction or commissioning¹³. By 2032, India wants to increase the nuclear power capacity from 5.8 GW to 63 GW. Towards this goal, fresh capacity of 2.8 GW must be added by 2019. In turn, this would require commissioning the 600 MW Prototype Fast Breeder Reactor (PFBR). Work on new nuclear projects under construction at existing locations and Kudankulam-3&4 would have to be actively pursued.

13.36. From 2017-18 through 2019-20, we are likely to add 61.6 GW electricity generation capacity through all conventional sources. In addition, we must realize generation capacity of 6.9 GW through the large hydro projects by 2019-20. For the hydro projects, the government will need to make efforts to expedite progress on capacity under construction through satisfactory Rehabilitation & Resettlement implementation. Our goal of adding generation capacity of 15.8 GW in wind power and 53 GW in solar power over the next three years will require concerted effort.

13.37. In view of the currently declining Plant Load Factor (PLF) (60% in 2016-17), the government must ensure that fresh capacity augmentation beyond 2019-20 is scheduled as per demand for power and operational viability. Moreover, the PLFs of gas based power capacity (24.8% in 2015-16) must be raised to achieve grid balance. For this, government support for inducting LNG in power generation will be required. In addition, India must leverage regional connectivity to boost electricity generation. During 2017-18 to 2019-20, the cross border trade in electricity must be facilitated with neighbouring countries. The JV Hydel projects in Bhutan should be expedited, and the transmission corridor on the Indian side must be readied for evacuation of its electricity.

13.38. Apart from electricity generation, India also has to overhaul its transmission and distribution across the nation. In

2015, India reported one of the world's worst T&D losses (23%) contributing to very high Aggregate Technical and Commercial (AT&C) losses (25%)¹⁴. India must take a number of measures to limit these losses. First, for a robust National Grid, the transmission capacity to South India must be increased to 18.4 GW in the next 3 years. Second, 100% metering, indexing and real time monitoring of all 11 KV feeders must be achieved for all electricity consumers and feeders. Third, efforts must be made to achieve the targets of Ujwal DISCOM Assurance Yojna (UDAY) by cooperative efforts between the Centre and states. The yearly targets relating to several parameters as identified under the scheme must be set and actively monitored. We must also ensure that the DISCOMs do not suffer with working capital paucity.

Augmenting Supply of Oil and Gas, Through Domestic Exploration and Production (E&P) as well as Overseas Acreages

- 13.39. India's consumption of oil and gas far exceeds its domestic production capabilities. India not only imports coal but also oil and gas. Given the availability of domestic reserves of oil and gas and the prospects of their exploitation at competitive prices, there is a strong case for increased E&P at home and reduced dependence on imports. In due course, we may also consider building strategic reserves as insurance against disruption of import supplies.
- 13.40. India's proved crude oil reserves as of April 2016 stand at around 5.7 billion barrels. The majority of the domestic oil production is located at the western offshore fields, out of which 40% is accounted by the Mumbai High Basin¹⁵. However, despite the successive governments' efforts, oil production has fallen far short of demand. For instance in 2013, oil production in India at 1 million barrels per day (mmbd) was considerably below the demand of 3.7 mmbd¹⁶. Several measures are suggested for boosting oil and E&P capabilities of India:
 - 13.41. First, to expand E&P, in the next 3 years, another 25% of the remaining unexplored area out of 3.14 million square km of sedimentary area should be awarded for initiation of exploration. Exploration should be initiated in all the remaining 11 sedimentary basins.
 - 13.42. Second, by 2017-18, the Indian Government should launch Open Acreage Licensing Policy (OALP), which would facilitate award of acreages throughout the year, instead of periodic bidding rounds. Further, the government should launch a programme to undertake seismic survey of all un-awarded acreages, including from basins where exploration has not been initiated, and host the same on the National Data Repository (NDR). NDR should be launched in 2017 for open viewing of data and operationalization of OALP. These actions in near term are likely to significantly boost E&P activities.
 - 13.43. Third, all discoveries under the Production Sharing Contract (PSC) rounds should be rationalised, either towards monetisation or surrender to the government for recycling under OALP. Moreover, third-party assessments of full potential of nominated production fields should be undertaken by the Directorate General of Hydrocarbons (DGH) and technology inducted to raise the recovery factors of oil/gas.
 - 13.44. Fourth, the issue of simultaneous exploitation of all hydrocarbons should also be resolved for the existing contractors/licensees. These actions should be supported by strengthened regulatory mechanism through suitable changes to the Upstream and Downstream regulatory framework.
 - 13.45. Fifth, on the lines of the nominated acreages, the existing blocks/fields under PSC regime that have moved into appraisal/development stages of their contracts, should be granted rights to explore further (including shale oil/gas) through appropriate contract amendments.
 - 13.46. Sixth, the early gains on E&P can be made by launching a policy to re-start exploration in the 'S' type small blocks that are facing contractual violations due to time and Minimum Work Programme (MWP) violations. The Coal-bed methane (CBM) production should be enhanced by bringing coal bearing areas/coal mines under exploitation.
 - 13.47. Seventh, on the issue of removal of bottlenecks, the policy for sharing of upstream infrastructure by new developers should be launched. Also, all legacy issues/contractual disputes should be considered by an inter-ministerial empowered mechanism for speedy resolution.

13.48. Finally, global companies should be offered business support/incentives to set up R&D centres in India to undertake India-specific research, and also to manufacture tools/equipment under ‘Make in India’ campaign. Whereas, overseas acquisitions of both exploratory and discovered properties should be actively pursued with a view to achieve production level of 20% of India’s oil/gas consumption by 2020.

Augmented refining and distribution of oil and gas

13.49. As we have already discussed, India’s oil and gas production is critically short of the demand. While boosting the E&P activities, it is also critical to augment refining and distribution capacity of oil and gas.

13.50. First, by 2019, India should sustain its export capacity of refined products by setting up new refineries - the PSUs may start construction work on new refineries of 60 million metric tonnes per annum (MMTPA) capacity. Also, the Refineries should upgrade their processing capacity to meet petroleum fuel quality standards of BS-VI.

13.51. Second, within next three years the government should liberalise trade of all petroleum products in fair and transparent manner to expand the coverage of un-served regions by facilitating the entry of private enterprises.

13.52. Third, in the next three years, the tax structure should be rationalized in import and sale of energy on thermal value basis with a view to enhance the competitiveness of the economy. By 2019-20, we must set up strategic cum commercial oil reserves up to 90 days’ of consumption through public and private investment.

13.53. Fourth, the Oil Marketing Companies (OMC) should be nudged towards developing a near-term action plan. The government should promote bio-fuels by the OMCs by procuring them at market-determined price – OMCs should aim at 10% ethanol blending in petrol by 2020. In addition, the OMCs should be encouraged to procure crude efficiently to reduce the price of crude imports by leveraging the large crude buying power of India.

13.54. Fifth, the Liquefied Natural Gas (LNG) receiving capacity should be doubled by 2022, by facilitating evacuation and marketing of LNG. A systematic plan should be launched by 2019-20 to connect markets with LNG terminals by pipelines, and suitably changing downstream pricing policies. The government must coordinate efforts to provide purchase support so that LNG supplies contracted by companies (both upstream and downstream) and LNG re-gasification capacities are not distressed.

13.55. Sixth, to remove distortion in the gas market, the government should eliminate multiple prices in natural gas, by moving to market determined pricing. By 2019-20, the policy should be launched for creation of commercial and strategic storage of gas, including by offering depleted nominated gas fields.

13.56. Finally, for expanding the penetration of natural gas, the CGD network should be extended to 326 cities by 2022 through suitable changes in bidding/regulatory practices of Petroleum and Natural Gas Regulatory Board (PNGRB). The work should also be resumed in about 10,258 km gas pipelines bid out by PNGRB, by suitably incentivizing pipeline companies with better tariff mechanism, assured throughput and Viability Gap Funding (VGF) support, as per the specific situation.

Expanding the Installation, Generation and Distribution of Renewable energy

13.57. India is looking at using renewable energy to meet multiple objectives: energy security, energy efficiency, de-carbonization, and sustainability, among others. India’s fossil fuel requirements, which comprise nearly 90% of primary energy supply, are increasingly being met by imports. India is also committed to meeting its commitments stated in the Paris Agreement. Renewable energy is an element in achieving these objectives. The following actions are recommended in this context.

13.58. First, a renewable energy capacity of 100 GW should be achieved by 2019-20 so as to contribute to achievement of 175 GW target by 2022. The financial support for renewable sector will be aimed at promoting generation and infrastructure creation rather than mere capacity creation.

13.59. Second, the off-grid target of 40 GW of solar energy by 2022 may be apportioned between residential, commercial,

industrial and agricultural sectors with a target of achieving 20 GW capacity by 2019-20. The residential off-grid capacity should be developed through a robust regulatory and policy framework including a remunerative net metering policy. The two phases of Green corridor project should be executed so as to evacuate the renewable generation available in 2019-20.

- 13.60. Third, Solar Energy Corporation of India Limited (SECI) should develop storage solutions within next three years to help bring down prices through demand aggregation of both household and grid scale batteries.
- 13.61. Fourth, at the institutional level, all 8 Renewable Energy Management Centres (REMCs) should be operationalized to activate grid planning between Central Power System Operation Corporation Limited (POSOCO) and / State Load Despatch Centre (SLDCs) to ensure smooth dispatch of renewable electricity. The central/state agencies should provide infrastructural, transmission and purchase support to developers to help achieve the renewable target of the country. Moreover, a friendly eco-system for integration of renewable electricity should be created by changing/improving the regulatory practices and better coordination, through state specific renewable action plans.
- 13.62. Fifth, by 2019-20, a robust market for renewable power should be created through effective implementation of Renewable Purchase Obligations (RPOs) especially in the light of uniform targets having been announced. The renewable rich states may be encouraged to sell power to renewable poor states.
- 13.63. Sixth, a large programme should be launched to tap at least 50% of the bio-gas potential in the country by supporting technology and credit support through NABARD by 2020.
- 13.64. Finally, Small Hydro Power (SHP) target of 5000 MW by 2022 should be advanced to 2019-20 through VGF and tariff support, which will also aid balancing of variable solar energy in de-centralised locations.

¹ Kirk R Smith, “LPG scheme is historic opportunity to improve households’ health”, Financial Express, May 2016.
<http://www.financialexpress.com/economy/lpg-scheme-is-historic-opportunity-to-improve-households-health-kirk-r-smith/244299/>

² Central Electricity Authority, “Government Of India Power Sector Oct-2016”.

³ Ashok Sreenivas, Rakesh K IyerPrayas, “A comprehensive assessment of India’s energy sector”.

⁴ Central Electricity Authority, “Power Sector November 2016”. http://www.cea.nic.in/reports/monthly/executivesummary/2016/exe_summary-11.pdf

⁵ IEA, “Key World Energy Statistics”, 2016.

⁶ <http://www.pmujjwalayojana.com/>

⁷ Bureau for Energy Efficiency, Ministry of Power

⁸ Institute for Energy Economics and Financial Analysis, “Indian Electricity Sector Transformation”

⁹ Ibid

¹⁰ Provisional Coal Statistics 2014-15 http://www.coal.nic.in/sites/upload_files/coal/files/coalupload/Provisional1415.pdf

¹¹ <http://www.eia.gov/todayinenergy/detail.php?id=22652>

¹² Institute for Energy Economics and Financial Analysis, “Indian Electricity Sector Transformation”.

¹³ Charles K. Ebinger, Brookings Institution, “India’s Energy and Climate Policy Can India Meet the Challenge of Industrialization and Climate Change?”

¹⁴ Central Electricity Authority, “Power Sector October 2016”.

¹⁵ Charles K. Ebinger, Brookings Institution, “India’s Energy and Climate Policy Can India Meet the Challenge of Industrialization and Climate Change?”

¹⁶ TheHindu, “Natural gas supply growing much faster than demand”, August 13 2015.

<http://www.thehindu.com/business/Industry/natural-gas-supply-growing-much-faster-than-demand/article7531386.ece>

CHAPTER 14.

SCIENCE AND TECHNOLOGY

Context And Challenges

- 14.1. India had a good beginning in Science and Technology (S&T) at independence. By 1970, institutions such as the Indian Space Research Organization (ISRO), Bhabha Atomic Research Centre (BARC), Indian Institutes of Technology (IIT), Tata Institute of Fundamental Research (TIFR) and Indian Institute of Science (IISC) had achieved great vibrancy. Many Indian scientists and engineers competed on the frontiers of research. While we continued to build on the S&T infrastructure in subsequent decades, we experienced a loss of momentum during the 1970s and 1980s. Luckily, there has been some return of this momentum in recent years though we have been greatly outpaced by China.
- 14.2. Patent applications filed and granted abroad offer a good indicator of the gap that has appeared between India and China in the fifteen years between 2001 and 2015. In 2001, the number of patent applications filed abroad by Indian residents at 1,077 was approximately comparable to that by the Chinese residents at 1,197. But by 2015, a huge gap had emerged: 11,265 for India and 42,154 for China. In terms of patents granted abroad, India improved its global rank from 27th to 15th over the same years and China from 25th to 8th¹. To be sure, India has made substantial progress but China's advance has been far faster. Transformation in India's S&T sector would require rapid progress over the next fifteen years.
- 14.3. Proximate factors that have held back India's progress in S&T include:
 1. **Public funding on Research and Development (R&D) is low.** In 2011, India spent 0.82% of its Gross Domestic Product (GDP) on R&D. During the same year, the Chinese and South Korean governments spent approximately 1.8 and 3.7 % respectively².
 2. **Private investment on R&D also remains low.** The private sector contributes about one-third of R&D investment as a share of GDP while public funds make up the rest. The dearth of funds hinders the translation of research to commercialization.
 3. **Management of S&T initiatives is inefficient and non-uniform.** Bureaucratic hurdles, lack of interdepartmental synergies and a lack of clear prioritization hinder the implementation of various schemes.
 4. **Government schemes for innovation have been producing inadequate results.** Existing schemes for innovation suffer from duplication of efforts, long approval times and lack of clear evaluation guidelines.
 5. **Technological development in key sectors has been slow.** Sectors such as agriculture, energy, waste management, health and crosscutting areas such as security and connectivity have not witnessed significant technological advancements.
 6. **The lack of a well-functioning national ecosystem.** We have a limited number of idea incubators and dedicated technology parks. Such facilities have proved important in developing an S&T ecosystem in China.
 7. **The higher education system has lagged in terms of R&D as well as producing an adequately trained scientific workforce.** With research located in councils and teaching in universities and colleges, the critical link between teaching and research has been severed in India. With a lack of focus on research in the universities, industry-academia research link, so important in countries such as the United States, has also been lost. Furthermore, the absence of research at the universities has adversely impacted teaching and the growth of adequately trained scientific workforce.

Goals For 2017-2020

- 14.4. Over the next three years, we should direct our S&T efforts to creating a supporting environment for innovation and development and focus on priority sectors. Indian innovations should address the needs of the burgeoning middle class and rural residents. We must facilitate the development of affordable and durable products that are suitable for the local demand and context.
- 14.5. To achieve this broad vision, first, we must put in place mechanisms to attract funding for and manage S&T initiatives. Second, we should ensure that S&T is harnessed in a strategic manner to address challenges in key enabling sectors. Third, we should direct our efforts to building a powerful national innovation ecosystem, through incubation facilities, quality higher education and supportive policies. For this, we should capitalize on the momentum of the newly developed Atal Innovation Mission (AIM) to promote innovation among enterprises. This Action Agenda lays out practical steps for India to achieve these goals in the next three years (2017-2020). The third goal, creating a national innovation ecosystem, is discussed in the following chapter, “Creating an Innovation Ecosystem.”

Funding and Management of Science and Technology (S&T)

- 14.6. *Evaluate existing government schemes in science, technology and innovation.* We need to create a comprehensive database of all existing schemes related to S&T across different ministries and departments. The database would contain information on the coordinating ministry, the scheme’s objectives and available funds. We can draw upon the database to evaluate existing schemes using pre-defined criteria including commercial feasibility, risk and timelines. This will help us identify any duplication of efforts, reduce approval times, increase accountability and collaboration between entities and measure outcomes. Schemes that are not delivering on their objectives should be discontinued with the released funds spent on revamping and consolidation of well-functioning schemes and on new high-priority schemes.
- 14.7. *Develop clear guidelines for Public-Private Partnerships (PPPs) in S&T.* The involvement of industry in S&T is important for ensuring demand-driven and relevant R&D. We can achieve this by facilitating collaboration between academic institutions, government departments and industry, through PPPs. We need to recognize that PPPs in S&T are different than those in infrastructure. R&D projects are associated with a higher risk and longer timelines for achieving results. We should take these factors in consideration and develop clear guidelines for the implementation of PPPs in S&T. We should administer a clear funding mechanism for such programs, where the government provides financing in the form of loans.
- 14.8. *Create a body to coordinate all public S&T efforts and actors.* We should set up a “National Science, Technology & Innovation Foundation” headed by a distinguished scientist in 2017. The Foundation will coordinate with Science and Technology Departments, concerned line ministries, state governments, academics and researchers, private sector leaders in the field and other stakeholders to identify and deliberate national issues, recommend priority interventions in S&T and prepare frameworks for their implementation.
- 14.9. Through the proposed Foundation, we can monitor the progress of public projects. We should review progress of projects every six months or at a frequency determined by the members of the Foundation between 2017 and 2020 to propose course corrections for achieving goals in a timely manner. Within the Foundation, we can designate a multi-disciplinary overall monitoring group consisting of scientists and social scientists. Based on this review, we should recommend actions to maximize the societal impact of projects as well as strategies for the deployment of technologies in a timely manner.
- 14.10. *Rethink the Teaching-Research-Industry Link.* The time has come for us to rethink the higher education system and begin establishing a close link between teaching and research. The Prime Minister’s initiative to create ten public and ten private world-class universities offers an extra-ordinary opportunity in this respect. Research must be made an integral part of the responsibilities of faculty members at these universities with teaching burden correspondingly reduced. The universities must also be given autonomy to attract research staff from abroad or local research bodies to create a critical mass of research faculty in specific areas. They must also be encouraged to compete for research projects from industry. The universities must then be evaluated and ranked according to both teaching, research output and funding received from the private sector. Gradually, this model may be extended to bring other universities in the fold.

The objective should be to eventually move research from falling solely under the purview of research institutes and councils to also being encompassed by research universities.

- 14.11. *Improve the Administration of the Patent Regime.* As a member of the World Trade Organization (WTO), India has implemented the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) and established a strong intellectual property rights regime. In May 2016, the Cabinet also approved a National Intellectual Property Rights (IPR) Policy³. It is important that this policy be communicated and disseminated to scientists, engineers and other researchers in the public and private sectors to spur innovation.
- 14.12. More importantly, we need to streamline the administration of our patent regime. There are widespread complaints about delays in the grant of patents in India. Slow processing often discourages potential applicants from filing patents. It is appalling that according to the World Intellectual Property Organization (WIPO) data, patent applications by residents in India steadily rose from 6,296 in 2007 to 12,579 in 2015 while patents granted to them fell from 3,173 to barely 822 over the same period⁴. In contrast, patents granted to residents in China rose from 31,945 in 2007 to 263,436 in 2015⁵. Recently, the Patent Office has hired more staff and is reported to have accelerated the decision-making pace⁶ but we need a quantum jump in the numbers to clear the backlog and then meet the international standards in terms of time taken in processing patents.

Priority Sectors for S&T Interventions

- 14.13. We should take a focused approach to S&T to address India's socio-economic challenges in key sectors and fields. The role of the government in directing S&T efforts towards economic ends contributed to China and South Korea's success in the sector. Both countries have successfully used S&T policies as complements to their economic policies in specific areas and technologies⁷. We should draw lessons from these countries' experiences and similarly focus on priority enabling sectors for growth in allocating resources to S&T interventions over the next three years.
- 14.14. Given the limited funds the government has at its disposal, it may offer well-targeted grants to seek solutions to specific social problems. In each case, researchers competing for grants may form their own teams as necessary. Submitted proposals must be evaluated for their content as well the strength of the team to implement it. This will encourage researchers at different institutions to come together. Below, we provide some guidelines on what may constitute challenging research problems with high social returns. These will, of course, have to be further refined by experts in their respective fields.
- 14.15. *Water Management.* As India's growing population puts pressure on its finite water resources, innovations in the management and cleanliness of water will prove critical to providing access to water to its citizens. The government should prioritize the development of cost-effective, implementable, scalable, water sector technologies such as desalination, recycling, removing heavy toxic metals from water, and water conservation technologies for realizing the target of Water for All. These efforts should begin before 2019 to ensure that access to water remains uninterrupted as the country urbanizes and industrializes at a rapid pace.
- 14.16. *Agriculture.* The government should prioritize the development of productivity-enhancing technologies in agriculture over the next three years. Agriculture accounts for nearly half of all employment in India and about 17% of the country's GDP⁸. However, the number of new technological innovations in the sector remains low. For example, despite producing about 80% of the global stock of guar beans, a key ingredient in guar gum which is used in food processing and hydraulic fracturing, India has does not have any significant intellectual property related to it⁹. The government should encourage innovations in three areas within agriculture that will help increase productivity in an environmentally sustainable manner. First, it should seek to develop technologies for rejuvenating soil affected by overdose of pesticides, fertilizers and other toxic chemicals. Second, it invite research to help develop cost effective technologies for implementing Precision Agriculture (PA) or satellite farming or site specific crop management (SSCM) for farming management based on observing, measuring and responding to inter and intra-field variability in crops. Finally, it should invite scientists to develop cost-effective technologies for food storage and transportation to minimize post-harvest losses in agriculture.
- 14.17. *Energy.* The government should encourage the development of clean coal technologies and renewable sources of

energy. To drive growth in a sustainable manner, the manufacturing sector needs reliable access to a variety of energy sources, including sustainable energy. For example, we should explore the conversion of coal into Methanol and other non-polluting forms of energy to fuel transportation. It should also incentivize stakeholders to develop technologies for capturing carbon dioxide from the atmosphere and combining with hydrogen for producing Methanol (fuel) and olefins (for use in textile and other industrial applications).

14.18. *Waste Management.* As India industrializes, waste management will play a crucial role in ensuring that the development takes place in a sustainable manner. Technologies related to the management, storage and disposal of solid waste should be a priority in the next three years. The government urgently needs to fund the development of cost-effective technologies for addressing waste accumulation in solid, semisolid and liquid forms as well as technologies to convert "waste to energy." It should encourage the development of technologies for transforming agricultural waste into Methanol or other forms of energy. For example, it could explore self-sustaining bio-energy models or devices that have multiple uses including organic manure production. Along with the private sector, the government should harness new technologies for converting waste into productive materials such as manure and gas.

14.19. *Health.* The government should help develop creative and cost-effective solutions to recurring vector borne diseases such as chikungunya, dengue and drug resistance malaria. Solutions may take the form of new vaccines, devices that help detect and kill mosquitoes carrying the viruses and creating sanitary conditions that prevent the multiplication of mosquitoes in the first place. Additional technological priorities are discussed in the chapter, "Health."

14.20. *Connectivity and Security.* Policymakers should also incentivize innovation in crosscutting areas such as connectivity and security that affect the economy and the success of other programs in the short term. With respect to connectivity, the government should help develop affordable technologies for providing nationwide digital connectivity, which will form the backbone for e-governance, e-health, communications, rural innovations and entrepreneurship in realizing the Digital India Vision. It should also encourage the development of technologies to address national security such as foliage penetration through wall imaging radars.

¹ World Intellectual Property Organization (WIPO), "India Statistical Country Profile".

² United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

³ Press Information Bureau, Government of India, "Cabinet approves National Intellectual Property Rights Policy", May 2016.

⁴ Ibid.

⁵ World Intellectual Property Organization (WIPO), "China Statistical Country Profile".

⁶ Press Information Bureau, "Intellectual Property Initiatives to Drive "Make in India", July 2015.

⁷ CSIR-NISTADS National Institute of Science Technology and Development Studies, "A Comparative Study on S&T, Innovation and Development Strategies of China and South Korea Vis-à-vis India." 2012.

⁸ World Bank, "World Development Indicators".

⁹ Presentation by Anil Kakodkar, "R&D in Value Addition.", India International Science Festival, December 2015.

CHAPTER 15.

CREATING AN INNOVATION ECOSYSTEM

- 15.1. As defined in the World Bank report titled "Innovation Policy - A Guide for Developing Countries,"¹ innovation involves the process of creating a new idea in a given context and its successful dissemination into the society. It opens up new venues for economic growth and is necessary for inclusive social development. Innovation is useful only when an entrepreneur can find ways to commercialise the idea and deliver it to all sections of the society.
- 15.2. India has historically been at the pinnacle of innovation in a large variety of fields including urbanization (Indus Valley Civilization), metallurgy (Iron Pillar of Delhi), Algebra (invention of the Zero) or Science (Raman Effect) among many others. It is a relatively recent phenomenon that India has started to lag behind when it comes to creating new technologies that open up new opportunities for the rest of the world. However, as India aspires to become a middle income country and beyond, sustainable growth is essential and will only come from the creation of new economies. Furthermore, in India, we depend on innovation to help solve important basic problems like inclusive education, affordable health services, waste management, rapid and sustainable urbanisation among many others.
³This requires innovation to be the central driver for growth across all sectors ranging from social causes to sciences.
- 15.3. Historically, various initiatives taken by the Government of India suggest that it recognises the importance of innovation led growth. While the National Innovation Foundation was set up in the year 2000² to fund grassroots innovations, India's Science and Technology Policy of 2003, which brought Science and Technology together for the first time, emphasized on the need to invest in research and development (R&D) for creating a national innovation ecosystem³. However, innovation only came to the forefront of Indian policy when 2010 - 2020 was declared as the "Decade of Innovation." The National Innovation Council was set up by the Prime Minister at the time to create the innovation roadmap for 2010 - 2020⁴ while the Science, Technology and Innovation Policy was formulated in 2013⁵ to provide further impetus to existing initiatives.
- 15.4. Recently, India has made considerable progress in developing an environment conducive for entrepreneurs with the government emerging as one of the key flag bearers of India's start-ups. The "Start-up India" initiative, launched in 2016, which specified 19 guidelines and funding of Rs.10,000 Crore to boost the startup ecosystem was very encouraging. The Atal Innovation Mission (AIM), launched with the Start-up India initiative, which aims to set up 500 Atal Tinkering Labs at the school level, 100 Atal Incubation Centres and launch identified grand challenges, is one of the most innovative policy interventions globally. Cooperative federalism has also encouraged more than 13 states and Union Territories (UTs) to establish policies for encouraging start-ups and/or fostering innovation⁶. Results can be seen in the form of its tech start-up ecosystem which is now the third largest in the world, in terms of number of start-ups, after the United States of America (USA) and the United Kingdom (UK)⁷. Tech start-ups in India are expected to grow from around 4,750+ in 2016 to around 10,500 by 2020⁸.
- 15.5. Although recent developments have been encouraging, India still has a long way to go towards building a strong ecosystem where innovation can thrive. An ideal ecosystem would enable and enrich new enterprises that significantly impact economic growth and add enough jobs to fulfil the demand of the large workforce building up in the country. In a nutshell, our goal is to work towards an environment that provides the following⁹.
 1. Human capital
 2. Quality education and R&D
 3. Collaborative ecosystem
 4. Availability of funding
 5. Transparent regulations and a robust legal system

6. Culture for innovation and entrepreneurship

- 15.6. While some of these features are situational, most of these factors can be improved with the right government intervention. For the purposes of this Action Agenda we focus only on the measures where we can make improvements in the short term. These are described as below.

Human Capital

- 15.7. Human capital is one of the key pillars contributing to the innovation quotient of a country. India should pro-actively encourage entrepreneurs and researchers from around the world to develop, design and build products in India. This would encourage integration of knowledge and propel job creation. Encouraging high skilled immigration not only fosters healthy competition but goes a long way in improving the quality of domestic skills. A centralised system for granting entrepreneur visas based on set criteria including novelty in technology, sector, job creation potential and ease of dissemination of the product/service among others should be set up. International centres could be set up to facilitate document verification. Furthermore, a guidance mechanism could also be set up for initial hand holding. The feasibility analysis of this project should be done by 2018 with an aim to set up required mechanisms by 2020.
- 15.8. A report by the Expert Committee on Innovation & Entrepreneurship chaired by Professor Tarun Khanna¹⁰ recommended harnessing the Non-resident Indian (NRI) talent pool for mentorship, skill development and expertise. Talent and experiences of the large Indian diaspora should be tapped by engaging them in short term assignments, courses and other activities which would enable them to contribute to India's development. The government should engage with Indian High Commissions globally to formulate a strategy for engaging the Indian diaspora.

Quality Education and R&D

- 15.9. In February 2016, the Union Government approved the AIM to promote an innovative environment and entrepreneurial spirit starting at the school level. We should capitalize on this momentum and encourage AIM's efforts to build a strong national innovation ecosystem.
- 15.10. Building a strong foundation for education in India is one of the most important building blocks for an innovative society. The anticipated demographic dividend in India can only deliver when the youth is given relevant training at the start of their learning years. Inability to harness the energy of the emerging workforce can quickly turn the dividend into a curse. Quality higher education and research should be the key areas of focus in this exercise. While details for improving the quality of higher education are included in the Education chapter of this Action Agenda, in this chapter, we will look at education and research from the point of view of innovation. It is recommended that:

1. In order to boost teaching/research quality in top government funded higher education institutions, scholarships given out by these institutions should be linked to research / teaching contributions by the applicant. This would involve the receiver of the scholarship choosing between a research and a teaching fellowship, hence contributing back to the institution during and after their course. Onus would also be on the professors / teachers to take on a minimum threshold of teaching / research staff. The government should design a detailed plan to overhaul the scholarship system in government institutions. The goal would be to implement the plan across all eligible institutions over the next three years.
2. In order to encourage innovative thinking at the school level, a provision to evaluate a student's proven track record of innovation (e.g. awards and patents among others) should be introduced at the admission stage for higher education institutions.

Collaborative Ecosystem

- 15.11. One of the key requirements for effective innovation is the ability to disseminate it into the society. A new technology that cannot be diffused into the economy does not benefit the society. Only when the personal computer and the internet could be disseminated to the masses, did we see the benefits of these technologies. India's eminent institutions like Bhabha Atomic Research Centre (BARC) and Indian Space Research Organisation (ISRO) among others

produce cutting edge technologies, some of which can be made commercially viable. By 2020, these institutions should pilot 5 partnership agreements with private institutions to ensure dissemination of some of these technologies into the society.

- 15.12. Collaboration between the public and private sector can be enhanced by creating a platform which facilitates sharing of facilities, talent and research goals where possible. This can be achieved on a project by project basis using various partnership structures. A nodal agency should be appointed which would be responsible for facilitating these partnerships. A portal should be created and a database of all the facilities made available by the participants should be maintained.
- 15.13. The corporate sector, with its support in the form of mentorship, infrastructure and funding, has been a key catalyst in the expansion of the start-up ecosystem¹¹. However, R&D of new technologies requires very high risk long term funding which is usually not commercially viable. A public private partnership would seek the government's help in bridging the commercial viability gap for projects that are not commercially viable. More importantly, the private sector's expertise will be needed to ensure that the extant research funding facilitated by the government is in line with industry requirements.

Availability of Funding

- 15.14. The Alternative Investment Policy Advisory Committee (AIPAC) constituted by Securities and Exchange Board of India (SEBI) in 2015 was chaired by Shri. N.R. Narayana Murthy¹². The committee has made a slew of recommendations to improve the ease of doing business in the Alternative Investment Fund (AIF) sector, which include venture capital and private equity funds, an essential pillar for the start-up ecosystem. The focus for the committee was to create a healthy investing environment which would lead to increased flow of long term risk capital into India's start-ups. In the two reports that the committee submitted in 2016, various recommendations have been implemented. However, the recommendations that have not been implemented but are important for the improvement of the AIF sector should be assigned a priority and issued a potential timeline for implementation. The priorities and timelines set by the government should be made public to ensure full transparency in the process. Such transparency would also encourage the formation of such committees in the future which are the epitome of intellectual partnerships between the public and private sectors.

Transparent Regulations and a Robust Legal System

- 15.15. A strong intellectual property regime is one of the key factors that encourages and incentivises innovation in a country. The Indian Government has demonstrated its commitment in this regard by launching the National Intellectual Property Rights (IPR) Policy in 2016¹³. It is encouraging to see that implementation is already under way with the launch of "IPR Enforcement Toolkit for Police and IPR Awareness Campaign for Children" in January 2017¹⁴. Over the next three years, all key stakeholders including various Ministries / Departments and State Governments along with the nodal department i.e. Department of Industrial Policy and Promotion (DIPP) should work collaboratively to fully implement the key objectives of the policy which include:

1. IPR Awareness: Outreach and Promotion
2. Generation of IPRs (stimulating IPR generation)
3. Legal and Legislative Framework
4. Administration and Management
5. Commercialisation of IPRs
6. Human Capital Development

- 15.16. Investments which are above the fair market value of a start-up are taxed under "income from other sources" under Section 56 of the Income Tax Act. Venture Capital Funds under Category I - AIF¹⁵ are exempt from this tax. The second AIPAC report mentioned above has recommended that a similar carve out should be made for all other AIF classes. Additionally, while investments from Angel Investors were exempted from this tax in 2016, the exemptions

were only for start-ups recognised by the Inter-ministerial Board of Certification as per the definition provided by the DIPP¹⁶. As only a handful of start-ups are recognised under this definition, the benefits of this exemption are currently availed by a limited number of start-ups. The government should consult with relevant stakeholders as soon as possible to come up with a viable mechanism for a wider delivery of this exemption.

15.17. Lastly, as discussed in the chapter “Trade, Industry and Services: Creating Well-Paid Jobs,” in order to ease the burden of compliance on the enterprises, it is recommended that any company less than five years old and having less than Rs. 25 Crore in turnover should be permitted to declare itself a “start-up” with no subsidies in any form provided to the enterprise. This would require easing the definition of start-ups provided by DIPP¹⁷. The objective of this recommendation is to enhance the ease of doing business for small companies and pave the way for greater job creation.

¹ World Bank, “Innovation Policy - A Guide for Developing Countries”.

² NIE

³ Science, Technology and Innovation Policy, 2013

⁴ Planning Commission, “Twelfth Five Year Plan, Chapter 9 – ‘Innovation’”.

⁵ Science, Technology and Innovation Policy, 2013.

⁶ NASSCOM – Zinnov, “Indian Start-up Ecosystem Maturing”, 2016.

⁷ NASSCOM – Zinnov, “Indian Start-up Ecosystem Maturing”, 2016.

⁸ NASSCOM – Zinnov, “Indian Start-up Ecosystem Maturing”, 2016.

⁹ Inspired by sources including the World Bank and Venture Beat. Sources

(1. <http://www.worldbank.org/en/topic/competitiveness/brief/innovation-entrepreneurship>;

2. <http://venturebeat.com/2015/08/29/the-10-hottest-startup-ecosystems-in-the-world/>)

¹⁰ NITI Aayog, “Report of the Expert Committee on Innovation and Entrepreneurship”, August 2015.

¹¹ <http://zinnov.com/startup-landscape/>

¹² Securities Exchange Board of India, “Second report of the Alternative Investment Policy Advisory Committee”. Source: http://www.sebi.gov.in/cms/sebi_data/attachdocs/1480591844782.pdf

¹³ National Intellectual Property Rights Policy. Source: http://dipp.nic.in/English/Schemes/Intellectual_Property_Rights/National_IPR_Policy_08.08.2016.pdf

¹⁴ Press Information Bureau, “Launch of IPR Enforcement Toolkit for Police and IPR Awareness Campaign for Children”, January 2017.

¹⁵ Securities Exchange Board of India, “Second report of the Alternative Investment Policy Advisory Committee”. Source: http://www.sebi.gov.in/cms/sebi_data/attachdocs/1480591844782.pdf

¹⁶ DIPP definition source: http://dipp.nic.in/English/Investor/startupindia/Definition_Startup_GazetteNotification.pdf

¹⁷ DIPP definition source: <http://dipp.nic.in/English>

Part V Government

CHAPTER 16.

GOVERNANCE

- 16.1. The issue of governance cuts across all aspects of government functioning. As such, transparent and efficient governance is critical to the success of every policy and programme. Even the best of policies and programmes may be rendered ineffective, even counter-productive, by poor governance.
- 16.2. Governance issues have directly or indirectly figured in our discussion of each subject area. Therefore, in this chapter, we consider areas not directly covered elsewhere. These include
 1. Role of the Government
 2. Civil service reform
 3. Electoral reform
 4. Corruption related reform
 5. Federalism

Role of the Government

- 16.3. India's choice to build a socialist pattern of production during several post-independence decades has resulted in the government entering many activities that do not serve any public purpose and are best performed by the private sector. At the same time, there has been a neglect of some activities that only the government can undertake and are of great public value. Manufacture of products such as parachutes and three wheelers falls in the first category while the provision of public health in the second. The present government has begun to correct this imbalance through closure of sick Central Public Sector Enterprises (CPSE), strategic disinvestment programme, and the launch of Swachh Bharat mission. This process must be accelerated in the next three years.
- 16.4. The major action to be taken in the near term in this area relates to continued closure of sick CPSEs, strategic disinvestment of viable CPSEs and further progress in public health and quality education. According to the Department of Public Enterprises, there were 235 operational CPSEs as of 2016. Of these, 74 are classified as sick or loss making. A NITI Aayog committee analysed the status of these CPSEs in detail and laid out a plan of action for each of the 74 CPSEs. The recommended actions for different CPSEs include closure, revival, merger with other CPSEs, long-term lease (in the case of hotels), transfer to state governments and strategic disinvestment. These recommendations are being implemented on a case-by-case basis. The Union Cabinet has already approved the closures of six CPSEs: HMT Watches Ltd, HMT Chinar Watches Ltd, HMT Bearings Ltd, Tungabhadra Steel Products Ltd, Hindustan Cables Ltd and Central Inland Water Transport Corporation. Concerned ministries are taking the necessary steps.
- 16.5. The Committee laid out a clear principle for the revival of any CPSE from the time of submission of its report. Any revival of a non-strategic CPSE must be based on sound commercial principles and must have an element of commercial funding, whether through equity or loan. It should not rely principally on budgetary support or sale of land.
- 16.6. In addition, NITI Aayog was asked to identify CPSEs that should be strategically disinvested and recommend the method of disinvestment. Under this mandate, the NITI Aayog has submitted two lists of CPSEs with detailed analysis for strategic disinvestment. The CCEA has given in-principle approval for the strategic disinvestment of 20 CPSEs. These are now in the implementation stage. It is recommended that the Department of Investment and Public Assets Management speed up the process of disinvestment.

16.7. As the government contains its role in manufacturing, it must also expand its role in the promotion of public health and quality education. Our cities need to be freed of solid waste, swamps and bodies of standing water to contain the growth of mosquitoes and spread of diseases. The government needs to continue its efforts to end open defecation by 2nd October 2019, the 150th birth anniversary of Mahatma Gandhi. It needs to progressively bring clean piped water to all citizens. School education has seen a progressive deterioration in quality as measured by the proportion of students in a given class who can read, write and perform arithmetic operations at a given level. This requires urgent correction to ensure that all children get a minimum level of foundational learning as preparation towards future acquisition of skills in the progressively digitalizing world. These and related issues are taken up separately in the relevant chapters of the action agenda.

Civil Service Reform

- 16.8. Civil service is the backbone of the government. It needs to be empowered to make quick decisions and implement them. Sustained high levels of performance can only be achieved if performance is objectively measured with high performance rewarded and poor performance reprimanded.
- 16.9. Today, rising complexity of the economy has meant that policy making is a specialized activity. Therefore, it is essential that specialists be inducted into the system through lateral entry. Such entry will also have the beneficial side effect of bringing competition to the established career bureaucracy.
- 16.10. *Institutionalize goal setting and tracking for each department.* Each Ministry and government agency should set outcome-based goals with a clear timeline. The current government has moved in this direction but the process could be formalized and institutionalised. Making the goals and progress available publicly would go some distance towards incentivising delivery.
- 16.11. *Implement an HR system for government employees.* Human Resource Management needs to be a strategic function in the government. It should be implemented through a unified single online platform that covers employees from the time they are hired to when they leave service. Such a portal would incorporate all HR related requirements such as performance appraisal, training, leave and disciplinary proceedings. It could also facilitate Massively Open Online Course style capacity building for government employees.
- 16.12. *E-governance and paperless governance ranking for ministries at central and state levels.* Each government department and agency should be ranked on the basis of their move to the e-office system, reduction of paper use, and citizen engagement through the electronic medium. This would permit increased efficiency, better tracking of progress on files and improved interface with citizens. Some ministries and agencies have already made the move and demonstrated that this change can be achieved immediately. A ranking will shine the spotlight on ministries that are dragging feet and incentivise them to change. The goal should be full digitization by the end of 2018-19. Several other measures to promote e-Governance are also mentioned in the Digital Connectivity chapter.
- 16.13. *Outsource service delivery where possible.* We should reduce dependence on government administrative machinery wherever possible. We can make use of the power of Aadhaar based identity verification to allow private channels to provide services wherever possible. Identification of such services should be taken up and PPP models to provide those services should be explored.
- 16.14. *Longer tenure of Secretaries.* Currently, by the time an officer is promoted from Additional Secretary to Secretary, usually she has two years or less left before retirement. This feature creates two important inefficiencies. One, with a time horizon shorter than two years, the officer is hesitant to take any major initiatives. Two, and more importantly, to the extent that any misstep may become the cause for charges of favouritism or corruption post retirement, the officer hesitates to take decisions on any major project. This causes inordinate amount of delay in decision-making. One possible solution to this problem is early promotion to the Secretary position. Introduction of lateral entry, discussed immediately below, will facilitate this change.
- 16.15. *Increase specialization and induct lateral entry.* Finally, in areas requiring specialised knowledge, it is important to develop expertise among internal staff and induct lateral entry. For the former, officers may be encouraged to gain expertise in

specific areas in the early stages of careers and the current system of rapid rotation of officers across ministries may be replaced by a system of longer postings according to specialization. Officers should also be encouraged to enhance their knowledge and skills in the chosen area of specialization through intensive training.

- 16.16. This specialization by the internal staff needs to be complemented by lateral entry of highly specialized staff on fixed-term contracts. Specialists could be brought on three to five year contracts. Such a system will bring top talent and energy into the government and will lend new dynamism to the ministries. The NITI Aayog performs many tasks requiring specialized knowledge and skills. Therefore, it has recently proposed changes to its Rules of Recruitment, which if approved would open the door to lateral entry. This initiative could serve as a pilot for other ministries.

Monitoring of Government Programmes

- 16.17. The mechanisms for third-party monitoring of government programmes needs to be strengthened to ensure periodical review of the progress and the impact of these programmes. The platform, Pro-Active Governance and Timely Implementation (PRAGATI) launched by the Prime Minister, has led to significant improvement in monitoring and implementation of major infrastructure projects. NITI Aayog has also initiated the practice of preparing an outcome budget for all central government ministries and departments, which will help in setting transparent targets for all programmes as well as impact evaluation and monitoring of government funded programmes through its attached office, Development Monitoring and Evaluation Office (DMEO). These recent initiatives need to be strengthened and embedded deeply into our policy culture.
- 16.18. An important agenda for the government is to push for direct benefit transfer (DBT) in various welfare and subsidy schemes, with an objective to increase transparency and effectiveness of these programmes. A mechanism for centralised monitoring of the push towards DBT across different schemes should be created, which will utilise innovative techniques such as telephonic and interactive voice response (IVR) surveys to assess the progress of DBT and its impact on the beneficiaries. The Andhra Pradesh government is already doing this, having set up a 750-person two-way call centre to actively seek feedback on its schemes from beneficiaries.

Electoral Reform

- 16.19. All elections in India should happen in a free, fair and synchronised manner so as to cause minimum ‘campaign mode’ disruption to governance.
- 16.20. We may begin work towards switching to a synchronised two-phase election from the 2024 election to the Lok Sabha. This would require a maximum one-time curtailment or extension of some state assemblies. To implement this in the national interest, a focused group of stakeholders comprising constitution and subject matter experts, think tanks, government officials and representatives of various political parties should be formed to work out appropriate implementation related details. This may include drafting appropriate constitution and statutory amendments, agreeing on a workable framework to facilitate transition to simultaneous elections, developing a stakeholder communication plan and various operational details.

Corruption Related Reforms

- 16.21. Corruption hinders the process of economic growth, undermines trust in democratic and governance institutions and has a broader corrosive impact on the process of human development. Clean governance has been an important goal for the current government, and several important steps have been, and will continue to be, taken to move India towards a corruption-free society. While several actions noted earlier in this chapter will also have an impact on reducing corruption, it is a topic important enough to deserve explicit detailing of specific actions.

Speeding up decision-making on corruption cases

- 16.22. One area where improvements are required is in the time taken to process cases requiring disciplinary action. On average, it takes more than 8 years to finalize a major vigilance case from the date of occurrence of irregularity¹. The major delays come from the delay in detection, preliminary inquiries for First Stage Advice, in appointment of the

inquiry officer and submission of their report. Procedural reforms for reducing these delays are important. For the All-India Services, the provision of completing the disciplinary proceedings in a time-bound manner has been introduced through subordinate legislation in January 2017.

- 16.23. The justice system is another avenue where corruption cases get held up. Delays in obtaining justice encourage the corrupt and discourage those who are honest. Beyond the larger reforms in the justice system to reduce pendency, special courts set up to try corruption cases should be strengthened and time limits to process corruption cases should be introduced.

Curbing Black Money

- 16.24. A central element in corruption is the existence of unaccounted income and wealth. In a strategic initiative to reduce stocks of black money in the system and pin down tax evasion, Government of India scrapped the existing notes of Rs.500 and Rs.1000 as legal tender with effect from 9th November 2016. These old notes were replaced with new Rs.500 and Rs.2000 notes. To reduce flow of black money, the government has also taken several steps, including promotion of digital payments, stricter limits on cash transactions without Permanent Account Number (PAN) and on cash contributions to electoral campaigns. The committee of Chief Ministers on digital payments has recommended several other measures for encouraging digital payments, through reducing the costs of transactions using debit/credit cards and encouraging Rupay cards and Aadhar enabled Payment Systems.
- 16.25. Further structural changes to reduce flows of black money will involve keeping tax levels moderate and tax administration simple and transparent, and reforms in real estate transactions, including seeding of Aadhar and moderate stamp duties. Moreover, the government must frontally address the problem of corruption among tax officials. Cases of corruption among tax officials must be prosecuted and disposed swiftly since without instilling honesty among officials in this area we cannot curb the generation of black money.

Minimising discretionary powers of officers

- 16.26. An important aspect of curtailing corruption is to minimize the discretionary powers available to the government officers. There are two specific and interlinked ways in which this can be achieved.
- 16.27. First, where officers are required to enforce rules, the rules themselves should provide unambiguous instructions to the government officers to follow that would lead to elimination of their discretionary powers. For example, the Chapter “Taxation Policy and Administration” discusses the need for clear tax laws to minimize the tax officers’ discretionary powers. Similar actions are required in every aspect of government enforcement.
- 16.28. Second, adoption of technology, especially digital platforms, would lead to disintermediation between the government and its citizens, and push government services on a neutral and transparent platform. This has the potential to transform government administration systems, and substantially reduce the scope for exercise of discretion by government officers. While technology can be used for various government activities, one such example is the promotion of Government e-market, which is aimed at replacing the current procurement system with a digital marketplace. This will help in bringing transparency and reducing scope for corruption in procurement systems in India.
- 16.29. Other technology led solutions which encourage government interaction with citizens and businesses in a presence-less and paper-less manner should be introduced wherever possible. Such systems both reduce the avenues of corruption available to officers, and also make it possible to focus vigilance on those transactions which do not take place through them.
- 16.30. Another system that should be technology/system led is posting of officers. Discretionary postings often result in charges of favouritism and corruption. Technology/system led postings would be immune to such charges.

Political Financing Reform

- 16.31. The Union Budget 2017-18 has taken several excellent steps in terms of campaign finance reform by lowering the

limit for campaign donations in cash and introducing electoral bonds. An effort must be made to implement these reforms in the coming years.

Federalism

16.32. A signature initiative of the present government has been "Co-operative and Competitive federalism" to achieve all round growth and move away from 'One Size Fits All' approach to policy. This has been at the heart of the new institution of the NITI Aayog, which is mandated to foster collaborative federalism through structured support initiatives, recognizing that "strong states make a strong nation". The acceptance of the recommendations of the Fourteenth Finance Commission (FFC) has increased the fiscal autonomy of the states, allowing them to pursue their own paths in designing and implementing development schemes as per their priorities and needs.

16.33. Several next generation reforms required for economic progress such as those relating to land, agriculture and electricity distribution are in the domain of the states. Further, it is preferable to adopt a state-led reform model even for many items in the concurrent list in the Constitution, such as labour law and the land acquisition law. At least in some states, greater consensus for reforms in these areas may emerge than exists at the centre. Moreover, different states may benefit from the freedom to chart different policies based on their local needs rather than one-size-fits-all reform at the Centre.

16.34. Thus, it is important to create an enabling environment where states can become the drivers of economic reforms in the country.

Ranking of States

16.35. For fostering genuine competition between states, NITI Aayog will continue the process of ranking states in terms of doing business, and improvement in health, education and water outcomes. Simultaneously, NITI Aayog will provide technical and expert assistance to states to improve their performance. This includes compilation and dissemination of best-case practices worldwide keeping in view the local Indian conditions.

Fiscal independence

16.36. An important requirement to deepen federalism is fiscal independence of the states. As mentioned above, the award of greater share of tax revenues as devolution has greatly advanced this objective. This process needs to be taken forward. The Centrally Sponsored Schemes (CSS) are social welfare schemes promoted by the Centre related to state-subjects in the Constitution that are national priorities for development. On the one hand, new CSS schemes have proliferated while on the other existing schemes have been running for decades without due scrutiny. The total budget outlay of the Centre towards CSS in 2016-17 was Rs. 2.26 Lakh Crore. Currently, there are 28 broad schemes, which are further classified into multiple sub-schemes.

16.37. The NITI Aayog may be asked to undertake a careful review of the schemes. It is important to evaluate each scheme to determine if it is meeting its stated objectives and if not why. The review must then suggest course correction necessary to bring the scheme back on track to deliver on its objectives. In rare cases when it is determined that the scheme is performing poorly and that corrective action is not likely to result in significantly improved outcomes, its closure must be considered. More broadly, each scheme must also be evaluated for a possible sunset clause, which would help draw a timetable for its completion. Closing a scheme upon achieving its objectives would free up resources for the launch of new schemes. Such change is an essential feature of a dynamic economy and society.

16.38. NITI Aayog may be asked to carry out a full analysis of the CSS and develop a long-term roadmap of the same latest by the end of 2018-19.

Non-Government Organisations (NGO)

16.39. An effective partnership between the government and the NGOs can help in governance of the social sector schemes, as the voluntary sector can help significantly in filling the gap in the capability of the government to deliver its social welfare programmes to the targeted beneficiaries.

16.40. For improving the transparency and accountability in the sector, NITI Aayog has been made the nodal agency for registration and accreditation of voluntary organisations. The registration will generate a unique ID for these organisations and provide a snapshot of their functions. This will help in various government agencies to identify suitable partners for their activities. Further, the portal can be used for monitoring and increasing the accountability of voluntary organisations. As of 11 April 2017, 28,000 NGOs had registered on NITI Aayog managed portal Darpan as against the estimates of 3.2 million NGOs operating in India. In the next three years, the coverage of the portal would be expanded to cover most of the relevant NGOs.

Table 16-1: Key Action Agenda Deliverables with Timelines

Area of Action Agenda	Deliverable	Nodal agency	Stakeholders	Timeline
Civil Service Reform budget	'SMART' Goals and progress on same for every ministry and department	Union/State Finance Ministry	All Union/State ministries and departments	December 2017 and then every year, one month before
	Implement H R system for government employees	DoPT	All Union/State ministries and departments	March 2018
	E governance and paperless governance ranking for ministries at central and state levels	DARPG	All Union/State ministries and departments	March 2018
	Outsource government services through private channels where appropriate	NITI Aayog	All Union/State central ministries and departments	March 2018
	Modified guidelines to enable more specialisation for government officers	DoPT		March 2018
Political and Electoral reform	Constitute working group of stakeholders for deciding roadmap to synchronised elections	Election Commission	Central and State Governments, political parties, civil society	March 2018, report in six months
Federalism	Analysis of CSS and development of a long-term roadmap.	NITI Aayog	All Union/State ministries and departments	2018-19

¹ Central Vigilance Commission, "Report on Study of Existing Pattern of Prolonged Disciplinary Proceedings and Suggestions for Remedial Action", July 2015.

CHAPTER 17.

TAXATION POLICY AND ADMINISTRATION

Context

- 17.1. Three broad principles should guide tax policy. First, it should be such that it raises the requisite revenue while minimizing evasion and distortion in the economy. Second, it should exhibit horizontal equity in the sense that individuals with equal income are taxed equally. Finally, it should exhibit progressivity in the sense that those with higher incomes are taxed at higher rates.
- 17.2. A tax system rests on two legs: a system of tax rates including exemptions, if any, and an administration system that enforces tax collection at the rates specified.
- 17.3. The tax reform agenda outlined below is based on the following strategic objectives:
 1. **Eliminating the generation of black money.** Tax reform should be seen as part of a larger government agenda of cleaning up the system so that no black income is generated. A complex tax system accompanied by myriad exemptions breeds rent-seeking behaviour and presents opportunities for individuals and businesses to evade taxes. Therefore, the reform aims to simplify substantially the tax structure and dismantle exemptions offered under special situations.
 2. **Expanding the tax base.** India's tax base is very narrow. Only a small proportion of individuals and businesses are part of the tax net. This has led to a low tax-to-GDP ratio, which is detrimental to effective governance and delivery of public services. A larger tax base, achieved through tax reforms, can also allow reduced across-the-board tax rates, thereby supporting investment, expanding output and enhancing economic growth.
 3. **Supporting investments through a predictable and stable tax policy.** Transforming the tax administration will help minimise tax-related disputes. We can achieve this by simplifying tax laws and regulations, and minimizing discretionary powers to the tax authorities provided by the statutes. There is also a need to improve the interface of tax authorities with the taxpayers, thereby making the process more taxpayer friendly.

Direct Taxes

- 17.4. **Corporate tax.** The corporate tax regime requires rationalisation and simplification. Although the statutory rate of corporate tax is high, the collection rate is low because of an array of tax exemptions. Against the average statutory tax rate of 33.84 % in 2014-15¹, the collection rate of a sample of over 582,000 companies was only 24.67 %. This increased to 28.24% in 2015-16². The existing systems faces a number of problems:
 1. **Discourages investments and growth:** The high marginal tax rate in India, relative to other Asian countries³, hurts equity investment. The exemptions are not given based on predetermined rules. Instead, these are devised through an opaque political process of selecting between demands of various competing groups. This creates uncertainty for investors with respect to the applicable tax rate, deterring them from investing. This also creates opportunities for corruption, rent seeking and tax evasion.
 2. **Significant sectoral differences:** The tax system is not equitable horizontally since the differential in effective tax rate across sectors is very high. For example, in 2014-15, a sample of cement manufacturers, consultancy service firms, and banking service firms paid an effective tax rate of 9 %, 16 %, and 35 %, respectively⁴.
 3. **Vertical inequity:** The exemptions to corporate tax are not equitable vertically. For example, in 2014-15, small companies having a profit of up to Rs. 1 Crore paid an average tax rate of 29.37% while companies having a profit of greater than Rs. 500 Crore paid an average tax rate of only 22.88 %⁵.

- 17.5. During the next three years, we should eliminate various corporate tax exemptions. In 2014-15, there were a total of 32 exemptions on corporate tax that had a projected impact on revenues of around Rs. 1 Lakh Crore, according to the Ministry of Finance⁶. Of these, withdrawal of seven major exemptions has already been announced, while ‘grandfathering’ these incentives for the existing firms. Note that of the seven, two exemptions would be withdrawn only by 2020-21. The cumulative revenue impact of the seven exemptions in 2014-15 was about Rs. 76,000 Crore. Other major exemptions that continue to exist include corporate tax exemptions on undertakings engaged in generation, transmission and distribution of power, development of SEZs and telecommunication services.
- 17.6. Along with implementation of the measures already announced, the other remaining corporate tax exemptions should also be withdrawn. This should be accompanied by a reduction in the corporate tax rate from 34% to 25% (including surcharges and cesses) for all companies. Given that the tax collection rate in 2014-15 was below 25%, this reform will not result in any revenue loss.
- 17.7. **Un-incorporated bodies.** The income from operations of partnership firms is subjected to a tax twice: first, profits of the business entity are taxed (subject to certain deductions such as partner salary), and the individual owners’ incomes are taxed. The tax on the intermediary, i.e., the business entities, is distortionary since the income ultimately goes to the business owners and is taxed as part of their personal income. Therefore, we propose giving the non-corporate business entities a "pass-through" of tax liabilities so that their income is taxed only once, in the hands of the individual owners. This is consistent with practices in many tax jurisdictions such as the U.S. and U.K. This will simplify the tax structure and reduce the burden of tax liabilities of such businesses.
- 17.8. Along the same lines, taxation laws for all intermediaries such as mutual funds and pension funds should be given an automatic pass-through instead of a separate exemption built into the system for a particular category of intermediary.
- 17.9. **Personal income taxes.** A key limitation of personal income tax regime is the small tax base. For example, in assessment year 2014-15, only 3.65 Crore individuals filed returns. Of this group, only 1.91 Crore individuals, or around 1.5% of the population paid any income tax at all⁷. Clearly, the current situation is not optimal. It is also not desirable in terms of developing a healthy economy since tax payment is an essential aspect of the relationship between the government and its citizens. Therefore, we should endeavour to bring a large number of citizens into the direct tax net even if their tax liabilities are minimal. The following reforms address the current situation:
1. The current income tax exemption threshold is Rs. 2,50,000 for an individual. A total of 1.12 Crore individuals filed returns declaring an annual income between Rs. 1,50,000 to 2,50,000 and thus were exempted. In addition, many individuals would not have filed returns since their incomes were below the minimum threshold. Going forward, the nominal income exemption threshold should remain unchanged such that the real value of the threshold is reduced, leading to the inclusion of a greater proportion of individuals in the tax net over time.
 2. However, the tax slabs corresponding to the lowest tax rate should be expanded to ensure that the tax liability of lower income individuals does not increase suddenly with the growth in their nominal incomes.
 3. We should aggressively move the economy towards greater formalisation, which will lead to greater number of individuals filing the tax returns. This includes moving towards digital payments and away from cash.
- 17.10. **Arresting tax evasion when non-agricultural income is declared as agricultural income.** All agricultural income is exempted from income tax. While the provision is meant to protect farmers, non-agricultural entities sometimes use it to evade taxes by declaring agriculture as the source of their income. In order to mitigate the generation of black money, the loopholes need to be plugged.

Indirect Taxes

- 17.11. **Goods and Services Tax.** The GST is a substantial reform of the existing indirect tax regime. The GST will be implemented during 2017-18. We need to develop an efficient GST operational system and minimise the disruption caused by the transition from the current indirect tax regime to the GST. The steps towards this include: (i) A well-functioning GST council; (ii) Advocacy and outreach programme to help the stakeholders (especially new taxpayers) adjust to the new system; (iii) A robust tax administration system by the Union and the state governments; and (iv) A well-functioning GSTN system.

- 17.12. The initial GST structure is designed such that massive changes in tax rates for any sector are avoided. Given the legacy of multiple rates of indirect taxes, implementing a GST with a single or a few rates would have necessarily implied that the tax rates on some products would have increased substantially, leading to a jump in their prices. Moving forward, under the real spirit of the GST, we should move gradually towards fewer number and lower level of rates. Since the GST system will expand the tax base, we should be able to lower the tax rates without loss of revenue.
- 17.13. **Custom duty.** To the extent feasible without violating our WTO obligations, we should unify all custom duties at 7%. Entrepreneurs perpetually complain about inverted duty structure. Once duties are unified at a single rate, no basis for such complaints will be left. The 7% rate will also lead to a substantial rise in custom revenue.
- 17.14. We need to improve procedures for custom clearances. This will reduce transaction costs and improve the ease of doing business. A single-window for customs clearance (SWIFT) needs to be extended to all partner government agencies with provision for a facility to upload supporting documents/licenses/permits on SWIFT. Moreover, we need to introduce SWIFT for export clearances. For efficient operations, every port should have container scanners—mobile/fixed, X-ray/drive-through. They should also have hand-held devices like tablets/personal radiation detectors/radionuclide identification devices at sheds/factories to tag each container. Duty exemption should be given to exporter upon declaration with enforcement done through ex post random checks. Under the current system, delays in drawbacks are endemic and administrative procedures so burdensome that many exporters simply forgo the exemption.
- 17.15. **Stamp duty on property registrations.** State governments levy stamp duties and fees on property registrations at the time of purchase. The total revenue from stamp duty & property registration fees for states was estimated to be Rs. 1,05,008 Crore in 2015-16, contributing 7 % of total tax revenues of the states. The rate of stamp duty varies across states, with some states charging as high as 8% of the property value. A high rate creates the incentives for the buyer of property to declare a lower value and pay a part of the payment in black. Black money thus flows massively into real estate. Therefore, the states may consider reducing the stamp duty inclusive of property registration fee, preferably to 3% to 3.5%. While individual states must take the call in this respect, we may note that when initial tax rate is excessively high, a reduction in it can raise the total revenue since it lowers the incentive to evade the tax. Indeed, there is some evidence from the past that states, which reduced stamp duties, saw their revenues rise, presumably because of an increase in declared property value by buyers⁸.

Improving the Tax Administration System and Minimizing Tax Litigation

- 17.16. The rise of tax disputes and the resulting uncertainty created from those has been a matter of concern in recent years. Pending tax litigations cost the taxpayer and the government in terms of resources including delays in the collection of revenue. As of 31 March 2015, over 6 Lakh appeals related to Union government's direct tax and indirect tax were pending, with a total dispute amount of Rs. 8.2 Lakh Crore⁹. In order to reduce the tax litigations in the country and push a stable tax environment, the following steps should be taken:

1. **Reduce the scope for interpretation of tax laws.** The scope for discretion in tax laws is an important reason for tax disputes, as they allow potential interpretative differences. This needs to be corrected through precise formulation of rules and regulations that spell out in detail tax liability under specific situations. In this regard, the Easwar Committee has offered detailed recommendations, which should be implemented.
2. **Dispute resolution strategy.** As recommended by the Tax Administration Reform Commission (TARC), the Central Board of Direct Taxation (CBDT) and central Board of Indirect Taxation (CBIT) should each create a separate disputes management vertical, which is separate from the tax collection functions. The dispute resolution mechanisms need to be modernised through alternative dispute resolution mechanisms including arbitration and conciliation. Details of different cases should also be available to the public so that taxpayers may use them as evidence in their disputes. This will increase transparency and enforce greater consistency in verdicts on cases with similar situations.

3. **Performance assessment of tax officials.** A key factor behind the increased number of tax disputes is the tendency of tax officials to initiate an action without the necessary justification or assessment. This is reflected in the low success rate of 30% they have in tax appeals filed by taxpayers across different courts¹⁰. Therefore, we should put in place a system of performance assessment of tax officials based on the success rate of their cases.
- 17.17. We need to enhance the tax boards' capabilities to utilise the available information and modern ICT tools to ensure tax compliance. For this purpose, the boards must be given considerable flexibility to bring outside technical staff laterally. We must create a multidisciplinary unit within Ministry of Finance that uses big data analytics and machine learning tools to leverage detailed data from the GSTN, income tax returns and TDS using PAN and Aadhaar numbers to identify the tax evasion activities.

¹ The statutory tax rate (inclusive of surcharges and cess) in 2014-15 was 32.445% for companies having incomes upto Rs. 10 Crore, and was 33.99% for companies having greater than Rs. 10 Crore income.

² Revenue forgone statement, Budget 2016-17, and Budget 2017-18.

³ PwC, "Worldwide Tax Summaries – Corporate Taxes 2016/17".

⁴ Revenue forgone statement, Budget 2016-17. The corresponding data for 2015-16 is cement - 21.4%, consultancy services - 25.3%, and banking - 40.3% respectively.

⁵ Revenue forgone statement, Budget 2016-17. The corresponding data for 2015-16 is 30.26% for companies with a profit of less than 1 Crore, and 25.90% for companies with profits of greater than 500 Crore.

⁶ Statement of Revenue Impact of Tax Incentives under the Central Tax System: Financial Years 2015-16 and 2016-17. This is the gross tax revenue impact and does not consider recoveries from application of MAT.

⁷ CBDT, "Income Tax Return Statistics Assessment Year 2014-15".

⁸ Report of The Advisory Group on Tax Policy and Tax Administration for the Tenth Plan.

⁹ Department of Revenues, "Report No. 3 of 2016 (Direct Taxes)" ; and Department of Revenues, "Report No. 2 of 2016 (Indirect Taxes-Central Excise)".

¹⁰ "Burgeoning tax litigation: Untangling the web", Indian Express, July 2015.

CHAPTER 18.

PRO-COMPETITION POLICIES AND REGULATION

- 18.1. As a market-based economy, it is essential that the government puts in place a regulatory framework that maximises the efficiency of markets. Often laws, rules and regulations enacted by the government inadvertently build into them provisions that restrict competition and harm efficiency of markets. This has happened in India as well. Just as it is useful to repeal dormant laws, harmful provisions in the active laws must be dropped. Competition will ensure access to high quality products and services at low prices for consumers, and incentivise firms to upgrade their technology. Barriers to competition can also hurt the competitiveness of India's exporters. For example, electricity and transportation infrastructure are often key input for manufacturing industries. If electricity market is not competitive, it can not only result in high electricity costs for industry, but also insufficient supply, which can in turn affect its competitiveness vis-à-vis the foreign companies in the world market.
- 18.2. The Vision and Strategy document lays out the agenda for reform as follows:
 1. Comprehensive reforms of product market regulations and policies.
 2. Reforming public procurement.
 3. Enhancing capacity of sectoral regulators in the country.
 4. Other reforms to enhance competition.
- 18.3. While it may not be feasible to make progress on all of these fronts, the following action agenda is proposed for completion in the next three years.

Comprehensive Reform of Anti-competitive Regulations

Challenge of pervasiveness of anti-competitive regulations

- 18.4. Government regulations play an important role in many ways. They set the framework for market forces to operate in and ensure protection of the interests of the society at large. However, faulty regulatory policies can have a severe adverse effect on the efficient interplay of market forces and end up harming public interest. Two systematic issues affect Indian regulatory environment: first, approach to creating regulations to solve a particular problem is often reactive, as adequate thought is not given to solving the problem at hand. For example, sometimes it is the case that the solution to a problem at hand is to effectively implement an existing law but we choose to enact a new law instead. Such an approach ends up creating a cobweb of laws whose future use in diverse situations end up harming competition. Second, it is often the case that we design laws and regulations without due attention to their harmful unintended consequences (see box 18-1).

Box 18-1: Urban Land Ceilings and Regulations Act – A Case of Unintended Harmful Effects of Regulation

The Urban Land Ceilings and Regulations Act (ULCRA), 1976 was created with the objective of freeing up land for public projects such as housing for the poor and infrastructure. It set tight ceilings on the ownership of land by an individual, family, firm, corporation or associations. Any excess land owned had to be sold to the government at a fraction of the market price, with an overall ceiling of only Rs. 2 lakhs per owner regardless of the size of the plot being acquired.

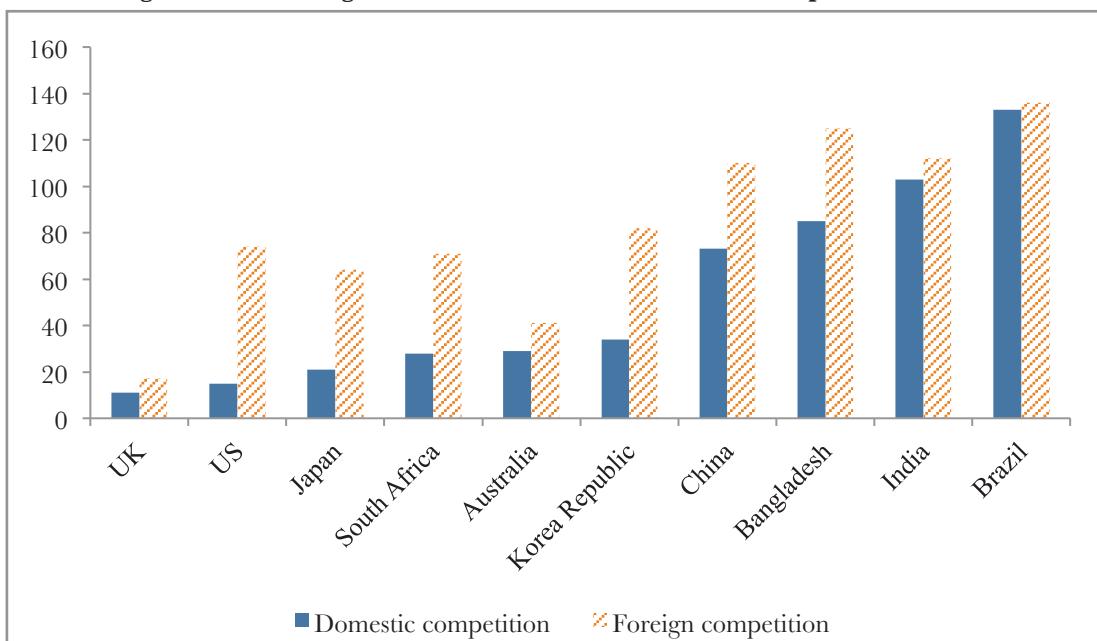
While the Act itself was premised on good intentions, it failed to achieve its objectives. Through the exemptions on ground of public interest that the Act provided, several target owners managed to get exemption from the regulations. By 1999, out of the 2,20,674 hectares estimated to be in excess to ceiling limits, the state governments could only acquire 19,020 hectares.

In addition, as a result of the Act, much of vacant urban land went off the market leading to skyrocketing of land prices. The outcome was exactly the opposite of what had been intended. Neither the government could acquire much land nor had vacant land became available for building private housing.

The problem was eventually recognized and the ULCRA was repealed in 1999.

- 18.5. From the era of license-permit raj, India has undertaken measures to significantly liberalise various sectors of the economy, and therefore allowing market forces to determine outcomes. However, the reform process has been gradual. Despite broad consensus over the primacy of markets in driving economic growth, government ownership of companies remains pervasive. Some sectors (railway, coal and electricity) remain exclusively in the public sector while in others (steel, civil aviation) government regulations give significant advantage to state enterprises over their private-sector counterparts. This has harmed competition in many markets. It is important that reforms are introduced to unlock productivity gains in these sectors and key bottlenecks removed.
- 18.6. Though regulation in industries such telecommunications, banking and capital markets is aimed at curbing monopoly behaviour and ensuring healthy competition, heavy hand of the regulator can equally well end up delivering the opposite outcome. Indeed, many elements restricting the ease of doing business are the result of heavy-handed regulation. It is important that these regulations are relaxed to further promote competition.
- 18.7. The challenge of anti-competitive regulatory environment in India is enormous. Even as India is making significant progress in the global competitiveness rankings of the World Economic Forum (WEF), its specific ranking in the area on competition is poor. The figure below show that India ranks 103rd on 'domestic competition' and 112th on 'foreign competition' by the WEF. This is much worse than several comparator countries. The OECD indicator for product market regulations finds that with the exception of Argentina, India has the least competition friendly regulations amongst all OECD and non-OECD countries covered¹.

Figure 18-1: Rankings in World Economic Forum Global Competitiveness Index



- 18.8. Restrictive regulations for a particular sector can affect competition in many ways. These include creating barriers to entry, price regulation, restricting competitive conduct such as agreements, vertical integration and advertisement. Two case studies are given below on how past and present regulations in the digital payments and electricity sectors have thwarted important government policy objectives (see Box 18-2 and Box 18-3).

Box 18-2: Past Entry Restrictions on Digital Mobile Payments in India

Recently the government has taken up various steps to promote digital mobile payments in India. This is important as India lags significantly behind even various South Asian and African countries. For example, in 2014, only 0.3% of adults in India used mobile payments compared to 76% in Kenya, 48% in Tanzania, 43% in Uganda, and 22% in Bangladesh. (Source: CGAP, World Bank).

However, historically poor performance has flown from past restrictive regulations that were corrected to an extent only in 2015. In most other developing countries, various entities other than the traditional banks have been crucial in the growth of mobile payments. For example, in Kenya, M-Pesa is the dominant service provider for mobile payments that is run by a telecom company.

However, this option was closed by regulations in India for a long time. Until 2015, the Reserve Bank of India (RBI) allowed only the existing licensed banks to provide mobile banking services, and that too only to their own customers. These transactions were subjected to various other regulatory restrictions also. This implied that the telecom companies and other potential third-party service providers were blocked from entering into a mobile banking business where consumers could deposit and withdraw cash and undertake transactions from mobile based accounts. (Source: RBI mobile banking transaction guidelines, 2008).

Recognizing the global developments, the RBI initiated the process of providing payment bank licenses to telecom companies and other e-wallets in 2015.

Box 18-3: Anti-competitive Electricity Regulations Acting as a Barrier to “Make in India”

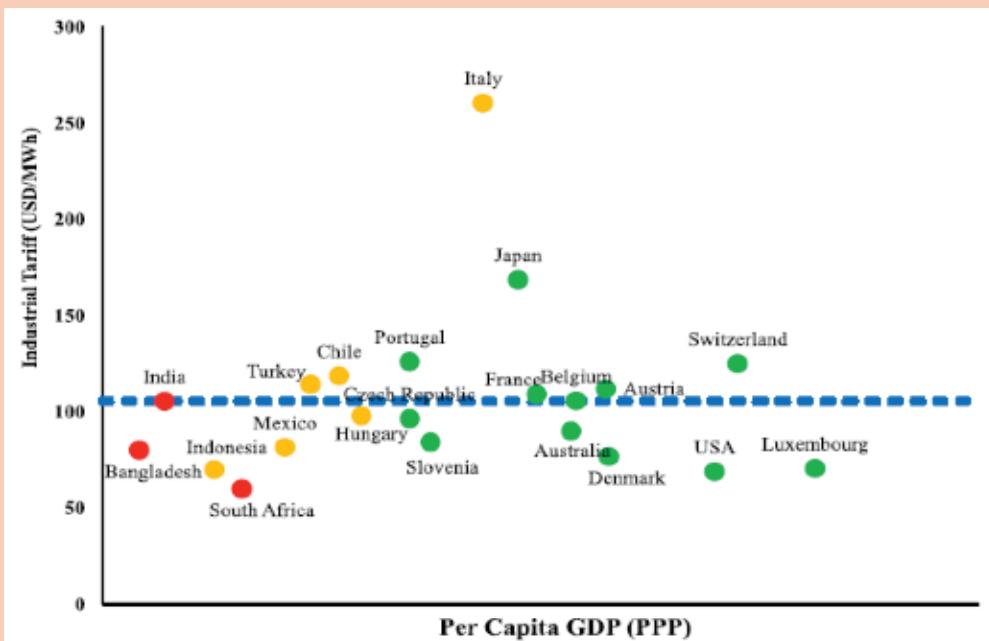
The “Make in India” programme which aims to increase the competitiveness of the manufacturing sector is limited by the current status of infrastructure. This is being addressed by the government through various infrastructure development projects. However, in the short-run, removing anti-competitive regulatory barriers in these sectors can provide a significant boost to the programme. Reforming anti-competitive electricity regulations is one such action.

Despite widespread reforms and restructuring of the electricity sector through The Electricity Act, 2003, the public-sector distribution companies (DISCOMs) have been the monopoly or near monopoly electricity distributor in most states. This is due to various regulatory barriers that protect the DISCOMs from competition. For example, the Open Access policy introduced in 2003 allows consumers with consumption above 1 megawatt (MW) to procure electricity directly from the electricity markets, instead of the DISCOMs. This allows for competition for the large consumers. However, in practice, a number of states have created barriers in creating a genuine open-access to large consumers. This is via cross-subsidy charges levied on purchase of electricity from the power exchanges, as well as other non-price barriers. The cross-subsidy charge can be substantial: it is usually between around Rs 1.0 to 2.5 per Kilo-Watt-hours (KWh), which is a large proportion of the average industrial tariff from state DISCOMs that are between Rs 5 to 7 per KWh. (Economic Survey, Ministry of Finance – 2015-16).

The impact of protecting DISCOMs from competition has been adverse for the economy, and particularly for the manufacturing sector. The nominal industrial tariffs in India are higher than several countries having comparable per-capita GDP (in PPP terms) and even many developed countries having higher income levels.

Worse is the fact that it is accompanied by poor quality of electricity supply as shown by the colours in dots in the figure below (red being the worst, then orange and green).

Industrial Tariffs (USD/MWh) and Quality of electricity Supply



Source: Economic Survey – 2015-16.

At a time when several power plants are experiencing low demand, opening up of the market for competition has the potential for large fall in industrial tariffs, thus providing a boost to “Make in India”.

Long-term roadmap

- 18.9. The long-term strategy for implementing pro-market competition reforms must include the following elements:
1. **Reversing burden of proof in favour of competition:** Instead of the current presumption of regulation, the default position should be favouring competition unless a clear policy objective justifies regulatory intervention.
 2. **Least restrictive regulations:** Adopting the principle that any regulatory or policy intervention should be the least restrictive to competition that meets the policy objectives.
 3. **Reforming traditional public monopoly sectors:** Opening-up the traditional public monopoly sectors to competition to the extent possible.
 4. **Separating policy-making, regulation and operations:** The separation of policy, regulation and business operations is needed to reduce the potential for conflict of government interests and creation of credible environment for private investment.
 5. **Competition neutrality between government-owned and privately owned enterprises:** Creating level playing conditions for competition between government-owned and privately owned enterprises.
 6. **Dismantling restrictions on inter-state competition:** Any regulation that creates isolated regional markets must be withdrawn to create unified national markets in all sectors to the extent possible.

Institutional mechanism for comprehensive review of regulations

- 18.10. Various countries, including Australia, UK, and US have mechanisms to systematically assess impact of existing or new proposed government actions on competition. Given that the problem in India is more severe, it is important that we too create a mechanism for comprehensive review of existing regulations to identify the anti-competitive regulations and reform them based on the review.
- 18.11. For ensuring a comprehensive and systematic approach to reforms over the long-term, a new competition policy that commits the government to promote competition through reform of its policies and regulations should be adopted. The policy will also have specific guidelines to be followed by all ministries/departments in a time-bound manner. Further, an appropriate institutional mechanism needs to be created for implementing the competition policy through conduct of sector-wise reviews of laws, policies, and regulations and recommending changes, if any, to promote the above mentioned policy objectives.
- 18.12. During the Action Agenda period, it is proposed that at least two sectoral reviews are initiated.

Foreign direct investment reforms

- 18.13. In the recent years, India has made significant progress in dismantling regulatory barriers to foreign direct investment (FDI), which existed in the form of sectoral equity caps. This is reflected, for example, in OECD's analysis that shows that India has been a top reformer of FDI regulatory restrictions in 2011-16 in the world. However, despite this progress, India continues to be ranked by the OECD as a restrictive regulatory regime for FDI. This shows the scope for further regulatory reforms, which ought to be implemented in the next three years.

Dismantling inter-state barriers to competition in agriculture sector

- 18.14. The government has undertaken an ambitious mission of unifying the country's fragmented agricultural markets. Various regulatory barriers, such as the APMC Act, Essential Commodities Act and procurement levies lead to inter-state barriers to competition. During the next three years, government should undertake efforts to unify as many local agricultural markets as possible through regulatory reforms by states and growth of the e-NAM platform.

Public Procurement Reforms

- 18.15. Procurement is an integral and important part of government's activities. A sound procurement system ensures effective competition for government contracts, which will lead to better value for money spent. This ensures effectiveness of the expenditure programme. Various regulations and procurement rules can harm the competition for these services. This directly affects the government through wastage of expenditure and poor quality of services. Some rules could unfairly rule out certain bidders which could facilitate collusion between bidders, sometimes accompanied by facilitation of corrupt procurement officials. Other rules could create entry barriers through obsolete technology requirements, for example. Regulations could also fragment the Indian market by favouring local bidders over others. While there is no easy solution to fully eliminate the possibility of collusion and corruption in public procurement, a lot can be done to gradually strengthen the procedures to minimise the undesired instances.

- 18.16. The sector-wise regulatory reviews should help in tackling certain procurement rules that affect competition.
- 18.17. However, more steps are required to systematically address problems in public procurement. The following steps should be undertaken:
- 1. Increase in transparency in the procurement process.** The movement towards e-procurement in recent years has led to greater transparency in the process. This process would be continued to ensure more processes are conducted online.
 - 2. Adoption of Government E-Marketplace (GeM) model.** The GeM is a portal developed by the Government of India that allows a completely paperless and cashless system of procurement thereby minimizing human interface. Procurement through it should be expanded to cover many more products and services. Procurement of common products through GeM promises to considerably reduce corruption, increase transparency, dismantle entry barriers for

potential vendors and eliminate discrepancies in payments.

3. **Easing of conditions for participation of bidders.** The procurement regulations and policies should facilitate participation of new bidders, making collusion more difficult. The qualification rules need to be rationalised so that the rules do not favour some bidders over others. Qualification rules based on turnover of firms ought to be limited. The technical conditions should be broadly defined based on the functional requirements, and a reference to third-party certification should be made, to the extent possible. Finally, the creation of a procurement complaints redressal mechanism should be explored, where bidders could raise concerns if a discriminatory procurement process was followed.
4. **Database for government tenders:** A centralised database should be created for automatically recording data of government tenders, including the number of bidders, price awarded and the financial bids made. This should be monitored by a government expert agency, which can highlight potential collusion cases and refer them to the Competition Commission of India for investigation.

Capacity Enhancement of Sectoral Regulators

18.18. Over the years, as government has reduced its control on the economy, a lot of burden of micro-governance of the economy has fallen on separate regulatory entities. Various sectoral regulators have been established as expert bodies to deal with several regulatory issues, such as licensing, establishing technical standards, consumer protection and price regulation. Another regulator that has been established is the Competition Commission of India to deal with overall issues of market abuse and prevention of anti-competitive conduct in any sector. To provide good governance, it is important that these regulatory institutions are strengthened through capacity building and structural reforms. The following actions are suggested:

1. **Addressing gaps in regulatory powers and independence.** While existing laws and rules establish the mandates of sectoral regulators, there is a need to address gaps in the powers and independence of the regulators, especially in the infrastructure sectors. This includes measures to enhance functional independence of the regulators through streamlining appointments and the provision of adequate financial resources. Similarly, the regulators should be provided with the necessary powers to enforce their decisions, such as the power to investigate and penalise, where appropriate.
2. **Human-resource capacity building.** The capacity of regulators is directly linked with its human resources. It can be significantly built by providing regulators with autonomy in formulating their human resource strategy. This includes hiring experts from the non-government sector at market rates, and relaxation in rules and regulations on employment in the government. Further, the process for appointments of heads of regulators should be opened up such that more eminent domain experts from the industry or academia could be brought in for the decision-making roles at these bodies.
3. **Reducing instances of overlap between jurisdictions of regulators.** The overlap in jurisdiction of certain regulators can create conflicts between them and create legal uncertainties while weakening the governance since various stakeholders have the opportunities for ‘forum-shopping’.
4. **Consolidation and reform of tribunals.** The Budget 2017-18 has undertaken a significant step towards consolidation of tribunals that adjudicate on decisions taken by sectoral regulators. This will allow pooling of resources and expertise. Further, the tribunals should be mandated to make their decision within a prescribed time. These can reduce instances of regulatory decisions being delayed by lengthy legal proceedings, and significantly help in speeding up the decision making process.

¹ See the 2013 update of the OECD's database on product market regulation.

CHAPTER 19.

THE RULE OF LAW

Context

- 19.1. All social, human and economic development depends on the rule of law. As such maintenance of law and order is a critical function of the government. While India has made great strides in this area since independence, much remains to be done.
- 19.2. For instance, India ranked 172nd out of 190 countries in the area of Enforcing Contracts in the World Bank's Ease of Doing Business report 2017 with an average time of nearly 4 years required for enforcement¹. As a further indicator of delayed justice, of the cases disposed since 2000 by district and lower courts, 81.8% took more than 5 years and 57% more than 10 years. In four high courts² where sufficient data was available, 87% cases were disposed of in 10-15 years, and only 5% in less than 5 years³. As just one comparison, in the U.S., median time from filing to disposal was 7 months for criminal cases and 8.8 months for civil cases in 2015⁴. These statistics clearly point out inordinate delays in India's judicial system.
- 19.3. Further such indications are visible if we look at statistics of the police force. The strength of the police force in the country is well below international norms. As on 1st March 2016, the total sanctioned police force was 22,80,691⁵ - approximately 181 policemen or policewomen per lakh population. After accounting for vacant positions, policemen on the ground per lakh citizens are merely 137 (17.3 lakh in all). The UN recommended number of police personnel per lakh population is 222. The conviction rate in Indian Penal Code (IPC) criminal cases in 2015 was 49%, implying that in more than half of IPC cases, either innocent people were charged, or the offenders were not convicted for their crimes. In the United Kingdom, the conviction ratio in 2014 was 82%⁷.
- 19.4. These statistics are symptoms that the justice system in India — intended to uphold the rule of law — is in dire need of reform. In the following sections, we will cover some of the more immediate and important reforms we can take up in the next three years.

Justice System Reform

- 19.5. There are three broad areas in which the Justice system needs reform: statutory and administrative laws, the judicial system and police.
 1. Statutory and administrative law reform should focus on: Modernising and weeding out old and dysfunctional elements in legislation; Unifying and harmonising laws; Reducing government intervention in areas where it is not required; Statutory reforms in the criminal justice and procedural laws; and reform of land/property related laws
 2. The strategy for reforming the judicial system should focus on streamlining human resource availability and performance, increasing and strengthening avenues for dispute resolution, using ICT extensively to improve efficiency.
 3. For police reform, the important areas are state level legislative and executive reforms to allow police forces to serve more effectively the purpose of the police force of a modern democratic state.

Statutory and administrative law reform

- 19.6. *Create a repository of all existing Central and state Laws, rules and regulations.* At the state level, all states need to create a central

repository of all the existing state laws, and the rules and regulations of the various regulatory bodies and executive agencies. The preliminary step should be to ensure that all legislation, amendments and subordinate legislation are available together in one place and searchable by subject matter. Once completed, all existing individual laws can be re-arranged to make a meaningful subject-wise compilation, and permit us to assess and address problems of over regulation in a structured and coherent fashion

- 19.7. *Repeal redundant laws.* At the Union Level, the first step would be to repeal the laws as already suggested by the Malimath Committee and Law Commission Reports. This process is currently in progress at the centre with the parliament having repealed 1175 redundant laws so far. In January 2017, the Cabinet has approved another bill for the repeal of 105 similar laws. This process must be taken to its logical conclusion with all redundant laws taken off the books by the end of 2018-19. A process of repealing the defunct laws should also be initiated and completed by 2019-20 by all states. Rajasthan has taken lead in this respect and other states may follow suit.
- 19.8. *Changes in Criminal Justice and Procedural Laws.* Changes to procedural laws in line with the principles and underlying thinking of the Commercial Division Bill. As the Law Commission of India has outlined in its 255th report, we should change from the present litigant driven outlook to a judge driven outlook in line with global practice. This requires a total overhaul of the Code of Civil Procedure, 1908 which has not undergone any significant reform since 2002. Another reform that should be done is of the Code of Criminal Procedure, 1973 to bring it in line with latest practices in criminal procedure, to expand the scope of forensic science evidence and recognize its strength for criminal justice delivery. Section 311 Code of Criminal Procedure (CrPC) should be amended to require every court to suo moto produce evidence for the purpose of discovering the truth. Suitable amendments to the Indian Evidence Act, 1872 will further facilitate the evidence gathering.
- 19.9. *Reform land ownership and related laws.* Nearly 67% of litigants in civil cases are using the judicial system for land/property related cases. The difficulty in establishing ownership also holds back the economy in other areas like Agriculture and Industry, and introduces inefficiency in renting and productive land use in urban areas. There is thus a clear need to bring in land reforms, accompanied by modernisation in the area of maintenance of land records. We examine some of these issues in greater detail in the agriculture chapter, but reforms such as the titling law passed in Rajasthan in 2016, along with simplification and rationalisation of other laws related to land leasing, transfer, inheritance etc. are needed to reduce the burden on the judicial system.

Judicial system reform

- 19.10. *Introduce a judicial performance index.* The first step would be to establish a judicial performance index. Such an index could be established to help High Courts and High Court Chief Justices keep track of performance and process improvement at the District Courts and subordinate levels for reducing delay. This would require fixing non-mandatory time frames for different types of cases as broad guidelines to benchmark when a case has been delayed. Using existing infrastructure and data, indicators could be created to see how long cases have been pending, what percentage of cases have been delayed and how many cases were disposed in the last year compared to the year before. In this effort we could also learn from measures developed internationally, such as “Global Measures of Court Performance” created jointly by the Australasian Institute of Judicial Administration (Australia and New Zealand), the National Center for State Courts (United States), the Federal Judicial Center (United States) and the Subordinate Courts of Singapore. Other international efforts that can be studied include European Commission for the Efficiency of Justice. The index can also include certain progress on process steps that have already been approved by high courts, like burden of day-to-day activity being removed from judges and given to administrative officials. This annual evaluation should give judges in High Courts and District Courts a sense of where they are failing and what they need to fix. Since the subordinate judiciary is largely within the domain of the High Courts, this could also spur competitive reform of the judiciary in those states.
- 19.11. *Introduce an administrative cadre in the judicial system.* There is a need to create a separate administrative cadre in the judiciary to manage the system. To maintain judicial independence, the cadre should report in to the Chief Justice in each High Court. Currently, judges also handle many administrative responsibilities, which reduce the time available to them for hearing cases and writing judgements.

- 19.12. *Increase use of Information and Communication Technology (ICT).* High priority should be given to court process automation and ICT enablement for electronic court and case management, including electronic management of court schedules and migration of all courts to the unified national court application software. Establishment of ICT systems in related institutions like jails and police systems and integration of court ICT systems should also be taken up at high priority. The productivity gains from implementing these systems will help significantly in utilising existing manpower to the fullest extent possible.
- 19.13. *Streamline Judicial Appointments.* Step may be taken for ensuring availability of online real time judicial statistics for determining the adequacy of Judiciary manpower and infrastructure to deal with work load of cases, which will enable priority appointment of judges at the lower judiciary levels keeping in mind a scientific approach to assessing the number of judges needed to tackle the pendency problem.
- 19.14. *Shift certain large sections of workload out of the regular court system.* Commercial Courts, Commercial Division and Commercial Appellate Division of High Courts Act, 2015 should be implemented in the largest cities to decongest existing courts. As suggested by the Law Commission in its 255th Report, these courts and divisions should be used to free up resources to tackle the more routine cases. Also, since Traffic and Police challan cases constituted 37.4% of the total number of cases during the three-year period examined by the commission, special courts can be dedicated to these offences. Consideration may also be given to waiving the requirement that offenders must come to court to pay their fine.

Police Reform

- 19.15. In this section, we focus on action points relating to the role policy must play in enforcing law and order on a day-to-day basis. These reforms are generally required at the level of the state.

State level legislative reform

- 19.16. States should be encouraged, with fiscal incentives, to introduce critical legislative reform to their police acts, most of which are still based on the police act of 1861. The Model Police Act of 2015 can serve as a basis for such legislative reform as it modernises the mandate of the police, puts in place a governance mechanism that is relatively insulated from political interference and provides for measurement and tracking of police performance.

Administrative and operational reform

- 19.17. A Task Force must be created under the MHA to identify non-core functions that can be outsourced to save on manpower. These measures will help in reducing the workload of the police. Functions such as serving court summons and antecedents and addresses verification for passport applications or job verifications can be outsourced to private agents or government departments.
- 19.18. The police-to-population ratio should be increased to reach the United Nations (UN) norm of 222 personnel per lakh population in the next seven years. A three-year target may be worked out by the MHA in consultation with states.
- 19.19. Incidence of crime against women and other vulnerable groups is not only a reflection of societal health and social fabric; it has an adverse implication on many counts other than the obvious horror of the crime for the individual affected: tourism, hospitality industries, women's Labour Force Participation Ratio – all get affected. The states should be encouraged to ensure that the representation of women in the police force is increased. The MHA should come up with a policy to encourage greater participation of women with a target of achieving 30% women among new recruits.
- 19.20. While matters pertaining to crime are ordinarily in the state list, common citizens view the government as a single entity and expect services to be delivered accordingly. India should launch a common nation-wide contact for attending to urgent security needs of the citizens. The service may include emergency response on the pattern of 911 in the United States. The back end of the service may be designed in accordance with responsibilities under Schedule VII of the Constitution.

Table 19-1: Key Action Plan Deliverables with Timelines

Area of Action Agenda	Deliverable	Nodal agency	Stakeholders	Timeline
Statutory and administrative law	Subject wise Repository of Central and State Laws	Law Ministry	State governments	December 2018
	Repeal of old laws	Law ministry	State governments	December 2018, six monthly progress report
	Guideline for simple language in laws and overlap analysis before introduction of any new legislation	Law ministry	Central and State governments	December 2018
	Changes to criminal and procedural laws	Law ministry		December 2019, six monthly progress report
	Reforms in land titling, transfer and inheritance laws	Law ministry/ Department of Land Resources	State governments	December 2019, six monthly progress report
Judicial reform	Court performance index	NITI Aayog	Law Ministry, Supreme Court, High courts	September 2017
	Court Automation and ICT enablement	Law ministry	State Governments, Judiciary	December 2019, six monthly progress report
	Fill empty positions in courts	Law Ministry	State Governments, Judiciary	December 2019, six monthly progress report
	Online status of courts - manpower available and cases pending	Law Ministry	State Governments, Judiciary	June 2018, six monthly progress report
	Separate traffic courts/ amendment to remove requirement to pay traffic fine in court	Law Ministry	State Governments,	December 2017
Police reform	Constitutional amendment for cross-border aspects of law and order on central list	Home Ministry	Central and State Governments	March 2019
	Administrative and operational reform of police systems	Home Ministry	State governments	March 2020

¹ World Bank, “Doing Business 2017, Annual Report”.

² Gujarat, Orissa, Kerala, Bombay

³ DAKSH, “State of the Indian Judiciary, 2016”. http://dakshindia.org/state-of-the-indian-judiciary/20_chapter_09.html#_idTextAnchor240

⁴ http://www.uscourts.gov/sites/default/files/data_tables/Table6.03.pdf

⁵ Bureau of Police Research & Development, “Data on Police Organisations, January 2016.

⁶ National Crime Records Bureau, “Crime in India”, 2015.

⁷ <https://www.gov.uk/government/statistics/criminal-justice-statistics-quarterly-april-2013-to-march-2014>

Part VI Social Sectors

CHAPTER 20.

EDUCATION AND SKILL DEVELOPMENT

- 20.1. While India is expected to become the second largest economy by 2050¹, it will also boast of the world's largest working-age population which is expected to touch 962 million by 2030². Furthermore, India will be the world's youngest country by 2020 with an average age of 29 years³. This "demographic dividend" comes at a time when the rest of the world is ageing where, by 2020, the average age in the United States of America (USA) is expected to be 40 years, for Europe 46 years and for Japan 47 years⁴. Thus, India will not only have a young workforce to fulfil its domestic needs, it also has the opportunity to become the global hub for skilled workforce.
- 20.2. This window of opportunity is also a challenge. The youth of India need education and skills to be able to fulfil their promise and the current systems are ill-equipped to deliver these on a large scale. The following sections touch on the action items needed in the areas of School Education, Higher Education and Skill Development if we are to deliver on this promise.

School Education Vision and Strategy in Brief

- 20.3. The most important goal in front of the Indian school education system today is to improve learning outcomes. Through initiatives like the Sarva Shiksha Abhiyan (SSA) and The Right of Children to Free and Compulsory Education (RTE) Act, the Indian school system has focused on measuring and delivering inputs, and in this, it has largely succeeded. The Gross Enrolment Ratio (GER) in 2015-16 for grades I-V was 99.2% and for grades VI-VIII was 92.8%⁵. Pupil-Teacher ratio at national level for elementary schools was 24:1 and for secondary schools it was 27:1⁶.
- 20.4. Unfortunately, this success in getting more children into schools with more teachers has not translated into more education. The proportion of children in grade III who can read at least a grade I level text dropped from 50.6 in 2008 to 40.3 in 2014, before increasing marginally to 42.5 in 2016 according to Pratham's Annual Status of Education Report (ASER) data. The proportion of children in grade III who can do at least subtraction fell from 39% in 2008 to 25.4% in 2014, and again increased slightly to 27.7% in 2016. Poor learning outcomes are reflected in multiple other sources as well, including the National Achievement Survey (NAS), which found worse results in Class V Cycle 4 (2015) compared to Cycle 3(2012).
- 20.5. These are not the only results, which suggest that a focus on inputs does not help improve education. The most rigorous and credible evidence available to-date shows that the traditional levers – more or better infrastructure⁷, lower pupil-teacher ratios⁸, higher teacher salaries⁹ and more teacher training¹⁰ – by themselves have not been effective in improving student learning outcomes. The most critical missing pieces that evidence has shown to be effective are - pedagogy that focuses on teaching at the right level¹¹, outcome linked incentives¹², and governance that enables the system to operate smoothly¹³. In the next three years, we must focus on introducing changes that help produce improved learning outcomes in the short term as well as lay down the foundation of long term strategic change.

School Education Action Agenda - What Does it Seek to Accomplish and How?

- 20.6. There are three major goals to achieve in the first three years of the action agenda
 1. Orient the system towards outcomes
 2. Provide tools to teachers and students for effective learning
 3. Improve existing governance mechanisms and pilot new ones

Orient the system towards outcomes

- 20.7. *Introduce an independent, state of the art sample based outcome measurement system.* One of the most important components of a learning outcome orientation is a credible, comparable measurement system for each child. This is important in and of itself because without credible measurement, there is no awareness of the situation¹⁴ and no possibility of improvement. It also makes it impossible to introduce performance-linked incentives, which have been shown to be highly effective in improving learning outcomes. However, a regular high stakes assessment that involves every child would be a gargantuan undertaking for which the capacity does not exist at this point. Instead, we need to introduce an annual sample-based measurement system that is representative at the state level, independent, technology driven¹⁵ and provides rigorous estimates for the entire population of children (publicly and privately schooled). It is also critical that this assessment starts from grades as early as two or three, because that is the most critical stage of learning. Such a system would have the short-term benefit of allowing states to know how they are doing and aim to improve. One possible method is that the National Achievement Survey (NAS) can be adapted to meet the characteristics outlined above. In the longer to medium term, such a system will help build capacity for a more comprehensive assessment, and provide an independent check of the validity of larger assessments when they start being carried out. It can also be used to pilot larger scale diagnostic assessments for interested states that can help them determine shortcomings in the system and move towards their own larger scale assessments.
- 20.8. *Track and support state level improvement through a School Education Quality Index (SEQI).* Competitive and collaborative federalism can be used as a lever to drive improvements in school quality through tracking outcomes and reforms in a systematic way and making them public knowledge. SEQI will be instituted to collect, systematise and publicise these measurements to drive the orientation towards outcomes.
- 20.9. *Modify RTE requirements on inputs.* The Right To Education (RTE) Act stresses on inputs, causing resources to be focused on things like building schools, hiring teachers, having playgrounds and libraries while learning outcomes have steadily dropped since the introduction of the Act. The RTE needs to be modified to actually become a Right To Learning, instead of being, as it currently is, a Right to go to School. In this context, the recent amendment of Rule 23(2) under the Right to Education Act constitutes an extremely important positive step. The amendment makes it compulsory for all state governments to codify expected levels of learning for students in classes I to VIII. It requires states to prepare “class-wise, subject-wise learning outcomes for all elementary classes” and devise “guidelines for putting into practice continuous and comprehensive evaluation, to achieve the defined learning outcomes.” In implementing this mandate, states should begin by devising their learning indicators and planning a state-level measurement system for every child.
- 20.10. We should also go further in this effort. Gujarat has already shown the way with its rules and regulations for the RTE Act. These rules assign the bulk of the weight to student performance when considering continued recognition of a school. But most states have followed the central government’s template and relied on input norms. To remedy this situation, all the requirements on inputs such as school buildings, playgrounds and pupil teacher ratios should be removed or relaxed to take the form of guidelines, and the focus should shift to outcomes instead. States should be encouraged to deploy resources as efficiently as possible to achieve outcomes. In particular, pedagogically unviable schools with very few students will then be more easily consolidated into larger schools.

Provide tools to teachers and students for effective learning

- 20.11. *Introduce evidence based Information and Communication Technology tools only.* Evidence shows that introducing technology by itself is no panacea. A recent review of evidence finds mixed results with a pattern of no results and even a few negative results¹⁶. This should not be interpreted to mean, however, that all technology-based learning applications are ineffective or harmful. On-going research has offered some indication that computer-based tools that allow children to learn at their own level and pace may be highly effective in pushing up learning outcomes¹⁷. The government should commission further research on such tools on a wider scale, and if successful, they should be adopted.
- 20.12. *Focus on foundational learning.* There is compelling evidence that children who fall behind in basic literacy and numeracy skills in early grades maintain an almost flat learning curve later because the material being taught in class moves past their level and they have no way of catching up¹⁸. A time-bound national program with focus on ensuring that all

children have such basic skills should be launched. Mobilizing the services of local contract tutors who may not possess the qualifications of regular teachers but are nevertheless qualified to impart foundational skills is one possible way of bridging this gap.

20.13. *Pilot a system of technology aided adaptive examinations.* Under the RTE, everyone is promoted till Std. VIII and are suddenly required to clear board examinations in higher grades. This leads to student stress and high stakes situations which result in adverse outcomes like preparing for the test and mass cheating. We should pilot a system of technologically enabled “exams on demand” which test students on absolute competencies instead of relative ‘marks’ and allow students to take and re-take exams when they are ready. This can help us study its effectiveness in reducing cheating in exams and also open up the option of ‘second chance’ programs, where those who have dropped out at the elementary level can certify themselves at the higher levels.

Improve existing governance mechanisms and experiment with new ones

20.14. *Improve existing governance mechanisms.* The hollowing of public schools makes it abundantly clear that the public school system has not achieved the desired outcomes in the country.

Table 20-1: Hollowed Out Public Schools (2014-15)

Type of public school	Number of schools	Avg. students per school	Avg. spend per child per year	Total teacher salary bill
20 students or less enrolled	~1,00,000	12.7	Rs. 80,000	9,440 cr.
50 students or less enrolled	~3,70,000	29	Rs. 40,800	41,630 cr.

20.15. Between 2010 and 2014, public schools increased by approximately 13,500 in number but total enrolment in them fell by 1.13 Crore. In parallel, private school enrolment rose by 1.85 Crore. This shift has been accompanied by hollowing of an alarmingly large number of public schools. As the accompanying table shows, public schools with fewer than 50 students (and an average of 29 students per school) stood at 3.7 Lakh schools in 2014-15. They represented 36% of all public schools¹⁹. High rate of teacher absenteeism, limited time spent on teaching when the teacher is in class and generally poor quality of education are among important reasons for this emptying out. Outcomes are worse in government schools than in private schools, and those who can leave are voting with their feet. Quality improvement through improved governance is one way of slowing or reversing this process. A set of basic governance processes and structural reforms that have the maximum impact have been identified and included in the SEQI. These include, among others, a focus on school leadership, administrative tenure, basic monitoring by administrators to resolve school level issues such as teacher absenteeism, and transparency in teacher appointments and postings/transfers. Improvements on these parameters included in the SEQI should be the focus of state governments in the short term.

20.16. *Pilot new governance mechanisms.* One of the critical changes that needs to be brought about in the governance of the school education system in India is a separation of the functions of policy making, regulation and provision. Currently, all these functions are carried out under the State Ministry of Education which often regulate aspects of private school functioning like school fees in an ad hoc manner. Progressive states should be identified where the separation of these functions can be piloted.

20.17. The provision of education can potentially be hived off into a separate publicly owned vehicle, or the directorate of education can be made more autonomous and accountable. The important factors to be kept in mind for such an initiative to succeed are – clear, measurable goals; quality of top managers selected; independence and authority for the management to take necessary steps to reach the goals; and oversight and accountability based on credible measurement of outcomes.

20.18. In terms of regulation, states should regulate only based on outcomes and transparency requirements, not through

regulating inputs like library, fees and playground. Both private and government schools should be regulated in the same way.

20.19. *Explore the role for private players.* A working group should be set up with states' participation to explore and pilot other bolder experiments by interested states. These could include education vouchers and local government led purchasing of schooling services. Public-Private Partnership (PPP) models could also be explored where the private sector adopts government schools while being publicly funded on a per child basis. This latter instrumentality may provide a solution to the problems of schools that have hollowed and are incurring massive expenditures per pupil currently (see above).

Higher Education Vision and Strategy in Brief

20.20. In higher education, we face a similar challenge to school education. We have made significant progress in increasing enrolment – the GER in tertiary education has risen from 20.8% in 2011-12 to 24.5% in 2015-16 and is more than double what it was only 10 years ago²⁰. However, we need to drive higher quality in the system. To give an indication of the magnitude of the challenge, an assessment of 150,000 engineering graduates²¹ in 2016 found only 18% of engineers were employable in the software services sector in a functional role, only 41% in non-functional Business Process Outsourcing and only 4% in software engineering start-ups.

20.21. When we look to successful higher education systems across the world, we find that less regulation and more focus on autonomous governance, transparency and outcomes are critical components of a vibrant and successful higher education sector, and these should be the basis of our strategy.

Higher Education Action Agenda – What Do We Seek to Accomplish?

20.22. The major actions to be completed over the next three years are:

1. Designation of World Class Universities
2. Autonomy for top colleges and universities
3. Reform of the regulatory system – A tiered system of universities
4. Establish system of project/researcher specific research grants
5. Increased focus on vocational and profession led education

20.23. *Designation of World Class Universities.* Identify 20 universities (10 public and 10 private) that can be immediately moved out from the regulatory system. Creating world-class universities requires autonomous governance, focused funding, and oversight based on independent outcomes like world rankings. Here we can learn from China's and Singapore's attempt to create world-class research universities. China chose a tiered system under which two Tier 1 universities – Beijing and Qinghua - received significantly higher funding. Singapore too funded its top two universities – National University of Singapore and Nanyang Technological University - very liberally. We too should be careful that we do not spread available funds too thin. Instead, we should adopt the tiered funding model for public universities whereby the two best public universities are provided significantly higher funding (with commitment to deliver correspondingly large improvements in performance) than the remaining eight chosen public universities. The most promising candidates should receive the most funds and be accountable for outcomes, while receiving the same flexibility in governance as any university worldwide. Chosen private universities should also be provided the same level of autonomy though no public resources need be offered to them.

20.24. *Autonomy for top colleges.* More established colleges should be brought under the autonomous colleges scheme to take them out of the centralized control of their university and provide greater flexibility in academic matters. Selectively, we should also offer colleges with postgraduate teaching, excellent track record and commitment to promoting excellence in teaching and research the option to convert into unitary universities. This will allow the colleges to develop their brand name and compete more effectively for good students and teachers. The Presidency College, which recently converted to Presidency University, offers a good example in this respect.

- 20.25. *Reform of the regulatory system - A tiered system of universities.* The University Grants Commission (UGC) Act, 1956 is in dire need of reform. The UGC's position as an overarching regulator of every aspect of higher education from student fees to curriculum to teaching and course hours keeps India's higher education system from responding to the changes and challenges that it faces in a fast evolving world. Various professional councils further complicate the regulatory environment in higher education. We should introduce a system of regulation that focuses on information disclosure and governance rather than micro management of universities. This requires an overhaul of the UGC as a regulatory system and a rationalization of the role of professional councils.
- 20.26. But even within the existing legal framework, it is possible to make progress. We should introduce a tiered system whereby the top research-focused universities, which promise to compete globally, are given full autonomy and promised additional resources based on significant improvements over time. These universities may be subject to high standards of transparency with full freedom granted in operational matters such as courses, curriculum, teaching hours and pedagogy. Quality should be enforced through periodic third party assessments. As mentioned in the Science and Technology chapter as well, the universities must also be given autonomy to attract research staff from abroad or local research bodies to create a critical mass of research faculty in specific areas. They must also be encouraged to compete for research projects from industry. The objective should be to eventually move research from falling solely under the purview of research institutes and councils to also being encompassed by research universities.
- 20.27. A second tier of universities with employment-focused education can be subject to light regulation. These universities would be expected to use the flexibility given to them to adjust admission policies, curriculum and courses to respond to shifts in job composition in the marketplace. They will also be evaluated according to their success in job placements of their students.
- 20.28. The last tier of the universities, whose primary function would be to ensure that higher education is available to all who want it would be the most regulated one. This tier will consist of the universities that are currently performing poorly and not likely to perform well on either research or employment dimension. While this tier can receive greater scrutiny from the UGC, there is a need for loosening control here as well with priority given to transparency.
- 20.29. The system should provide flexibility to universities that improve performance to move to higher tier. Universities in the first two tiers, which repeatedly fail to meet the minimum standards, should also face the prospect of losing their coveted classification. Colleges and universities in the third tier that repeatedly do poorly in quality assessments should be considered for closure.
- 20.30. While the legal framework should eventually be altered to give the tiered system legal cover and to insulate it from the possibility of a return to the current regime under a different future leadership, it is possible to begin moving towards this system under the current legal framework of the UGC Act. A key drawback under the UGC Act is that it would not provide sufficient assurance to universities of their status within a particular tier. The fear that the status may be changed on the whim of an administrator would remain. An eventual change in the law would be required.
- 20.31. Besides these actions, reform at the state level is also required and should be carried out through incentivization by the Rashtriya Uchchatar Shiksha Abhiyan (RUSA). These reforms should also encourage autonomy and good governance practices in universities in the state level regulation of higher education. States need to give state universities greater autonomy and reduce interference in their day-to-day functioning.
- 20.32. *Establish a system of project- and scholar-specific research grants.* A system of public funding for research in specific areas of public importance has driven much of the innovation in science and technology in other countries. A similar system should be set up in India with funding to specific scholars, thus, providing both maximum flexibility and accountability for results. Another model that should be adopted is the 'prize' system with funding going to research/innovation groups that deliver solutions to clearly specified problems. Such a system can be used in the future to drive innovation and research, solve pressing problems, and provide a mechanism for competition and quality assurance.
- 20.33. *Increased focus on vocational and profession led education.* We should establish and promote norms/standards and/or outcome based certification for institutions that focus on skills and trades closely tied to employment. We should also include vocational subjects in mainstream universities to allow for greater acceptance and utility for vocational learning. We can focus more in particular on those skills that are expected to be in high demand from the public sector in the coming years. Examples include public health workers, foundational skills teaching, nursing and paramedics.

Skill Development

- 20.34. Estimates suggest that only 2.3% of India's workforce has undergone formal skill training compared to United Kingdom's (UK) 68%, Germany's 75%, USA's 52%, Japan's 80% and South Korea's 96%²². This has led to large sections of the workforce having insufficient job skills. Furthermore, according to estimates for the period 2013-2014, India's annual skilling capacity at approximately 7 million²³ is significantly lower than the workforce entering the market annually. Additionally, as noted earlier, the quality of skills imparted in the existing facilities in India is also a matter of concern. A large proportion of our engineers can simply not be employed as engineers.
- 20.35. The Government of India has recognized the exigency of implementing large scale and effective skill development solutions with a number of initiatives having been undertaken over the years. In 2008, the then Prime Minister set up the three tier structure called the "Coordinated Action on Skill Development" which included (i) the PM's National Council which set a vision for 500 million skilled people by 2022, (ii) the National Skill Development Coordination Board (NSDCB) which coordinated the skill development efforts of various government departments and (iii) National Skill Development Corporation (NSDC) which is a unique Public Private Partnership (PPP) body that implements various skill development programs²⁴. Although the National Council and the NSDCB were subsumed into the National Skill Development Agency (NSDA) in 2013, the NSDC is still a key agency working on skill development in India.
- 20.36. The creation of a new Skill Development ministry in 2014 marked a paradigm shift in skilling, moving it to a new trajectory. The Skill India Initiative was launched in 2015 which aims to equip 40 Crore people with employable skills by 2022²⁵. This initiative includes key government schemes on skill development like National Policy for Skill Development and Entrepreneurship 2015, Pradhan Mantri Kaushal Vikas Yojana (PMKVY), National Skill Development Mission and the Skill Loan Scheme. Increased allocations of Rs. 4,500 Crore to the Deendayal Antyodaya Yojana - National Rural Livelihood Mission and the launch of Skill Acquisition and Knowledge Awareness for Livelihood Promotion Programme (SANKALP) with an outlay of Rs. 4,000 Crore in Budget 2017-18 highlight the government's continued commitment towards skill development²⁶.
- 20.37. Despite numerous initiatives that have been undertaken till date, we are still faced with a daunting challenge of training a large workforce. It is estimated that the demographic dividend is expected to last for 25 years²⁷. Thus, to reap the benefits of this one-off opportunity India needs to significantly scale up its skill development initiatives ensuring quality and speed with efforts from both the private and the public sector. The Action Agenda identifies initiatives that need to be undertaken over the next three years to complement the existing policies.
- 20.38. Apprenticeships are an effective mechanism for skill development as they offer efficient industry relevant training. The Government of India has set a target for training 50 Lakh apprentices by 2020²⁸. While numerous measures are suggested in the National Policy for Skill Development and Entrepreneurship, 2015, some further steps may be taken over the next three years to supplement these policy initiatives and help achieve the government targets.
- 20.39. In particular, the quality of outcomes from apprenticeship courses could be enhanced with increased transparency and robustness of the training along with better assessment and certification procedures. This can be achieved by:
1. Encouraging trade areas offering longer term courses to enable educational certification in parallel.
 2. Mandating educational institutions to recognize skill certifications and provide for upward mobility or lateral movements.
 3. Sector Skills Councils with Qualification Packs (QP) and National Occupational Standards (NOS) that are not yet aligned to the National Skills Qualifications Framework (NSQF) should be required to cover all job roles in their sector over the next three years.
 4. Industries represented by the Sector Skill Councils (SSCs) should be responsible for constantly updating the QPs and NOS to stay abreast with international requirements. Costs incurred could be funded under PPP mode.
- 20.40. Currently we do not have an independent regulator overseeing the various skill development initiatives in India. The Ministry of Skill Development and Entrepreneurship (MSDE) is acting as both policy setting and regulation body. Over the next three years, a skill assessment board should be set up at arm's length distance from the government.

20.41. According to the Skill Development Sector Achievements report, December 2016²⁹, NSDC partners skilled 24.9 Lakh people of which 12.0 Lakh were placed in 2014-15. This translates to a placement rate of below 50%. It is recommended that a target of a placement rate for 80% or more should be set for 2020. Furthermore, all NSDC partners should be required to report on the additional metrics recommended in the report titled “Youth Empowerment through Skill Development” by S Ramadorai³⁰. The following indicators could also be used to report on the aggregate performance of NSDC:

1. Per cent of Certified Candidates employed
2. Longevity of certified candidate in their chosen job field
3. Wage difference between certified and unskilled candidates
4. Number of entrepreneurs created through the vocational training ecosystem
5. Number of certified candidates employed in overseas vocational jobs

20.42. All government Departments and Ministries should promote the availability of a young skilled workforce as India’s key asset across the world. A national level Overseas Employment Promotion Agency (OEPA) should be set up under the Ministry of External Affairs to consolidate all the promotional initiatives of the government. This agency would also serve as the nodal agency for identifying potential partners around the globe, areas where skill gaps exist globally and establishing agreements with other countries. It would also help streamline the efforts of an increasing number of India International Skill Centres (IISCs) which are being set up across the country. Bilateral Memorandum of Understanding (MOUs) / negotiations with countries should focus on agreements which include skills training, skill certification and skilled labour mobility.

20.43. The skills and expertise of Indian citizens living overseas or returning to India should be recognised and exploited. Furthermore, there should also be a separate focus on the skills offered by foreign immigrants in India. These people offer global experiences and perspectives. The government should set up a database that records their skills and knowledge with a view to offering them opportunities to contribute to skill development in the country. Dedicated communication channels should be set up with the Indian Diaspora to ensure effective promotion of the opportunities that exist in India. This would also be useful in fostering innovation. Recognition and awards associated with this contribution should also be explored.

20.44. In parallel with the Recognition of Prior Learning (RPL) initiative launched with PMKVY, the identification of transferable skills should also be established as an area of focus. This can be addressed through:

1. Developing a matrix of skills that are transferrable across sectors and trades
2. Making these technological and vocational skills that are transferrable across occupations an integral part of the basic skill development curricula across sectors

20.45. The role of NSDC needs to be delineated better. The envisioned role for the NSDC, according to its website³¹, is that of an enabler for building skill development institutions. Currently, NSDC’s bandwidth is consumed by managing the PMKVY, which primarily does not address the higher levels of skilling or market led, non-sponsored skilling programs. Capacity within the NSDC may be supplemented in the form of a dedicated cell for PMKVY so that the main body of NSDC can focus on its envisioned role.

Sector Specific Action Points

Creative and Cultural Sectors

20.46. India boasts of a rich and diverse culture but formal skill development for cultural industries lags other sectors. Building a skilled labour force in this sector would contribute to job creation, protect cultural practices and heritage, and create livelihood for artisans with traditional skills. Skill development in the cultural sector should be promoted by setting up a dedicated SSC for the same. This SSC would include skill development in Archaeology, Archival Studies, Conservation, Museology and performing arts, among other fields. We should consult with stakeholders to identify skills from different parts of India (a national cultural skill mapping has already been proposed by the NSDC³²) and

select the appropriate experts in these sub-sectors. Skill development programmes should also be developed with a view to make associated skills commercially viable.

- 20.47. Traditional knowledge systems should also be strengthened by developing curricula for creative industries at tertiary institutions and certification programs.
- 20.48. In addition to providing skills through the Handicrafts and Carpet Sector Skills Council, selected youth with background in handicraft and weaving should be given government support to further develop their skills in eminent institutions like the National Institute of Design or the National Institute of Fashion Technology. This would give these young artists the requisite skills to fuse traditional handicraft practices with contemporary design sensibilities.

Other industries

- 20.49. **Gems and Jewellery Sector.** Various measures including increased investment in skill training via co-financing with larger firms, establishing trainer courses and adoption of RPL among others are proposed. Further details are included in the “Trade, Industry and Services: Creating Well-Paid Jobs” chapter.
- 20.50. **Automotive Sector.** An increased focus on the skill development agenda in the automotive sector will help tackle the low productivity of Indian workers in automotive firms.

Table 20-2: Key Action Points with Timelines for School Education

Area of Action Agenda	Deliverable	Nodal agency	Stakeholders	Timeline
Orient system towards outcomes	Introduce state of the art sample based state level learning outcome test	MHRD	NITI Aayog, State governments	December 2017 and then every year
	Introduce SEQI to measure and compare states on reform and improvement	NITI Aayog	MHRD, state governments	March 2018
	Modify RTE requirements on inputs and change towards outcomes	MHRD		March 2018
Provide tools to teachers and students for learning	Commission large scale studies for evidence on ICT tools	NITI Aayog	MHRD, State governments	September 2017
	National mission for foundational skills learning	MHRD	State governments	March 2018
	Pilot a system of technology aided adaptive examinations	MHRD	State governments	March 2019
Improve governance mechanisms	Start tracking improvement in governance mechanisms as per SEQI	NITI Aayog	MHRD, State governments	September 2017
	Introduce new governance reforms	NITI Aayog	MHRD, State governments	March 2020
	Constitute working group to explore bold reforms of public private partnerships in education sector	NITI Aayog	MHRD, State governments	September 2017

Table 20-3: Key Action Points with Timelines for Higher Education

Deliverable	Nodal agency	Stakeholders	Timeline
Designate 20 World Class universities	MHRD	Top public, private universities	September 2017
Introduce three-tiered system of regulation	MHRD	Universities, state governments	March 2018
Introduce researcher/project based research funding	MHRD		March 2018
Allow vocational courses in mainstream colleges	MHRD	UGC	September 2017
Introduce outcome based norms and certification processes for vocational training in important sectors	MHRD		September 2017

¹ CII Skill Development Initiatives. Source: <http://www.cii.in/uploads//CIISDFinalreduced766.pdf>

² Skilling India – The Billion People Challenge. Source: https://www.crisil.com/pdf/corporate/skilling-india_nov10.pdf

³ EY and FICCI, “Reaping India’s promised demographic dividend – industry in driving seat”. Source: [http://www.ey.com/Publication/vwLUAssets/EY-Government-and-Public-Sector-Reaping-Indias-demographic-dividend/\\$FILE/EY-Reaping-Indias-promised-demographic-dividend-industry-in-driving-seat.pdf](http://www.ey.com/Publication/vwLUAssets/EY-Government-and-Public-Sector-Reaping-Indias-demographic-dividend/$FILE/EY-Reaping-Indias-promised-demographic-dividend-industry-in-driving-seat.pdf)

⁴ National Policy for Skill Development and Entrepreneurship. Source: <http://www.msde.gov.in/assets/images/Skill%20India/policy%20booklet-%20Final.pdf>

⁵ <http://udisc.in/Downloads/Trends-ElementaryEducation-2015-16/All-India.pdf>

⁶ http://mhrd.gov.in/sites/upload_files/mhrd/files/Student-Teacher%20Ratio.pdf, based on U-DISE data.

⁷ Muralidharan, Karthik, Jishnu Das, Alaka Holla, Michael Kremer, and Aakash Mohpal, “The Fiscal Costs of Weak Governance: Evidence from Teacher Absence in India”, UC San Diego/Borkum, Evan, Fang He, and Leigh Linden, “School Libraries and Language Skills in Indian Primary Schools: A Randomized Evaluation of the Akshara Library Program”, 2010, Columbia.

⁸ Banerjee, Abhijit, Shawn Cole, Esther Duflo, and Leigh Linden, “Remedying Education: Evidence from Two Randomized Experiments in India.” Quarterly Journal of Economics no. 122 (3):1235-1264, 2007.

Muralidharan, Karthik, Jishnu Das, Alaka Holla, Michael Kremer, and Aakash Mohpal, “The Fiscal Costs of Weak Governance: Evidence from Teacher Absence in India” UC San Diego, 2013.

⁹ Kingdon, Geeta, and Francis Teal, “Teacher Unions, Teacher Pay and Student Performance in India: A Pupil Fixed Effects Approach.” Journal of Development Economics no. 91 (2):278-288, 2010.

¹⁰ Muralidharan, Karthik, and Venkatesh Sundaram, “Teacher Performance Pay: Experimental Evidence from India.” Journal of Political Economy no. 119 (1):39-77, 2011.

¹¹ The Support to Rural India’s Public Education System (STRIPES) trial: a cluster randomised controlled trial of supplementary teaching, learning material and material support. PLoS One, Jul 16;8(7):e65775, 2013. doi: 10.1371/journal.pone.0065775. Print 2013

Banerjee, Abhijit, Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani, “Pitfalls of Participatory Programs: Evidence From a Randomized Evaluation in Education in India.” American Economic Journal: Economic Policy no. 2 (1):1-30, 2010.

¹² Muralidharan, Karthik, and Venkatesh Sundaram, “Teacher Performance Pay: Experimental Evidence from India.” Journal of Political Economy no. 119 (1):39-77, 2011.

Muralidharan, Karthik, Long Term Effects of Teacher Performance Pay: Experimental Evidence from India. UC San Diego, 2012.

¹³ Muralidharan, Karthik, Jishnu Das, Alaka Holla, Michael Kremer, and Aakash Mohpal, The Fiscal Costs of Weak Governance: Evidence from Teacher Absence in India. UC San Diego, 2013.

¹⁴ While ASER has done sterling work in bringing attention to the status of learning outcomes in the Indian system, it has been limited in its scope and its acceptance within the government.

¹⁵ The system must be technologically driven to permit capabilities that pen and paper based tests do not possess - adaptive testing to prevent domination of floor/ceiling effects, quick turnaround times for results and building up of capabilities and questions that promote the long term goal of credible measurement for each child

¹⁶ Bulman, G. and R.W. Fairlie, “Technology and Education: Computers, Software and the Internet,” in Eric Hanushek, Stephen Machin, and Ludger Woessmann, eds., Handbook of the Economics of Education, Elsevier, pp. 239–280, 2016.

¹⁷ Muralidharan, Karthik, Abhijit Singh, Alejandro Ganiman “Disrupting Education? Experimental Evidence on Technology-Aided Instruction in India” NBER Working Paper No. 22923, 2016. <http://www.nber.org/papers/w22923>

¹⁸ Muralidharan, Karthik, and Yendrick Zieleniak, Measuring Learning Trajectories in Developing Countries with Longitudinal Data and Item Response Theory. UC San Diego, 2013.

¹⁹ Geeta Gandhi Kingdon, “Put the onus on teachers”, Indian Express.

²⁰ All India Survey of Higher Education 2015-16 and World Bank

²¹ Aspiring minds employability report

²² National Skill Development Mission - Implementation Plan. Source: <http://www.skilldevelopment.gov.in/assets/images/Mission%20booklet.pdf>

²³ National Skill Development Mission - Implementation Plan. Source: <http://www.skilldevelopment.gov.in/assets/images/Mission%20booklet.pdf>

²⁴ Planning Commission, “Enhancing Skills and Faster Generation of Employment”. Source: http://12thplan.gov.in/12thplan_docs/9.pdf

²⁵ Press Information Bureau, “18,000 plus ITI graduating students received job offer letters on the occasion of World Youth Skills Day”, July 2015.

²⁶ Budget Speech 2017-18. Source: <http://indiabudget.nic.in/ub2017-18/bs/bs.pdf>

²⁷ National Policy for Skill Development and Entrepreneurship. Source: <http://www.msde.gov.in/assets/images/Skill%20India/policy%20booklet-%20Final.pdf>

²⁸ Press Information Bureau, “Cabinet approves the National Apprenticeship Promotion Scheme”, July 2016.

²⁹ Department of Industrial Promotion and Policy, “Skill Development Sector, Achievements report”, December 2016. Source: http://dipp.nic.in/English/Investor/Make_in_India/sector_achievement/Make_in_India_Skill_Development_Sector_Achievement_Report_22122016.pdf

³⁰ <http://www.nsdcindia.org/sites/default/files/files/pdf/SD%20Report%202014.pdf>

³¹ NSDC Role. Source: <http://www.nsdcindia.org/our-role> as seen on 25.03.2017

³² Expression of Interest for Cultural Skill Mapping. Source: http://www.nsdcindia.org/sites/default/files/files/EOI_Cultural_Skill_Mapping.pdf

CHAPTER 21.

HEALTH

Context

- 21.1. While India has made significant progress in health outcomes over the last two decades, key indicators (Infant Mortality Rate, Life Expectancy, Malnutrition, and Maternal Mortality Rate) have remained below those of other countries at similar stages of development and levels of spending on health. Moreover, there are large disparities in outcomes and service coverage between different parts of the country.
- 21.2. India faces the challenge of a double burden of disease, wherein communicable diseases still account for a significant proportion of disease burden. In 2012, out of the total number of Disability-Adjusted Life Years (DALYs) lost¹, 33% were attributable to these diseases. Non-communicable diseases accounted for 55% of DALYs² with injuries accounting for the remaining 12%, in the same year³. There is a rising morbidity and mortality cost attributable to non-communicable diseases. They are collectively responsible for an estimated 60% of premature deaths.
- 21.3. Achievement of the expected health outcomes will require
 1. Adequate investment of public financial resources in health.
 2. Efficient prioritization of spending with greater emphasis given to preventive health rather than curative care.
 3. Adequate attention by the government to the stewardship of organizing the health sector in its entirety without focusing almost exclusively on the provisioning of health care
 4. Efficient management of publicly provided health care
 5. Addressing challenges in human resources for health in terms of numbers, distribution, quality and skill mix
 6. Sufficient focus on and convergence with programs addressing the key social determinants of health (nutrition, drinking water and sanitation)
- 21.4. While the context is complex, the vision for a healthy India calls for re-prioritization of our goals. We also need to re-deliberate the usefulness of long standing strategies. Over the course of the next three years, the healthcare system in the country must prioritise public health and shift from being curative to preventive. Public health is the science of protecting and improving the health of families and communities through promotion of healthy lifestyles, research for disease and injury prevention and detection and control of infectious diseases. Overall, public health is concerned with protecting the health of entire populations.
- 21.5. Emphasis should also be placed on the stewardship role of the government i.e. setting and enforcing rules/incentives to guide the behaviour of the health system. Further, a data-driven and more decentralised approach to designing health systems should be adopted.

Box 21-1: Specific Health Goals to be Achieved by the Year 2020

1. Reduce Maternal Mortality Ratio to 120/100,000 live births (2013 estimate: 167/100,000 live births⁴)
2. Reduce Infant Mortality Rate to 30/1,000 live births (2013 estimate: 40/1,000 live births⁵)
3. Reduce Under 5 Mortality Rate to 38/1,000 live births (2015 estimate: 48/1,000 live births⁶)
4. Reduce the percentage of underweight children by 3 points per annum from NFHS-4
5. Reduce Total Fertility Rate to 2.1 (2013 estimate: 2.3⁷)
6. Reduce incidence of TB to 130/100,000 (2015 estimate: 217/100,000⁸)
7. Reduce incidence of Malaria (Annual Parasite Incidence) to less than 1/1,000 in 90% of districts (2016 estimate: 74% of districts have achieved an API of less than 1⁹)
8. Eliminate Kala Azar (2015 estimate: 80% of endemic blocks have eliminated¹⁰) and Lymphatic Filariasis (2015 estimate: 87% of endemic districts have eliminated¹¹)
9. Reduce premature mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 1/4th of National family Health Survey-4 (NFHS-4) levels
10. Reduce Out-of-Pocket Spending (OOPS) to 50% of the total health expenditure (2014 estimate: 62.4%¹²)

Public and Preventive Health

- 21.6. Public and preventive health interventions work well for communicable and non-communicable diseases. Moreover, being a pure public good, public health will inevitably be under-provided in any market mechanism. It is therefore imperative that the government as part of its stewardship role accords top priority to setting up a strong public health system.
- 21.7. Government expenditure on public health should be increased significantly to cover screenings for the entire population, active case detection and disease surveillance including from the private sector. Additionally, evidence-based preventive health interventions like breastfeeding as well as infant and young child feeding during the first two years of life should be mainstreamed through adequate budgetary allocations and plans of action at the national-level.
- 21.8. The most important step for prioritising inter-sectoral public health will be the creation of a designated focal agency within the Union Health Ministry. The functions carried out by this entity should include disease surveillance, monitoring of health status, educating the public, providing evidence for public health action and enforcing public health regulation. A suggested focal point is the pre-existing National Centre for Disease Control, which could be provided greater authority and resources to perform this role. An official equivalent to the Director General Health Services should lead the institution. An autonomous counterpart to the focal point in the Union Health Ministry should be considered at the state-level for coordinating with different agencies for public and preventive health initiatives, including those pertaining to the social determinants of health like nutrition, drinking water and sanitation. This state-level body should be adequately empowered to take decisions which are of a cross-sectoral nature since public and preventive health span action across many departments.
- 21.9. A factor which will be crucial for ensuring the success of the state-level counterpart is the availability of qualified and motivated human resources. To this end, the Central Government shall work in partnership with State Governments for creating a dedicated public health cadre on a priority basis during the next three years. This cadre may be largely created by re-aligning existing human resources and upgrading their skills.
- 21.10. A prerequisite for placing public health at the top of the agenda is the availability of credible population-level data on the prevalence of risk factors and complete health outcome data at frequent intervals. Mechanisms should be set up at the state/regional level to generate periodic (say 3-yearly) dis-aggregated district-level data in accordance with uniform protocols for ease of comparability across states. The Union Ministry of Health can prescribe protocols for

data collection. National collation and dissemination of data can be carried out by an existing or new agency at the Centre.

- 21.11. An important role for preventive health is in targeting disease risk factors including smoking, high blood pressure and sanitation. Early screening must be promoted so that diseases can be prevented or treated at an early stage. This can help to avert costly hospital-based treatment. The cadre of public health service personnel can be a useful resource for spreading awareness about diseases and looking out for potential cases. To focus on public and preventive health, the concept of grassroots male health workers could be reintroduced to supplement Accredited Social Health Activists (ASHAs) at the village-level. China had three million bare-foot doctors during the seventies to carry out these functions. Screening for non-communicable diseases should be extended to 75% of the population over the next three years to arrest premature mortality. The screening should be conducted once every three years.
- 21.12. Preventive health messages must integrate the practice of traditional medicine, and these must not be left to merely oral translation of knowledge across generations. The practice of Yoga should be made a regular activity in schools through certified instructors. During the three-year period, a minimum of 10,000 Yoga instructors should be certified.

Assurance of Health Care

- 21.13. The overlapping role of the government in financing, providing and regulating health care has resulted in limitations of accountability and quality of service delivery. There is a large capacity within the private sector for delivery of health services. However, in the absence of the stewardship role of the government, services delivered in the private health sector are now at varying levels of quality and cost.
- 21.14. The government must therefore adopt the function of strategic purchasing. They should leverage this purchasing power to obtain the desired services from service providers, both private and public, through autonomous structures created for this purpose. In numerous countries, public and private providers compete with each other – Canada and Taiwan being cases in point – with good results. There are therefore advantages to having private providers compete with public providers. Moreover, the mix of delivery of care in both the private and public sector in India is exemplified by the fact that the share of outpatient care in the public sector¹³ has either declined or improved marginally in a majority of states (15 out of 21) while there have been impressive gains in six states.
- 21.15. Autonomous structures could be set up at the Central and state/district levels for providing financial protection. These structures could act as the single payer, deciding what services to purchase, from whom and at what rates. The autonomous structure at the Central Level could be responsible for setting standards, determining the components of an essential health package, generating evidence to inform state policies and developing an IT platform that is inter-operable across states. It could also oversee the Electronic Health Records (EHR).
- 21.16. The Medical Technology Assessment Board being set up under the Department of Health Research must be fully functional to carry out Health Technology Assessments. These assessments should be mandatory for the introduction of new treatment methods under the essential health package.
- 21.17. Another key enabler for strategic purchasing and regulating the quality of health care is data. The EHR should be linked to the National Identification Number for public and private facilities. Inter-operability with existing software of private health care facilities must also be facilitated, wherever possible. In order to be able to respond to performance-linked incentives defined by the purchaser, the process of granting autonomy to public health care facilities should also be initiated.
- 21.18. For providing an essential health package including critical primary, secondary and selected tertiary services, mandatory contributions from the non-poor should be introduced. This may be achieved through a mandatory co-payment for the service. Since a step like this implies that service provision is ensured, mandatory contributions should be initiated towards the end of three years, with full implementation in seven years.
- 21.19. For health care institutions in the public sector, several steps need to be taken to improve quality over the next three years:

1. Quality certification of public hospitals (up to the level of district hospitals) should be carried out. Public hospitals should be ranked and nudged towards improvement.
2. Existing district hospitals should be strengthened to conform to the Indian Public Health Standards. The “Kayakalp” award should be used as a planning tool for improving water, sanitation and hygiene infrastructure in public health facilities as opposed to only for assessment. The award should also be linked to improvements in health outcomes e.g. reduction in neonatal deaths due to sepsis and tetanus.
3. For enabling communities to avail of facilities at the district-level, up to 20% of district hospitals must be linked with medical colleges during the three-year timeframe. This will help to reduce the load on tertiary care institutions.
4. Nine sanctioned All India Institute of Medical Sciences (AIIMS) should be made fully functional.
5. Co-location of Ayurveda Yoga Unani Siddha Homeopathy (AYUSH) services should be ensured in 50% of Primary Health Centres (PHCs), 60% of Community Health Centres (CHCs) and 100% of district hospitals. Thus far, AYUSH facilities have been co-located¹⁴ in 37% of PHCs, 50% of CHCs and 63% of district hospitals.

Fiscal Transfers for Better Health Outcomes

21.20. The current National Health Mission (NHM) budget has over 2000 budget lines. Though states are free to make their own priorities, they have to disaggregate the budget proposed, item-by-item, across multiple budget lines. The transaction costs and inefficiencies of seeking approval from the Centre for any changes are so high that most changes never get done and many budget lines remain unspent or under-spent.

21.21. It is therefore proposed, that Central transfers to states should follow principles focusing on outputs of service delivery and incentivizing better outcomes. These principles would translate into the following:

1. Relative position of the state with respect to achievement of key health outcomes from the national average (distance from the mean)
2. An additional payment for annual performance improvement which may be measured by a standardized index that is developed by the Centre and agreed to by the states
3. Incentives provided for key initiatives propagated by the Centre, including Public Health Law and Public Health Cadre
4. Till such time the NHM is continued in the existing format, releases to the states should be made contingent upon their average of previous three years/matching share contribution
5. Provision of an essential health package to citizens across states irrespective of the state in which they are registered as beneficiaries
6. Funds for primary health facilities to be allocated based on the number of families/persons registered i.e. capitation-based mode of payments

21.22. In the immediate term, state transfers can be made more flexible and output-based in the following manner:

1. The Centre may approve allocation primarily in 5 pools (NRHM RCH Flexipool, NUHM Flexipool, Flexipool for Communicable Diseases, Flexipool for Non-Communicable Diseases, Infrastructure Maintenance) with flexibility to states for making inter-se modifications.
2. A baseline allocation for facility-level care to be decided (if not already done) in the first year in terms of total outpatient and inpatient cases processed and the allocations frozen.

- 1) Both these figures could be modifiable for mix of cases seen and the unit costs would have to be worked out with some gradation for equity concerns.
- 2) The list of outpatient services available should be set out and can be used to modify the rates -- but once this list is declared no patient can be denied care on any grounds.

Human Resources for Health

- 21.23. According to a report by the National Skills Development Corporation, healthcare in India has the potential to generate an additional 7.5 million direct job opportunities by 2022¹⁵. Human resources for health need to be strengthened considerably in terms of quantity and quality.
- 21.24. One of the steps that should be taken is the formulation of a model policy on human resources for health by the Centre followed by issuance of guidelines to states. At least five states should have a comprehensive policy on human resources for health within the three-year timeframe.
- 21.25. In order to address the workforce shortages, a bridge course for training nurses/AYUSH practitioners in public and primary care should be implemented nationwide. Upon completion of the bridge course, nurses/AYUSH practitioners should be able to prescribe essential medicines. Additionally, we must create a cadre of primary health care practitioners by introducing a three-year competency-based dynamic course for primary, community and family medicine.
- 21.26. The National Medical Commission Bill, 2016 is an important step for strengthening the quality of human resources education and training. Reforms along similar lines should be undertaken for the medical (Indian Systems of Medicine), nursing, pharmacy and dental councils over the course of the next three years. Systems of continued medical education and skill improvement, linked to promotions and renewal of license to practice, should be introduced. To ensure that motivated workers fulfil community health needs, certification and career progression measures should be introduced. Specifically, ASHAs and Anganwadi Workers (AWWs) should be offered performance-based admissions to Auxiliary Nurse Midwife (ANM) schools for career progression.

Access to Medicines

- 21.27. A balanced approach towards regulation is needed for achieving the twin objectives of access to effective medicines and a strong pharmaceutical industry. There is a trade-off between lower prices on the one hand and quality medicine and discovery of breakthrough drugs on the other. It is therefore recommended that the Drug Price Control Order may be delinked from the National List of Essential Medicines.
- 21.28. For ensuring access to essential medicines, we must review the business model of the Jan Aushadhi Stores, as their rollout has been slow. In order to facilitate online access to quality medicines in a cost-effective and timely manner, the E-pharmacy Policy should be formulated and implemented before the end of 2017.
- 21.29. Additionally, steps need to be taken within the next three years to address quality and standards related issues plaguing the pharmaceutical sector in India. Schedule 'M' of the Drugs and Cosmetics Rules, 1945 must be upgraded to 'Good Manufacturing Practices' levels of the World Health Organization (WHO). This will help increase pharmaceutical exports through better compliance with international standards. An authorization mark should be stamped onto approved drugs for sale, similar to the FSSAI stamp on food products. The Drugs and Cosmetics Rules should also be modified for the prescription of generic drugs. Further, a third-party certification system may be put in place for drug manufacturers along with the establishment of quality testing laboratories.
- 21.30. The process for granting approvals for clinical trials and market authorization is complex with a lengthy timeline. It currently takes around two years in India compared to three months in Singapore. There is therefore an urgent need to reengineer the existing approval process. Clinical trials also offer a huge commercial opportunity.

Health Research

- 21.31. Evidence plays a crucial role in designing and implementing health interventions. One of the priority actions that should be taken in this area is setting up research consortia for diseases of high priority including Neglected Tropical Diseases and emerging infections. These consortia could be set up along the lines of the India TB Research and Development Corporation¹⁶, a flagship initiative by the Indian Council of Medical Research (ICMR) that aims to bring together all major national and international stakeholders for developing new tools (drug, diagnostics and vaccines) for tuberculosis.
- 21.32. Additionally, the ICMR academy and regional centre for excellence should expand the number of postgraduate degrees that are offered. At least 20 academic or research institutions should be identified at the regional level to act as hubs capable of training a minimum of 500 doctors every year.
- 21.33. Operationalization of all Viral Research & Diagnostic Labs (VRDL) in the country for sample testing should be completed and 80 new VRDLs should be established within the next three years.

Focusing on Key Social Determinants of Health

Nutrition

- 21.34. Direct nutrition interventions can account for reduction in stunting by only 20% with the balance attributable to indirect interventions such as access to water, sanitation and hygiene (WASH)¹⁷. The governance structure to administer an effective nutrition program must reflect a multi-sectoral approach. The PM Nutrition Council set up to address malnutrition in 200 high-burden districts convened in 2010 but there was no follow up. A National Nutrition Mission (NNM) should be launched with representation from other relevant Ministries. The PM Nutrition Council should be expanded to include a few Chief Ministers by rotation. For monitoring and evaluation, a Technical Secretariat/Policy Coordination Unit is proposed at NITI Aayog, which shall service the PM Nutrition Council. Analogous to the structure at the Central level headed by the top political executive, we also need to push for State Nutrition Councils.
- 21.35. There is an urgent need for a full-fledged and web-enabled Nutrition Information System. It should be synergised with the Health Management Information System and the Mother and Child Tracking System. It should also incorporate data from Swachh Bharat. The WCD Ministry in Bihar has already piloted a software application. This application needs to be replicated across the country.
- 21.36. For optimal nutritional outcomes, coordination among different frontline workers (ASHA, ANM and AWW) is essential. One of the mechanisms to motivate them could be through the provision of joint performance-based initiatives.
- 21.37. Convergence of nutrition initiatives is important from two perspectives -- geographic and programmatic. Currently, out of the 194 districts with high levels of child under-nutrition, there are only 11 districts where three major nutrition programs are running concurrently. Similarly, the programmatic guidelines indicate considerable overlap between the efforts of the Health and WCD Ministries. The proposed NNM should focus on high priority districts to streamline programs.
- 21.38. Convergence can occur in different ways:
1. The Take Home Ration (THR) component of Integrated Child Development Services (ICDS) needs to converge with the Maternity Benefit Programme (MBP). THR has been plagued with complaints of leakages and poor quality food supplement. Pilots need to be initiated in a few districts to test the efficacy of implementing the ICDS supplementary nutrition component through a conditional cash transfer route (transferred directly into the mother's Jan Dhan account).
 2. The Village Health and Nutrition Day should constitute the core of convergent action at the state, district and panchayat levels.

21.39. Another necessary measure is greater flexibility to states under ICDS. The sub group of Chief Ministers set up to review Centrally Sponsored Schemes (CSSs) has universally recommended a flexi component in every CSS in addition to decentralized decision-making by the states on the lines of Rashtriya Krishi Vikas Yojana. States will devise interventions to suit their local contexts. The success of Atal Bal Mission in Madhya Pradesh, which provided some untied funds at the district level to supplement grants under the ICDS scheme, is a case in point. For example, some states can provide direct cash transfers, based on soft conditions to address malnutrition.

21.40. To address malnutrition challenges, we need to forge mechanisms to engage the private sector for fortification of wheat, flour, rice, edible oils and milk. In addition, we could consider making double fortification of salt (with Iodine and Iron) and fortification of edible oils mandatory by legislating industry standards. Alternatively, fortified food can be gradually incorporated into mid-day meals, Public Distribution System shops and Anganwadi Centres that provide hot cooked meals. Due to resource constraints, this can initially be focused on high priority districts.

21.41. Several reports¹⁸ evaluating the Mid-Day Meal Programme have highlighted that in a majority of states, teachers spend one to two hours daily on activities related to the meals thereby detracting from precious teaching time. Additionally, there are issues with the poor functionality of kitchen sheds, adulteration and pilferage of food grains as well as suboptimal quality of meals. A clear administrative separation of duties could make the management of the programme more efficient and effective. This can be achieved in the following ways:

1. Private agencies and NGOs, which have demonstrated ability to adhere to certain hygiene norms for food preparation, could be engaged for the implementation of the programme. An external certifying agency should be deployed for verifying the quality of prepared meals on a periodic basis. The report submitted by the agency should form the basis for renewing or cancelling contracts. A partial substitution of the delivery of loose food grains by packaged products might help to increase the level of accountability in the supply chain. In the absence of credible private agencies or NGOs in a particular area, self-help groups could be entrusted with the responsibility for storage of grains or food supplies and provision of mid-day meals as is being done in some parts of the country.
2. Regardless of the type of agency engaged for the delivery of the programme, the involvement of local government institutions (e.g. Village Panchayats) and communities needs to be strengthened. This is crucial because the Mid-Day Meal Programme requires micro-management at the local level. If there is greater ownership of the programme among parents, it could help to strengthen quality assurance and monitoring considerably. In order to enable this, the powers of choosing and regulating delivery of agencies that are engaged for the implementation of the programme should be devolved to the block-level and more community-centric institutions in urban areas. Additionally, wherever, private agencies, NGOs or self-help groups are engaged, payments should be made on time. Currently, the delayed release of payments is a major challenge and serves as a disincentive for agencies to get involved with the programme.
3. States like Bihar have implemented various schemes, including Poshak Yojana and Cycle Yojana, by providing cash transfers directly to students. Lessons learnt from the State indicate that cash transfers can be an effective tool for limiting inappropriate use of Government funds, as well as ensuring high levels of satisfaction among beneficiaries. Options along these lines, that are also legally sound, can be explored for implementing the nutrition components of programmes like the Mid-Day Meal and the Integrated Child Development Services.

Drinking water and sanitation

21.42. Continuous uninterrupted water supply should be provided to at least 179,000 partially covered habitations in rural areas. Additionally, piped drinking water should be provided to every household across 500 Class-I cities as per the approved State Annual Action Plans under the Atal Mission for Urban Rejuvenation and Transformation.

21.43. To address water quality issues, a minimum of 26,500 arsenic and fluoride affected habitations should be treated in rural areas. A “Jal Mitra”¹⁹ from every village could be incentivised to ensure that water resources are free from contamination. She/he should be authorised to report to block/district officials on cases of encroachment and pollution. A time-bound action plan must be made for each block and panchayat to deal with these problems. Penalties for water pollution should also be raised.

21.44. Additionally, uniformity must be ensured across drinking water quality parameters defined by different agencies²⁰ e.g.

Central Pollution Control Board and Indian Council for Medical Research.

21.45. India is aiming to eliminate open defecation by the year 2019. In order to achieve this, an additional 55 million household toilets and 115,000 community toilets should be constructed in rural areas. Under Swachh Bharat Mission (Urban), over 6 million individual household toilets would need to be constructed including conversion of insanitary latrines into pour flush. Over 250,000 community toilets and 255,000 public toilets will also need to be built.

21.46. The amount of Central assistance provided for building toilets should take into account the differences in the cost of construction between rural and urban areas. Additionally, an incentive mechanism could be considered for encouraging the construction of accessible toilets for the differently abled. Further, developing a Knowledge Resource Centre for providing technological support for the Swachh Bharat Mission could be considered in States that do not yet have it.

21.47. More importantly, however, toilet functionality and usage must be ensured in the following ways:

1. Strengthen real-time monitoring by incorporating additional key indicators e.g. do all household members use toilets, do they use them at all times, are there provisions for hand-washing and pit emptying etc.
2. Engage third-party assessors (in addition to government inspectors) to evaluate toilet functionality at periodic intervals.
3. Introduce a strong public education component in the toilet monitoring program by involving community volunteers (“Swachhata Doots”) to generate peer pressure and motivate people to improve their sanitation facilities.

21.48. Access to water and sanitation facilities in schools has increased significantly²¹, however, there are wide disparities between and within states in terms of access, coverage and functionality. Thus, in addition to ensuring these facilities in all schools, there should be a focus on adequate investment in the areas of operation and maintenance by leveraging dedicated funds and putting in place mechanisms for implementation. Additionally, compliance of these facilities with standards and norms needs to be ensured through regular monitoring by active School Management Committees, for instance. Without this, facilities are likely to be unusable to begin with or fall into disrepair over a period of time. Emphasis also needs to be placed on hygiene, especially hand-washing with soap in all schools. The Menstrual Hygiene Management Guidelines that have been issued by the Ministry of Drinking Water and Sanitation need to be strictly implemented.

¹ 15,840 DALYs per 100,000 population; Disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or death.

² 26,503 DALYs per 100,000 population

³ 5607 DALYS per 100,000 population (Source: WHO Global Health Observatory data repository, Age standardized DALYs 2012)

⁴ Press Information Bureau, “Achievements Under Millennium Development Goals”, July 2015.

⁵ Press Information Bureau, “Achievements Under Millennium Development Goals”, July 2015.

⁶ “20% of world's under-5 deaths occur in India”, Times of India, September 2015.

⁷ Press Information Bureau, “Achievements Under Millennium Development Goals”, July 2015.

⁸ <http://data.worldbank.org/indicator/SH.TBS.INCD>

⁹ <http://www.who.int/features/2015/india-programme-end-malaria/en/>

¹⁰ Press Information Bureau, “Steps taken towards elimination of Kala-Azar”, March 2016.

¹¹ NITI Aayog, Appraisal document of 12th Five Year Plan.

¹² <http://data.worldbank.org/indicator/SH.XPD.OOPC.TO.ZS>

¹³ Jain et al., “NSSO 71st Round: Same Data, Multiple Interpretations”, EPW, Vols 46 and 47, Nov 2015

¹⁴ NITI Aayog, Appraisal document of 12th Five Year Plan.

¹⁵ <http://apps.who.int/iris/bitstream/10665/250047/1/9789241511308-eng.pdf>

¹⁶ Press Information Bureau, “India takes a lead in TB research in a unique mission mode to End TB”, November 2016.

¹⁷ Bhutta, Z.A., Das, J.K., Rizvi, A., Gaffey, M.F., Walker, N., Horton, S., Webb, P., Lartey, A., Black, R.E., Group, and T.L.N.I.R. and Maternal and Child Nutrition Study Group, “Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?” The Lancet, 382(9890), 2013, pp.452-477.

¹⁸ [http://www.iimahd.ernet.in/~satish/MDMJSPEPaper\(2\).pdf](http://www.iimahd.ernet.in/~satish/MDMJSPEPaper(2).pdf)

¹⁹ <http://www.mdws.gov.in/sites/default/files/FINAL%20COMBINED%20WORKING%20GROUP%20REPORT%20WATER%20and%20SANITATION%2005-10-2011.pdf>

²⁰ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3482709/>

²¹ <http://unicef.in/Whatwedo/39/Clean-India-Clean-Schools>

CHAPTER 22.

TOWARDS BUILDING

A MORE INCLUSIVE SOCIETY

Women

Context

- 22.1. Women encounter discriminatory practices throughout their lifecycle. An unfavourable child sex ratio, high school drop-out rates, lower asset ownership, falling workforce participation levels, high levels of anaemia during adolescence and increasing incidence of violent crimes are reflective of this fact.
- 22.2. Women's economic empowerment plays a crucial role in tackling gender inequality. Currently, the contribution of Indian women to the GDP¹ (17%), is not only far below the global average (37%), but is also less than that of China (41%) and sub-Saharan Africa (39%). Paradoxically, greater equality in educational attainment achieved through higher enrolment of girls in schools, has not translated into equal opportunities for women in the labour market. Despite significant acceleration in economic growth, labour market outcomes for men far outweigh those for women. This becomes evident in the extremely unequal participation of women across sectors and increasing gender wage gaps in decision-making positions.

Table 22-1: Unequal Participation of Women across Sectors

Indicator²	Female	Male
Labour force Participation Rate (% 15+ years)	27	80
Representation in Lok Sabha (%)	12.1	87.9
Representation in Rajya Sabha (%)	12.6	87.4
Representation in Supreme Court (%)	3.4	96.6
Representation in High Court (%)	9.8	90.2

- 22.3. Evidence-based research shows that women in India tend to be paid less, work in less productive jobs, and are overrepresented in unpaid care-giving work³. Globally, if women spend three times more time on unpaid work than men, in India it is 9.8 times more. If that was assessed for wages, it would add Rs.19.85 Lakh Crore or USD 300 billion to the GDP. The huge spectrum of women's skilled but unpaid work contributes directly to the economy. Yet, its devaluation by not being accounted for as 'work' weakens women's status, leading to their vulnerability.
- 22.4. India has the potential to increase its GDP substantially simply by enabling women's participation in the labour force on par with men⁴. Engaging in vulnerable forms of employment, however, far from improving the economic status of women, is often a reflection of their subordinate position in the household.
- 22.5. Over the next three years, the focus should be on promoting equal participation of women in the economy. Additionally, measures to protect women from all forms of violence must be prioritised.

Gender-Responsive Budgeting

- 22.6. There is a need to evaluate the impact of Gender-Responsive Budgeting (GRB) that was adopted by India in 2005 following which at least 57 government ministries/departments set up Gender Budgeting Cells. An analysis⁵ conducted by the National Institute of Public Finance and Policy reveals that GRB has not translated effectively into

policies that impact women despite being a promising fiscal innovation to begin with. GRB is not primarily about increasing the resources for gender development or targeting programmes for women. Its objective should be to make the entire budgetary process more responsive to gender challenges. Some of the ways in which this can be achieved is by generating gender-disaggregated data and integrating gender budgets with outcome budgets.

Economic Participation

- 22.7. According to the 68th round of NSSO, only 44% of Indian male workers are employed in farming, while 63% of the female workforce is employed in agriculture. In 2014⁶, 43% of women above 15 years of age had an account in a formal financial institution compared to 62% of men. Enabling equal access to employment opportunities and financial services for women is crucial for bridging socio-economic gender inequalities in India.
- 22.8. For linking more women with the formal financial system, several steps should be taken. Firstly, financial literacy programs customised for women should be implemented. Additionally, incentives could be provided (upon due verification) for opening of accounts by women in which money is set aside for specific purposes e.g. school fees. Successful pilot projects e.g. Bank Sakhis⁷ could be scaled up to improve the integration of female bank agents into the community. Such initiatives can empower women who are hesitant to step out of their homes alone for visiting bank branches.
- 22.9. The various Priority Sector Lending schemes that have a gender focus⁸ should be reviewed and their impact should be evaluated. Based on the results of the evaluation, further innovative financial products and services can be designed, including savings and insurance instruments for women from low-income communities.
- 22.10. As per the 68th round of NSSO, only 3.4% women underwent vocational training in mechanical, electrical and electronic engineering trades as compared to 29% men. Studies⁹ have shown that well-conceptualised vocational training programmes allow women to move beyond low-wage and low-skill work without reinforcing occupational segregation between men and women. Due to caregiving responsibilities and societal biases about which jobs are suitable for them, it often becomes difficult for women to access vocational training programmes. In Colombia, the Jóvenes en Acción initiative¹⁰, enabled women's participation through the provision of stipends and on-the-job training for women with children. Skill development programmes should move beyond traditional skills for women and provide them training for professions such as taxi driving and masonry. Entrepreneurship development should also be emphasised as part of skill training. Further, the National Skill Development Corporation should regularly assess the extent to which the minimum reservation of 33% of seats for women is being utilized and if women who undertake training are getting employed.
- 22.11. Sharing childcare responsibilities can be difficult in a culture where parental leave is given only to the mother. This reinforces the belief that unpaid, household work is the sole responsibility of the woman. The government has an important role to play in promoting gender equality by ensuring equality of opportunity in public service.

Women's Safety

- 22.12. While the launch of the Nirbhaya Fund was an important step, its implementation has remained sub-optimal.
- 22.13. Every state should have an active (24x7) and accessible (toll free) women's helpline. Additional efforts should also be made to provide women with information about their rights. For instance, in Brazil¹¹, electronic kiosks have been set up at stations on railways lines for providing information to women who are survivors of violent crimes about the support services that can be accessed by them.
- 22.14. Another focus should be on enhancing the safety of public transport. One of the ways in which this can be achieved is by leveraging technology such as Global Positioning System, Closed-Circuit Television and mandating that the staff, including drivers and conductors, wear photo identification cards which cannot be tampered.

Women's Well-being Index

- 22.15. Over the next three years, a composite gender-based index to reflect the status of women in the country should be

developed. It could be published in the form of a report card every year. For developing this index, generating gender-disaggregated data is crucial. Disaggregating data by important characteristics, such as geographical location, along with sex reveals the gendered reasons underlying gaps in outcomes between males and females, where they exist. Data on the social determinants of girls' and women's health, such as domestic care-giving, non-formal employment, needs to be featured in national statistics.

Children

- 22.16. Children constitute a little over a third of India's population, making it one of the youngest countries in the world. The Constitution casts upon the state a responsibility to ensure that "children are given opportunities and facilities to develop in a healthy manner and in conditions of freedom and dignity, and that childhood and youth are protected against exploitation and against moral and material abandonment".
- 22.17. A major obstacle to designing effective policy interventions for children is the unavailability of credible data. For instance, the number of working children in the 5-14 years age group is estimated to be 4.3 million (excluding marginal workers) as per the Ministry of Labour and Employment. The Census 2011 (which takes into account main and marginal workers), on the other hand, reports the number as 10.12 million. Moreover, even where data is available, there is considerable ambiguity. For instance, the chapter on human trafficking brought out by the National Crime Records Bureau, does not take into account cases of child kidnapping and abduction.
- 22.18. Over the course of the next three years, data systems pertaining to children must be strengthened. There should also be a focus on improving the execution of existing policies and programmes pertaining to children.

Data Systems

- 22.19. All out-of-school children need to be mapped as a prerequisite to planning remedial programmes for bringing them back to school. Additionally, there is an urgent need to map children who face various vulnerabilities (engaged in labour, living in conflict zones etc.). The data should be fed into a centralized database. Further, an updated database must be developed for trafficked/missing children.
- 22.20. Digitization and real-time monitoring of Anganwadis is already underway. Over the next three years, every Anganwadi Centre needs to be digitized. Digitization is expected to reduce the time spent by Anganwadi Workers on filling beneficiary records.

Early Childhood and School Education

- 22.21. It is recommended that services at Anganwadis which cater to most of the early childhood needs of care and development include crèche facilities as well. Crèche facilities are essential to free women of domestic care work so that they can become a part of the productive labour force. Additionally, since preschool education is a part of Integrated Child Development Services (ICDS), standardized pre-school curriculum which incorporates regional diversity, stories and games should be developed. E-courses should also be launched for Anganwadi Workers to improve pre-school learning.
- 22.22. Facilities in Anganwadi Centres need to be upgraded and adequate capacities for Anganwadi Workers created. A quick evaluation study of ICDS Anganwadi Centres by NITI Aayog¹² showed that 76% of children in the sample were not malnourished. Also, over 75% of Anganwadi Centres were maintaining their records properly. While these results are encouraging, challenges also emerged with respect to the work load of Anganwadi Workers and inadequate infrastructure which need to be addressed urgently. For instance, an estimated 4 Lakh Anganwadi Centres are without buildings, 1.5 Lakh without water and 2 Lakh without toilets. Resources could be converged from Swachh Bharat Mission, Mahatma Gandhi National Rural Employment Guarantee Act and Corporate Social Responsibility to ensure water & toilets in all Anganwadi Centres.
- 22.23. With respect to school education, skill training, sports and extra-curricular activities should be introduced as a mandatory part of the curriculum for at least three days a week. This will provide a more holistic education to students

and improve employability. Additionally, as outlined in the Draft National Policy for Women, 2016, a gender sensitization module should be included in the curriculum.

- 22.24. Conditional cash transfer schemes that encourage education of the girl child need to be implemented more widely. Design modifications are required so that parents invest the money for the intended purpose instead of spending it on dowry. Functional toilets and facilities for menstrual hygiene management need to be ensured to reduce the drop-out rate for girls at the secondary school level.

Box 22-1: Kanyashree Prakalpa Scheme, 2013

Launched in West Bengal, it is a conditional cash transfer scheme aimed at improving the status and well-being of the girl child by incentivizing schooling and delaying the age of marriage. The amount paid is Rs. 750 in annual scholarships for girls in Class 8 and above and a one-time grant of Rs. 25,000 after the girl attains 18 years of age.

Child Protection

- 22.25. While several legal measures have been introduced, there has been an increase in the number of crimes against children. There is an urgent need to implement the relevant legislations and undertake severe punitive action against those who perpetuate violence against children.
- 22.26. Over the next three years, all State Commissions for Protection of Child Rights should be active, well-staffed and fully functional. They should be in a position to address grievances in an efficient and timely manner.
- 22.27. Professionalization of child protection is essential which requires capacity building of staff. This can be achieved through the National Institute of Public Cooperation and Child Development, and its regional centres as well as by establishing linkages with academic institutions and training institutes at the state level. Similarly, the Child Welfare Officer in every police station needs to be sensitized to the rights of children. This can be enabled by the development of model guidelines¹³ by the Home Ministry with respect to the functioning of Child Welfare Officers.
- 22.28. The quality of services being provided by the Child Line service should be evaluated. After making the necessary course corrections, it could be extended to all districts of India.
- 22.29. Further, a clear definition of ‘trafficking’ needs to be in place. The definition of child labour also needs to be reconciled with the manner in which the Census collects and computes data. This will facilitate accurate planning and implementation.
- 22.30. Emphasis also needs to be placed on ensuring registration of births and deaths for all children. Having knowledge about the number of children being served by government programs will enable better planning of services as will keeping track of the causes of child deaths.

Youth

- 22.31. Nearly a third of all Indians¹⁴ are between 15 and 29 years of age. This is one of the largest youth populations in the world. In order to capitalise on this demographic dividend, however, India needs to address the multiple challenges faced by youth including access to quality education, employment, health as well as social and cultural opportunities.
- 22.32. A National Youth Policy was introduced by the Central Government in 2014 to replace the National Youth Policy, 2003. Several State Governments have also formulated their own youth policies.

Data Systems

22.33. Over the next three years, systems should be put in place for collecting data pertaining to youth in rural and urban areas, in a systematic and consistent manner. The last National Survey¹⁵ was conducted in the year 2001 and the situation could have changed considerably since then.

Evaluation of Existing Schemes and Policies

22.34. Several policies and schemes have been introduced for the youth over the years. While some focus entirely on youth development, others include an indirect reference to youth related issues. As a prerequisite to designing more effective and comprehensive policies for addressing challenges faced by the youth in the country, it is crucial that the impact¹⁶ of existing policies is evaluated.

Strengthening the Implementation of Existing Schemes

22.35. The Nehru Yuva Kendra Sangathan (NYKS) is focused on the development of personality and leadership qualities among youth from rural areas who are not a part of the formal education system. Similarly, the National Service Scheme (NSS) pertains to the character development of youth enrolled in high schools, colleges and universities. Universalizing the coverage of these programmes and improving their quality should be the priority over the next three years. Interlinkages between the action plans developed on the four key thematic areas (environment and disaster risk reduction, social inclusion, gender justice and equality and social entrepreneurship) under the ‘Strengthening NYKS and NSS’ project should be established. Additionally, the roles of different stakeholders, beyond the Ministry of Youth Affairs and Sports, in the implementation of the action plans should be articulated. This includes various government ministries and departments as well as organisations like the Indian Red Cross. The districts where the project has a presence should also pilot the recommendations made by the Expert Group Committee Meeting¹⁷ that was held on 16 May, 2016.

22.36. Another area for action is strengthening the National Institute for Youth Development which plays an important role in the capacity building of youth.

22.37. School-based programs can play a vital role in providing key health and nutrition services to youth. They can also sensitize them to gender-related issues. Further, schools and colleges should be key stakeholders in programmes focused on the prevention of substance abuse and relevant content should be developed for inclusion in the school curriculum. In collaboration with schools and colleges, awareness generation programmes should be carried out in at least 10 districts in each of the high burden states over the next three years. These states should be identified based on the data collected during the National Survey.

22.38. Further, at least 100,000 youth who have been victims of substance abuse should be involved with skill development programmes to enable them to make a meaningful contribution to society.

Minorities

22.39. According to the Census 2011, out of the total population of 121 Crore, Hindus constitute 79.8 %, Muslims constitute 14.2%, Christians 2.3%, Sikh 1.7%, Buddhists 0.7% and Jains 0.4%.

22.40. Muslims constitute the largest religious minority and lag behind others in terms of economic, health and education parameters. The participation of Muslims in salaried jobs is also low. Muslim workers are largely concentrated in the informal sector which is characterised by low wages, poor working conditions and little or no social security.

22.41. Until the Eleventh Five Year Plan, there were no substantive developmental programmes focused on minorities. Even the Eleventh Five Year Plan programmes were implemented for too short a time period to be assessed. Steps need to be taken over the next three years to strengthen the implementation of existing schemes for minorities as well as evaluate their effectiveness.

Strengthening the Implementation and Monitoring of Existing Schemes

- 22.42. The PM's New 15 Point Programme (15 PP) has replicated certain features of the Scheduled Caste Sub-Plan (SCSP) and the Tribal Sub-Plan (TSP) in allocating a share of fund flows to minorities. Instead of earmarking a fixed share of funds (15%), allocations should be made based on the needs of the minority population. Additionally, data on fund utilisation and achievement of targets should influence the allocation process.
- 22.43. Targets and outlays of the 15 PP should be disaggregated to the level of the natural settlement/hamlet/ward to ensure that schemes are reaching the targeted beneficiaries and producing the intended outcomes. This should also become the basis for reporting achievements.
- 22.44. For effectively monitoring schemes under the 15 PP, guidelines provide for setting up Central (Committee of Secretaries), State and District Committees to report progress on a quarterly basis. Apart from delays in constituting State Level Committees, the norm of holding quarterly meetings has also not been adhered to in many states.
- 22.45. State and District level implementing agencies should have clarity about their roles as well as the share of allocations available for schemes targeted at minorities. Social auditors must have access to data about annual outlays and targets at the hamlet/ward level to provide feedback that is actionable.

Ensuring Appropriateness of Design of Existing Schemes

- 22.46. Fund allocation under the 15 PP is currently reduced to an accounting exercise with departments 'booking' 15% of their expenditure under the minorities head. An additional challenge is inadequate targeting of schemes which are intended to focus on minorities. For instance, NITI Aayog's evaluation¹⁸ of 'Nai Roshni', a leadership development programme for minority women, revealed that the scheme was covering a large number of women who would have accessed the services anyway.
- 22.47. Policy guidelines of Centrally Sponsored Schemes covered under the 15 PP should allow for customised interventions by identifying and filling developmental gaps in minority dominated localities.
- 22.48. The Multi-sectoral Development Programme (MsDP) guidelines should be revised to focus on undertaking initiatives that are needs-based instead of topping up existing Centrally Sponsored Schemes under the 15 PP. MsDP should emphasise plans to overcome local development deficits instead of aiming to saturate the coverage of already existing national programmes.

Promoting Education and Skill Development

- 22.49. To enhance access to education for minority girls, 555 Balika Vidyalayas sanctioned since 2006-07 are operational in minority concentrated areas. However, the enrolment of Muslim girls in these schools was only 16.39%¹⁹ till 2013-14. Evidence from Bihar²⁰ has shown that providing bicycles helped to increase the enrolment of girls, including those from minority communities, into secondary school. Thus, emphasis should be given to the provision of collective transportation facilities (not limited to cycles). Other measures include well-designed school stipend or cash transfer programmes. For instance, in 1994, the Female Secondary School Stipend Program, was introduced in Bangladesh²¹ which covered all the major costs of schooling, including uniforms and books for rural girls. Studies found that the programme not only had a beneficial impact on education but also delayed age at marriage for girls.
- 22.50. All secondary/senior secondary schools that have been sanctioned till date for areas with a large minority population should be made functional.
- 22.51. The Online Scholarship Management System has improved the scholarship application and granting process considerably. However, large numbers of students continue to lose out on the opportunity to benefit from a scholarship due to technical glitches in the system. Additionally, in some states there is a lack of coordination between banks and the district administration as well as delays in issuing the scholarship notification. These issues need to be resolved on an urgent basis. The design of the scholarship schemes, especially the application procedures, needs to be streamlined.

- 22.52. There are a large number of madrasas²² in the country although the exact numbers are unclear²³. Continued efforts should be made to modernise them through curricular reforms and provision of facilities (e.g. computers, labs, libraries). A fee waiver²⁴ could also be considered for madrasa students opting for examinations conducted by the National Institute of Open Schooling.
- 22.53. To strengthen higher education for minorities, the establishment of model degree colleges in all identified districts should be completed by end of the three-year period. Additionally, the functionality of all Women's Hostels that have been sanctioned by the University Grants Commission (UGC) for minority concentrated areas should be ensured. UGC had sanctioned 285 Women's Hostels during the 11th Plan period for districts with a large minority population out of which 155 hostels had been approved till 2014-15²⁵.
- 22.54. Vocational training and skill development are critical given the widespread unemployment and trend towards self-employment, especially among Muslim youth. There should be a special focus on traditional skills that are possessed by minority communities e.g. Zardozi work in Bareilly and Chikankari in Lucknow. This can be accomplished through the Upgrading the Skills and Training in Traditional Arts/Crafts for Development scheme approved in 2014-15. Students undertaking vocational and skills training in school could be given a stipend to take care of the material requirements of such programmes. Minority populations should be made aware of and encouraged to access benefits offered by schemes like Start-Up India and Stand-Up India.
- 22.55. Concerted efforts should be made by the government for increasing awareness about the educational enhancement and skill training scheme, 'Nai Manzil', launched in August, 2015 for school dropouts from minority communities and those studying in madrasas. It should be expanded to all districts with a sizeable minority population.

Empowering Women from Minority Communities

- 22.56. 'Nai Roshni', the newly launched leadership training programme for women should be expanded to all districts with a large minority population. A focus on appropriate targeting and quality (selected NGOs have the requisite experience, funds are released to NGOs in a timely manner) should be ensured. Women who are trained under this programme could be linked with the skill development initiative of the ministry to facilitate their economic empowerment.
- 22.57. Representation of women from minority communities must be ensured in all institutions intended to promote their welfare. This includes the National and State Women's Commissions, National and State Minority Commissions and Minority Financial Corporations.

Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC)

Context

- 22.58. According to the Census 2011, SCs constitute 16.9% of the total population with approximately 80% living in rural areas. Nearly half the SC population is concentrated in five states -- Uttar Pradesh, West Bengal, Tamil Nadu, Andhra Pradesh and Bihar. The Constitution recognizes that SCs have suffered social, educational and economic deprivation historically. Special provisions have therefore been made for the advancement of their interests.
- 22.59. STs constitute 8.6% of India's population according to the Census 2011 with 47% living below the poverty line in rural areas and 30% in urban areas. Tribal populations often live in remote locations making it a challenge to deliver basic services to them and ensuring that they benefit from economic growth. According to a World Bank report²⁶, STs are nearly 20 years behind the average Indian population as a result of their increasing isolation especially from traditional livelihood sources like land and forests. Similar to SCs, a number of legislations have been enacted by Government of India for boosting the socio-economic development of STs and protecting their rights.
- 22.60. OBCs include castes or communities that are considered to be educationally and economically backward. According to the National Sample Survey conducted during 2004–05 (61st Round), OBCs constitute around 41% of the total population. Approximately a quarter of the OBC population lives in rural areas as small and marginal farmers, agricultural labour and other subsidiary occupational groups.

- 22.61. There has been a visible improvement in the incidence of poverty and literacy rates among SCs, STs and OBCs. However, challenges such as high drop-out rates from school, low enrolment ratios in secondary school (compared to other social groups) and high unemployment rates persist.
- 22.62. Over the years, while a larger share of resources has been allocated for the benefit of these communities, the actual utilisation of funds has been poor. Additionally, monitoring mechanisms have been limited making it difficult to ensure and evaluate outcomes on the ground. Similarly, legislations that have been enacted for protecting the rights of these communities, have been implemented in an uneven manner.

Scheduled Castes

Empowering through Education

- 22.63. Efforts need to be stepped up for establishing functional residential schools for boys and girls in blocks with a substantial SC population. Further, using funds provided by the Finance Commission and other agencies, State Governments should upgrade hostel facilities.
- 22.64. Evaluations of the scholarships schemes in different states have revealed the need for strengthening their administration in several ways²⁷. A clear monitoring mechanism needs to be put in place at every level of the implementation chain. Periodic audits should also be conducted to prevent malpractices and delays in the release of scholarship funds to students. The Social Welfare Department should coordinate with all relevant Educational Boards and obtain the list of recognized institutions every year as is being done in the state of Andhra Pradesh. States that continue to provide scholarships through cash payments should move to Direct Benefit Transfer (DBT). Further, emphasis should be placed on creating awareness about scholarship schemes through print, electronic and social media channels. As a result of limited awareness²⁸, many potentially deserving students do not apply and the fund allocations for these schemes often remain under-utilised.
- 22.65. A system should be put in place for revising the rates of scholarships including the maintenance charges based on the Cost of Living Index/Consumer Price Index. The income ceiling for parents of students considered to be eligible should also be raised periodically.
- 22.66. It is crucial that the impact of these scholarship schemes e.g. on improving school retention and completion rates is evaluated. This exercise could be carried out for a sample of students across states by engaging a third-party evaluator.
- 22.67. Upon strengthening of the scholarship system and evaluation of impact, the number of slots under the National Fellowship for SCs could be enhanced to 2,200 every year (currently 2,000 awards per annum). Similarly, the number of scholarships awarded under the National Overseas Scholarship could be expanded to 200 per year (currently 100 awards per annum)."

Enabling Economic Development

- 22.68. Targeted coverage of SCs should be ensured through the provision of soft loans and financial assistance by the National Scheduled Caste Finance Development Corporation and the National Safai Karamchari Finance Development Corporation.
- 22.69. While several initiatives have been taken by the government to market the products developed by SC artisans and entrepreneurs, the ambit of such initiatives has been limited. There is therefore a need to strengthen market linkages. This can be accomplished through the recently launched National SC/ST Hub.

Promoting integrated development of villages with a large SC population

- 22.70. During the three-year timeframe, efforts should be made to ensure that the 1,000 villages selected during the pilot phase of the Pradhan Mantri Adarsh Gram Yojana attain the ‘model village’ status. Additionally, the scheme should be launched in the newly added 1,375 villages upon completion of the baseline survey and formulation of the village development plans.

Scheduled Tribes

Strengthening Implementation of Schemes for STs

- 22.71. Administrative strengthening of agencies responsible for implementing schemes in tribal areas should be undertaken on a priority basis. This requires developing a comprehensive personnel policy which covers duration of postings, incentives for rendering services in tribal areas and modules for sensitizing officials. Currently, there is a lack of transparency with respect to posting and transfer policies. As a result, those who are posted in tribal areas remain there for long without getting a chance of being posted in or around urban areas.
- 22.72. Further, tribal communities should be trained and engaged for bolstering government efforts at maximizing the coverage of education, health and other services. The normative prescriptions for launching a scheme in tribal majority areas could also be relaxed.
- 22.73. The SCSP and TSP planning process needs to be strengthened. In addition to earmarking funds for SCSP and TSP, emphasis must be placed on needs-based planning as well as a robust mechanism for monitoring and evaluation of outcomes. The Ministries of Social Justice and Empowerment and Tribal Affairs need to spearhead the task of development, implementation and monitoring of SCSP/TSP. At the state level, an institutional mechanism needs to be put in place for appraisal of the SC/ST Sub Plan by the Chief Minister and the designated nodal department.
- 22.74. Currently, 28 Ministries²⁹ and 27 states are implementing the TSP. However, a mechanism for monitoring outreach of various schemes and assessing the critical gaps does not exist. The on-line MIS application being developed with support from the Ministry of Tribal Affairs-UNDP project will enable monitoring of fund allocation and utilization. It will also help to assess if the intended benefits are reaching the tribal community, in practice. The schemes of the Central Ministries/Departments as well State Governments should be incorporated into the MIS and rolled out by 2018.

Empowering through Education

- 22.75. For promoting pre-primary education, Anganwadi facilities should be extended to tribal areas. Following adequate training and capacity building, the management of Anganwadi Centres should be handed over to local women.
- 22.76. Steps need to be taken for strengthening the implementation of scholarship schemes. For instance, scholarship rates and income ceiling of parents should be revised at regular intervals in alignment with the price index. Further, it should be ensured that scholarships to students who are day scholars or hostellers are paid on a monthly basis directly into their bank accounts to defray their expenses. The impact of the scholarship schemes on improving educational outcomes for students should be evaluated on a priority basis.
- 22.77. In order to reduce drop-out rates especially among girls belonging to ST communities, hostel facilities must be ensured in all areas in which they are currently absent. Moreover, where facilities exist they need to be upgraded and maintained so that they are usable. State Governments are currently eligible for 100% funding for establishment of all Ashram Schools for girls as well as Ashram Schools for boys in TSP areas that are Naxalite affected. This scheme could be extended³⁰ for establishing Ashram Schools for ST boys in non-Naxalite affected areas as well. More emphasis should be placed on training qualified teachers belonging to local tribal communities and posting them in Ashram Schools, beyond the mere construction of facilities.
- 22.78. For higher education, the number of scholarships awarded for ST students under The National Fellowship could be increased to 3,500 from the current figure of 3,370 per annum. Additionally, the number of awards (currently 22)³¹ under the National Overseas Scholarship could be enhanced to 50 so that ST students get a fair share. The scheme could be extended to cover all disciplines of higher education as opposed to only engineering, science and technology. Similar to the scholarship schemes for SCs, emphasis should be placed on creating awareness about scholarship schemes through print, electronic and social media channels.
- 22.79. Vocational training should be an important complementary part of education at the elementary and secondary school levels. Within the three-year period, the presence of an ITI/Polytechnic should be ensured in each development block of the Tribal Sub-Plan areas.

Enabling Economic Development

- 22.80. Targeted coverage of STs should be ensured through the provision of soft loans and financial assistance by the National Scheduled Tribe Finance Development Corporation.
- 22.81. Despite having land holdings, tribal communities are not economically developed. One of the steps that should be taken is allocating funds for tribal communities to setup enterprises in rural and urban areas. Export of tribal handicrafts should also be encouraged by the government. The National SC/ST Hub should be leveraged for strengthening market linkages for ST entrepreneurs, accessing financial support schemes and disseminating industry best practices. In addition to land and forest-based activities, initiatives should be undertaken for imparting skills to tribal populations near their habitations. A prerequisite to this is carrying out a socio-economic survey to determine the skills that are most relevant for these communities. A diagnostic study could be carried out to assess the gap areas with respect to the marketability and scalability of enterprises run by STs.

Strengthening Implementation of the Forest Rights Act (FRA), 2006 and the Panchayats Extension to Scheduled Areas Act (PESA), 1996

- 22.82. The FRA and PESA legislations established a framework for local self-governance in demarcated (or “scheduled”) areas. However, their implementation has been fraught with problems. A major challenge exists in making people aware of their forest user rights. Efforts should be made for reaching out to people with simple and key messages about the FRA. Clarity also needs to be provided with respect to the provisions of the Act and the procedure for filing applications to claim community rights. Additionally, capacity building should be undertaken for people who are responsible for implementing the FRA. In order to streamline implementation, greater synergy should be developed between the Tribal Welfare Department and the Forest Department at the state level. This will help to identify areas where the possibility of serving common interests and meeting FRA objectives is high. Further, in selected forest villages, pilot initiatives should be launched for identifying alternative livelihood options for tribal communities which will reduce their dependence on forest resources.

Other Backward Classes

Empowering through Education

- 22.83. The construction of hostel facilities for boys and girls belonging to OBCs needs to be prioritised. Further, the presence of a residential school should be ensured in every district that has a large population of OBCs on an urgent basis.
- 22.84. The recently revised Free Coaching scheme for OBC students should be implemented in a timely manner. The process of seeking proposals from states and Union Territories and empanelling coaching institutions should be expedited.
- 22.85. The number of awards under the National Fellowship for OBCs could be increased to 780 per year (currently 660). Additionally, the number of awards under the National Overseas Scholarship for OBCs could also be increased to 470 per annum (currently 385). Any increase in the number of awards should be preceded by a strengthening of the scholarship system and evaluation of impact similar to the measures to be taken for SCs and STs.

Enabling Economic Development

- 22.86. The National SC/ST Hub could be expanded to also meet the marketing needs of artisans belonging to OBCs or a similar institutional mechanism could be put in place. Provision of concessional loans for entrepreneurship development among OBCs as well as financial assistance to trained/educated youth for self-employment should be continued on a priority basis.

Persons With Disabilities

Context

- 22.87. The Persons with Disabilities (PwDs) experience stigma and compromised dignity in their daily life. Article 41 of the

Indian Constitution mandates the state to make effective provisions for securing the right to education, work and public assistance for people affected by disability within the constraints of its economic capacity and level of development.

22.88. According to the Census 2011, there are 2.68 Crore PwDs in India constituting 2.21% of the total population. This, however, could be an underestimate because according to the World Health Organisation, 15% of the world's population faces some form of disability. India enacted the first legislation for PwDs in 1995. The Right of PwDs Bill, 2014 has been passed recently by the Rajya Sabha. If it is cleared by the Lok Sabha it will replace the PwDs Act, 1995. India also formulated its first National Policy for PwDs in 2006. In 2015, the Accessible India Campaign was launched.

22.89. Socio-economic empowerment of PwDs is an inter-sectoral issue. However, it has not received adequate attention from different Ministries and Departments. The Department of Empowerment of Persons with Disabilities (DEPwD) which is the nodal department for issues concerning PwDs at the national level has several schemes. However, many of these schemes have a very small allocation and the resources that are allocated do not get fully utilised. The monitoring capacity within the department is also limited which is a major challenge because a number of schemes are implemented through NGOs.

Undertaking Legislative, Policy and Institutional Reforms

22.90. Replacement of the PwDs Act, 1995, will be a major step forward, especially in recognising various types of disabilities. The National Policy for PwDs, 2006, also needs to be revised to make it more relevant and comprehensive. States should be encouraged to develop their own disability policies similar to the Comprehensive Disability Policy Framework for Chhattisgarh. At least 20 states should have a policy on disability by the end of the three years.

22.91. Certain institutional reforms should be undertaken. Firstly, it is important to strengthen the institutional framework at all levels to have a stronger and more direct role for PwDs. Secondly, the responsibility for specific initiatives for PwDs should be brought under the purview of the relevant line Ministries. For instance, all education related matters should be with the Ministry of Human Resources Development. Third, the number of schemes administered by the DEPwD should be rationalised. It would be prudent to have a limited number of schemes with adequate budgetary allocation that are implemented and monitored well. Fourth, the financial and human resource capacity of the Central and State Commissioners' offices need to be strengthened so that they are able to perform their functions more effectively. Guidelines on minimum staffing levels should also be introduced.

Estimating the number of PwDs in India

22.92. The first step towards empowering PwDs is obtaining a realistic estimate of the numbers of people who are coping with various types of disabilities. This has been difficult to obtain, however, because of reluctance to disclose this information due to social stigma. A large-scale awareness campaign should be launched to sensitize people about disability and alleviate the stigma.

Improving Accessibility

22.93. Guidelines/building by-laws with mandatory provisions for accessibility should be formulated. Over the next three years, 10,000 government buildings and 75% of buildings in the private sector should become fully accessible. Additionally, accessibility should be ensured for 75% of government owned public transport and 50% of privately owned transport. Accessibility for all international and domestic airports as well as railway stations should be ensured within the three-year timeframe. In order to improve accessibility of infrastructure, one of the additional sources of funding that should be tapped is corporate social responsibility.

Strengthening Education

22.94. Over the three-year period, around 4,80,000 Scholarships/Fellowships (fresh & renewals) should be awarded to students with disability.

22.95. While the Right to Education Act promised a special focus on admission and retention of children with disabilities, the situation has not seen a major improvement. An NCERT study³² found that disabled children in schools across states still face serious infrastructure and pedagogy handicaps. These challenges include absence of ramps and disabled friendly toilets as well as special teaching materials and sensitized teachers. It must be ensured that schools have at least one section of each class accessible under the Universal Design Guidelines. Additionally, a module on sensitization should be made mandatory in teacher training courses.

Enhancing employability

22.96. Skill training should be provided to at least 12.5 Lakh PwDs over the next three years. One of the ways in which this can be accomplished is by setting up dedicated ITI Centers for PwDs according to the requirements of the private sector. The success of ITIs³³ of course depends on the presence of staff, including a full-time principal and the extent of involvement of the industry partner. Additionally, five Centers should be established by the National Handicapped Finance and Development Corporation (NHFDC) including 1 in the North East for training PwDs for self-employment.

22.97. The Authorized Share Capital of NHFDC should be enhanced from the present Rs.400 Crore to Rs. 1,000 Crore. Additionally, grant support should be provided to NHFDC for implementing the backend subsidy (up to 35%) under NHFDC self-employment loans.

22.98. Potential posts for PwDs in the government should be reviewed and the 3% vacancy reservation implemented.

Establishing important institutions for PwDs

22.99. Four regional centres of the Rehabilitation Council of India (RCI) should be established. Independent functioning of the National Board of Examination in Rehabilitation under the RCI should be ensured.

22.100. Three Centres for Disability Sports (in Zirakpur, Vishakhapatnam and Gwalior) should be opened during the three-year timeframe.

22.101. The Indian Sign Language, Research & Training Centre should be set up and 500 additional sign language interpreters should be trained.

22.102. For comprehensive management of spinal injuries, 20 state Spinal Injury Centres should be established in government hospitals. Additionally, an impact evaluation of the scheme for supporting the Indian Spinal Injury Centre, New Delhi, should be conducted to ascertain the feasibility of enhancing the coverage of poor people with spinal injuries and modifying the scheme if necessary.

Improving Access to Aids/Assistive technologies for PwDs

22.103. Aids should be provided to approximately 3.5 lakh beneficiaries every year. Distribution of aids to senior citizens who live below the poverty line should be prioritised as a sizeable percentage suffers from age-related disabilities. Additionally, cochlear implant and corrective surgeries should be conducted for 5,000 children on a yearly basis.

22.104. The Unique Disability Identity Card (UDID) Project should be rolled-out in 14 states and Union Territories over the next three years. This will help to eventually create an electronic database of PwDs across the entire country. The process of issuing disability certificates through UDID should also be digitized.

Senior Citizens

Context

22.105. According to the Census 2011, India has 10.8 million senior citizens (above 60 years of age). This number is expected to increase substantially in the coming years with a rise in the life expectancy to 65 years from 42 years in 1960. In fact it is predicted³⁴ that between the years 2000 and 2050, the population of India will grow by 55%. However, the population above 60 years and 80 years will grow by 326% and 700% respectively.

22.106. Ensuring the welfare of senior citizens will therefore assume even greater importance in the future given the projected shift in demographic patterns. Healthcare is a crucial area of focus since a large share of the elderly population lives in rural areas and belongs to the weaker socio-economic segments. Moreover, senior citizens are considerably more prone to chronic illness and disability. Other challenges include financial insecurity and inadequate support from families/carers.

Undertaking Legislative, Policy and Institutional Reforms

22.107. The new National Policy on Senior Citizens should be finalized and implemented taking into consideration the changing demographics and socio-economic needs.

22.108. The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 should be revisited to assess the feasibility and effectiveness of certain provisions. For instance, the Act directs the government to establish at least one Old Age Home in every District with the capacity to accommodate 150 senior citizens. Such specifications limit the flexibility of the Act to cater to differing local conditions and needs. Areas in which specifications are needed, are currently absent from the Act. For instance, there are no provisions³⁵ with respect to the management of Old Age Homes, resulting in suboptimal quality³⁶ in a number of cases.

22.109. The schemes pertaining to senior citizens could be brought under the restructured Department of Disability Affairs and Senior Citizens. An integrated implementation and monitoring plan should be developed by the Department with inputs from various government and non-government stakeholders. The progress made with respect to the implementation of the plan should be reviewed periodically by the Inter-Ministerial Committee headed by the Secretary, Ministry of Social Justice and Empowerment.

Strengthening the implementation of existing policies

22.110. At least 15 states should have functional Councils for senior citizens by the end of three-year period. The Councils can play an important role in grievance redressal as well as ensuring that services intended for senior citizens are actually delivered.

22.111. The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 has been notified by all states and Union Territories. Six states³⁷ have not implemented all the procedural steps following the notification of the Act and should be encouraged to do so. However, even where the Act has been notified and the subsequent procedural steps have been completed, awareness about the various provisions of the Act among those responsible for implementation has been limited. A mass media awareness campaign should therefore be conducted by the Ministry of Social Justice and Empowerment. In order to ensure that the campaign reaches rural areas effectively, Panchayati Raj Institutions, Municipalities and Local Bodies must be involved. Workshops should be organised with State Governments, NGOs and Senior Citizens Associations to ensure that the various provisions of the Act are understood clearly.

22.112. The idea of day care (as opposed to residential centres) is more acceptable to a significant part of the elderly population³⁸. Setting up of day care/enrichment centres should therefore be prioritised under the Integrated Programme for Older Persons (*IPOP*).

22.113. Regional Resource and Training Centres (RRTCs) funded under IPOP can play an important role in fulfilling the rising demand for caregivers and personnel for Old Age Homes. Existing RRTCs funded under the IPOP should therefore be strengthened. Additionally, during the three-year timeframe it should be ensured that there is at least one RRTC in every state. The National Institute of Social Defence (NISD) also needs to be bolstered to play an important role in training the requisite human resources for initiatives pertaining to senior citizens. Courses offered by NISD should be recognised by the Rehabilitation Council of India or a similar institution.

22.114. Over the next three years, the presence of Old Age Homes with the requisite facilities should be ensured in all districts. While there should be room for flexibility, some minimum guidelines, pertaining to the design of the buildings as well as required management expertise should be formulated. The functionality of Old Age Homes must also be monitored on a regular basis. The key parameters for monitoring include infrastructure, services, skilled staff and participation of residents in the running of the Homes.

- 22.115. District-level helplines for senior citizens should be launched (wherever necessary) and made functional during the three-year period. Crucially, there should be a clear system for management of complaints made through the helplines. For instance, there could be a designated officer in every police station to deal with issues pertaining to senior citizens.
- 22.116. The effectiveness of the National Programme for Health Care of the Elderly should be evaluated. Based on the results of the evaluation, the initiative should be expanded to an additional 200 districts over the next three years. The Programme is currently being implemented in 281 districts across 27 states and 6 Union Territories³⁹. Additionally, Aadhaar-based smart cards containing the health details of senior citizens should be piloted in at least 15 districts during 2017-18 and expanded subsequently based on the results from the pilot.
- 22.117. Aadhaar and Direct Benefit Transfer based implementation and monitoring of social security programmes including the Old Age Pension Scheme and Senior Citizens Welfare Fund should be introduced.
-

¹ “Indian Women Can Boost The Economy By 16% In 2025. If We Let Them”, The Huffington Post, July 2016.

² World Bank Report, 2014; Census, 2011; Ministry of Women & Child Development, “High Level Committee Report on the Status of Women”.

³ https://www.actionaid.org.uk/sites/default/files/publications/womens_rights_on-line_version_2.1.pdf

⁴ “India could add 60% to 2025 GDP by bridging gender gap at work: McKinsey”, Livemint, December 2015.

⁵ http://www.mifp.org.in/media/mediabinary/2014/02/WP_2014_128.pdf

⁶ World Bank Global Financial Inclusion Database, 2014

⁷ https://www.giz.de/en/downloads_els/sakhimodel.pdf

⁸ <http://thecommonwealth.org/sites/default/files/inline/Priority%20Sector%20Lending%20case%20study%20FINAL.pdf>

⁹ <https://www.oecd.org/dac/povertyreduction/50157530.pdf>

¹⁰ <http://gap.hks.harvard.edu/subsidizing-vocational-training-disadvantaged-youth-colombia-evidence-randomized-trial>

¹¹ McKinsey Global Institute, “The Power of Parity”, September 2015.

¹² NITI Aayog, Appraisal document of 12th Five Year Plan.

¹³ http://ncper.gov.in/view_file.php?fid=461

¹⁴ <http://in.one.un.org/youth/>

¹⁵ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3410206/>

¹⁶ <http://icmr.nic.in/ijmr/2014/august/0805.pdf>

¹⁷ <http://www.in.undp.org/content/india/en/home/operations/UNV/events/translating-indias-national-youth-policy-2014-into-action.html>

¹⁸ http://niti.gov.in/writereaddata/files/document_publication/Final%20-%20Report%20on%20Nai%20Roshni.pdf

¹⁹ http://minorityaffairs.gov.in/sites/default/files/15PP-SacharCommitteeStatus_0.pdf

²⁰ <http://web2.uconn.edu/economics/working/2013-24.pdf>

²¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2928106/>

²² “Nai Manzil’ is a great programme for minority welfare, but its downfall lies in its low-profile”, Firstpost, January 2016.

²³ “Madrassas: behind closed doors”, Financial Times, October 2015.

²⁴ “Committee favours degree colleges in 90 minority districts”, The Economic Times, June 2013.

²⁵ http://minorityaffairs.gov.in/sites/default/files/15PP-SacharCommitteeStatus_0.pdf

²⁶ <http://documents.worldbank.org/curated/en/857771468260645048/pdf/613140PUB0pove158344B09780821386903.pdf>

²⁷ P R Memorial Foundation, “A REPORT ON EVALUATION OF POST MATRIC SCHOLARSHIPS (PMS) SCHEME AND ITS IMPACT ON THE SCHEDULED CASTE STUDENTS IN THE STATES OF ANDHRA PRADESH, BIHAR, CHHATISGARH, MAHARASHTRA, PUNJAB, UTTAR PRADESH AND WEST BENGAL”, 2008.

²⁸ “Govt to launch scholarship website for SC, OBC students”, Livemint, February 2013.

²⁹ http://mhrd.gov.in/sites/upload_files/mhrd/files/document-reports/SCSP-TSPReport_1.pdf

³⁰ http://164.100.47.134/lsscommittee/Social%20Justice%20&%20Empowerment/15_Social_Justice_And_Empowerment_44.pdf

³¹ <http://tribal.nic.in/WriteReadData/CMS/Documents/20160819044404356536OutcomeBudget2016-17-ilovepdf-compressed.pdf>

³² “RTE has failed to enable the disabled: Study”, Indian Express, January 2014.

³³ <http://www.cii.in/PublicationDetail.aspx?enc=yoCzhzzjlAWZlVqHzJhnszUsSS6SNyuKiHutI7ZzGZe+OUFpYLgIAeSdFE7iRWSwc1DtyDLGQPh7jmLTThl7+3tuizZvbKTfayquw98HGwQxChYMxyD9hVX1FPkUNYXj6U+v0wi+ceyehxac2t4Gk+fkcdYHkpvLgl7qX89zoUk9uzBEGC0TA5cNvggrUjr>

³⁴ <http://socialjustice.nic.in/writereaddata/UploadFile/dnpsc.pdf>

³⁵ <http://www.prssindia.org/billtrack/the-maintenance-and-welfare-of-parents-and-senior-citizens-bill-2007-441/>

³⁶ “No one to monitor old age homes, say experts”, Times of India, October 2016.

³⁷ http://socialjustice.nic.in/writereaddata/UploadFile/SOCIAL%20JUSTICE%20ENGLISH%202015_16.pdf

³⁸ <https://www.helplineindia.org/images/pdf/state-elderly-india-2014.pdf>

³⁹ Press Information Bureau, “National Programme for Health Care of Elderly”, May 2016.

Part VII

Sustainability

CHAPTER 23.

ENVIRONMENT AND FORESTS

Air Pollution

- 23.1. Air pollution is a serious problem in most of India and has reached crisis levels in Northern India. This is most publicized in Delhi, but it is also widespread in many other cities. As many as 10 of the top 20 most polluted cities in the world are in India, with nearly all in Northern and North-Western India¹. Since air pollution has significant negative impacts on the health and well-being of the population and as a negative externality of economic activity, it requires corrective action by the government.
- 23.2. The major sources of air pollution are coal power plants, brick kilns, vehicles, cooking and heating fires which burn biomass, rubbish burning, the burning of crop residue in some seasons, and dust from construction, roads, and fallow fields. Air pollution can be considerably reduced within three years by taking the following actions:
- 23.3. *Find alternatives to crop residue burning.* A very large contributor to air pollution in early winter in north India is residue burning of the rice crop. Productivity of the wheat crop depends on early planting after rice is harvested. So farmers burn residue in order to prepare the field quickly despite the resulting pollution. The Happy Seeder, a machine developed by Commonwealth Scientific and Industrial Research Organisation (CSIRO Australia) and Punjab Agricultural University, allows planting of wheat through the residue. It was introduced about five years ago. It has been shown to reduce field preparation costs marginally and maintain yields and profits of wheat, which has led some farmers to adopt it². In view of the urgency of the problem and the large benefit from putting an end to crop residue burning, a larger subsidy on the machine for limited time complemented by extension and information campaigns may eliminate the problem within the next three years. Implementation can be further strengthened by the enforcement of bans already in place³.
- 23.4. *Reduce pollution from cooking fires.* As also detailed in the chapter “Energy,” the penetration of LPG in households would increase under the Pradhan Mantri Ujjwala Yojana (PMUY) as 50 million LPG connections would be distributed to BPL families by 2019⁴. The household level biomass consumption should also be positively influenced through two measures: 1) support for setting up of biomass pelletising units; 2) a scheme to distribute ‘forced draft efficient biomass chullahs’ supported by subsidy for the vulnerable sections.
- 23.5. *Install flue gas de-sulphurizers, on all coal power plants in or close to densely populated areas except those less than 5 MW capacity and those older than 25 years by 2020.* The older power plants should be shut down and retired in a phased manner. This will cut emissions of Sulphur Dioxide (SO₂) gas that becomes sulphate particles in the atmosphere. It will also reduce particulate (smoke) emissions directly. The average cost of doing this along with improvements in fly ash removal and control of Nitrogen Oxides (NO_x) emissions has been estimated to be 35-40 paise/KWh, and could reduce the PM2.5 concentrations by 30-40%⁵. In order for effective implementation of these actions and of the Continuous Emission Monitoring program that is already in operation, capacity improvements in the Pollution Control Boards will be needed.
- 23.6. *Reduce pollution from brick kilns.* As one of the most polluting industries⁶, special attention should be given to reducing pollution from brick kilns. Upgradation of Fixed Chimney Bull’s Trench Kiln to cleaner technologies like Zig Zag kiln should be promoted through awareness of their higher efficiency and profitability and easy credit for upgradation. Training for firemen on best operating practices for higher efficiency should be promoted through the skill development programmes of the government by 2018.
- 23.7. *Reduce in-city vehicle pollution.* A number of complementary steps may be taken. First, making public transportation faster and more comfortable will discourage the use of private vehicles. Metro or bus based rapid transit systems connecting

suburbs and the city centre and a dense in-city transport system will go some distance towards achieving this objective. Second, replacement of vehicles from petrol and diesel to CNG can be effective in bringing down emissions. In the longer run, with the electric battery costs predicted to come down in the next decade, a shift to electric vehicles may become feasible as well. Third, infrastructure improvements, which allow vehicles traveling long distances to bypass the cities on the way without entering cities would help cut emissions. Fourth, higher taxes on petrol in and around more polluted cities would encourage commuters to share cars and take public transportation. Higher parking fees and park and ride facilities will have similar effects. Finally, we need to enforce existing traffic laws with greater force. When vehicles do not stay in the lanes and try to pass other vehicles by frequent changes in lanes, they cause traffic jams and delays. The result is idling of vehicles for much longer than necessary. Enforcing traffic laws will alleviate the problem.

Regulation of Polluting Industries

Institutional strengthening

- 23.8. Regulation should be based on scientific studies of public health and other benefits. We should introduce a change in legislation/rules so that the Pollution Control Boards (PCBs) are obliged to make rules and set standards by conducting or referring to scientific studies on the benefits of any given rule in terms of health and other benefits. This also requires building capacity for a much larger cadre of scientists in the Central and State PCBs, and much more monitoring equipment. This in turn requires sufficient finance to ensure that the Boards have an adequate budget.
- 23.9. Second, institute a requirement to publish all monitoring data on the PCBs' websites. This is important to ensure that the wider scientific community is involved, so that mistakes can be corrected and procedures can be continuously improved. It is also important to ensure that the mandate is carried out without favours or targeting of any particular company/industry. This will ensure predictability, stability and trust in the system, avoiding litigation.
- 23.10. Third, we may consider change in legislation/rules that gives power to PCBs to levy graduated fines depending on the seriousness of the offence and whether it is repeated. Closure and cutting electricity/water should be the last resort. Presently, the choice for a PCB faced with non-compliance is to take drastic action or no action. The result is that frequently no action is taken until matters reach a crisis point.

Reduce Solid Waste

- 23.11. Strengthen Swachh Bharat by taxing plastic production and import. The behavioural side of plastic usage should also be addressed, with information campaigns against unnecessary use of plastic, and Point of Sale charges for plastic bags that encourage people to use recyclable material. This will raise the cost of plastic and reduce plastic bag use nationwide. Revenue should be transferred to municipalities in proportion to population to cover the costs of recycling and disposal of plastic waste. The immediate requirement is to calculate the full cost of collection and disposal and set the tax rate to be high enough to cover this revenue need. This will also reduce waste burning, which is one of the primary causes of pollution in cities.
- 23.12. Enable easier setting up of solid waste management plants on existing dumpsites by changing their classification from B1 to B2 under the guidelines for Environment Impact Assessment Notification 2006. This will permit states to skip mandatory Environmental Impact Assessment whenever they are attempting to improve current dumpsites. In addition, since these plants will be causing an improvement to existing dumpsites, they should be exempted from the requirement of public hearings.

Forests and Tree Cover

Improving the effectiveness of afforestation programs

- 23.13. Although India has had many afforestation programs over many decades, there are no clear measurements of their impacts and effectiveness. This is because there are no generally accepted standards for making the information and impacts of these programs transparent and easily measurable. A way forward is to develop an open-source

smartphone/tablet app and back-end database that local forest managers can use to document their activities easily. The basic features will be the ability to demarcate the boundaries of the forest(s) using Global Positioning System (GPS), and entering photographs and other data on the forests, with an option for making subsets of the data open to the public.

- 23.14. This feature, together with some demonstration activities, can speed adoption by community and private forest managers who can benefit by transparently documenting their achievements and thus obtaining financial support from private and government donors and investors. Once the app has passed a market test and is in widespread use, it can be suitably modified and adopted to monitor government-managed forests and afforestation programs as well.

Removing restrictions on forest product markets

- 23.15. Presently, many states have laws or rules restricting the felling, transport, and sale of trees, even on private lands. These discourage farmers from planting tree crops. Equally importantly, this also prevents long-term investments in community-managed forests – for example, Van Panchayats in Uttarakhand, and various Joint Forest Management types in many states. These regulations and restrictions should be removed for private lands. In some cases, community and private forests have valuable indigenous tree species and ecosystems that may be converted to exotic monocultures. The restrictions may be preventing some of this conversion, but they do so at a very high economic cost. Furthermore, by restricting the entry of private timber and pulp plantations, they increase the pressure on native forests.
- 23.16. A better strategy to prevent such conversions from native mixed forests to exotic monocultures would be to develop positive incentives to maintain such forests. This would induce farmers and communities to document their ecological wealth in contrast to the present system that encourages them to conceal it and destroy it before it is officially recorded.

Preventing forest fragmentation by linear projects

- 23.17. All linear projects such as road, power lines and rail projects that cut through forests should be required to incorporate mitigation measures at all stages of planning, construction, and maintenance. This will allow projects to go ahead without cutting off migration corridors that are essential to prevent species from going extinct⁷.

Invasive species control

- 23.18. Invasive species cause enormous damage to crops and ecosystems every year. A unified policy on invasive alien species control, regulation, and management, is needed, cutting across sectors such as agriculture, horticulture, animal husbandry, forestry, and wildlife conservation.

Northeast India

- 23.19. Current policies provide road access and subsidies for halting the burning of trees and shifting cultivation (jhum) and often are conditional on conversion to oil palm and other monocultures, thus in effect subsidizing these activities. This is encouraging deforestation and reducing species richness. The policies subsidising palm oil cultivation should be reversed.

¹ WHO data 2016

² Gupta, R. "Low-hanging fruit in black carbon mitigation: Crop residue burning in South Asia"; Climate Change Economics., 05, 1450012 (2014)

³ "Punjab, Haryana Farmers Ignore Ban On Stubble Burning", NDTV, October 2016.

⁴ <http://www.pmujjwalayojana.com/>

⁵ Guttikunda, S.K., Jawahar, P, "Atmospheric emissions and pollution from the coal-fired thermal power plants in India." Atmos. Environ. 92, 2014.

⁶ US Environmental Protection Agency, "Reducing Black Carbon Emissions in South Asia".

⁷ Guidelines are available in - Background paper for (National Board for Wildlife) NBWL

- Draft guidelines for roads and power lines (National Board for Wildlife)

- Recommendations of the NBWL Sub-Committee on Guidelines for Roads in Protected Areas

- Guidelines for linear infrastructure in India (WII Draft, MoEFCC)

CHAPTER 24.

SUSTAINABLE MANAGEMENT OF WATER RESOURCES

Context

- 24.1. **Water Availability.** India's main source of water – the annual precipitation including snowfall is estimated as 4,000 billion cubic meters (BCM). However, 53.3% of the total precipitation is lost due to evapotranspiration, which leaves a balance of 1869 BCM water. The availability of water resources also shows a high degree of spatial and temporal variations as in the case of rainfall. For instance, the Ganga-Brahmaputra-Barak river basins contribute 59% of the total water resources of the country. Further, about 40% of the water available is not utilisable due to topographical constraints and uneven distribution of water resources¹. Therefore, utilizable water potential of India is 1,123 BCM consisting of 690 BCM of surface water and 433 BCM of ground water. As per the Central Water Commission (CWC), annual per capita water availability dropped from 1,816 cubic meters in 2001 to 1,544 cubic meters in 2011 due to population increase².
- 24.2. **Water Demand.** The 'National Commission for Integrated Water Resources Development' (NCIWRD) has projected the demand for water for the years 2025 and 2050. By the year 2050, the total demand for water is expected to be 973 BCM for low demand scenario and 1,180 BCM for high demand scenario. The projected demand share is dominated by agriculture (70%), followed by households (9%) and industries (7%)³.
- 24.3. **Need for Sustainable Management of Water Resources.** The mismatch between the present availability and the projected demand, uneven distribution of water resources, regular water scarcity and flooding, deteriorating water quality and excessive dependence on groundwater call for cohesive and scientific approach to manage available water resources.
- 24.4. **Surface Storage.** As against the surface water availability of 690 BCM, India's present storage capacity stands at 303 BCM (44%) and will gain an additional storage capacity of about 33 to 37 BCM with the completion of on-going large dam projects⁴. However, as per the Working Group on Water Resources for the XIth Plan, siltation will lead to loss of about 53 BCM of reservoirs' storage capacity by 2050. The storage capacities as share of average annual flow is more than 50% for Krishna, Tapi and Narmada river basins while the share for Ganga and Brahmaputra sub-basins stands at 11% and 0.5% respectively⁵. Moreover, India's annual storage available per capita at 225 m³ compares poorly with that of Australia (4,733), Brazil (3,145), China (1,111), and Russia (6,103)⁶.
- 24.5. **Groundwater.** Ground water resources amount to 433 BCM and are 39% of the total water resources. Surface water resources account for the remaining 61% water resources. Ground water accounts for as much as 63% of the total water used in irrigation⁷. On groundwater assessment, as on 31st March 2011, out of 6,607 assessed administrative units, 1,071 units were 'Over-exploited', 217 units 'Critical', 697 units 'Semi-critical', 4,530 units 'Safe' and 92 units were completely saline. The over-exploited and critical administrative units were significantly higher (more than 50% units) in Delhi, Haryana, Punjab, Rajasthan and Daman & Diu⁸. The stage of groundwater development has been reported more than 100% in the states of Punjab, Delhi, Rajasthan and Haryana⁹. On the other side, the stage of groundwater development is lower than the National average of 62% in North-eastern and Eastern states¹⁰.
- 24.6. **Irrigation Sector.** The Ultimate Irrigation Potential (UIP) in India is assessed at 139.9 million ha. As per the National Perspective Plan, implementation of Inter Basin Water Transfer (IBWT) proposals may create additional irrigation potential of 35 million ha¹¹. By March 2012, Irrigation Potential Created (IPC) stood at 112.5 million ha. However, there was a gap of 23.2 million ha (21%) between IPC and Irrigation Potential Utilized (IPU). Moreover, the 'Net Irrigated Area'¹² was only 65 million ha out of 141 million ha 'Net Area Sown.' Thus, the remaining 76 m ha (54% of Net Area Sown) needs to be provided with some means of irrigation. Moreover, the efficiency of irrigation sector for surface and ground water presently stands at 30% and 55% respectively. India can make significant gains in

water availability through increased efficiency of water use across the board in irrigation¹³. The irrigation sector is also grappling with the issues inter-alia of insufficient fund for implementation, non-completion of projects, poor maintenance, absence of effective Participatory Irrigation Management, non-alignment of cropping patterns to the agro-climatic zones, and absence of field channels for last mile connectivity.

- 24.7. **Drinking Water.** Providing adequate and safe drinking water to all households, through piped water supply, is a major challenge. As per 2011 Census, only 30.8% of the total rural households and 70.6% of the total urban households were reported getting piped water supply¹⁴.
- 24.8. **Industrial Water.** Treatment of effluents discharged from industries needs to be accorded priority for controlling water pollution. Disposal of untreated sewage and industrial waste is a major cause of pollution in rivers and other water bodies.

Sustainably Managing Water Resources

- 24.9. India's vision for water sector is to ensure water security for economic prosperity and environmental stability through sustainable management of available water resources with peoples' participation.
- 24.10. To achieve the above vision, India will have to adopt specific strategies. Below is the list of key strategies along with the specific actions for each strategy:

To provide irrigation to all farms (Har Khet Ko Pani) with improved on-farm water-use efficiency (Per Drop More crop)

- 24.11. Under Accelerated Irrigation Benefits programme (AIBP) component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), the on-going projects have to be closely monitored to remove bottlenecks for faster completion. A total of 149 major and medium irrigation projects were approved earlier for Central assistance under AIBP. Out of these, 99 projects (with capacity to create additional irrigation coverage over 76 Lakh ha) have been prioritised for implementation under PMKSY as these can be completed within a period of 2 to 3 years, if financial resources are made available.
- 24.12. A scheme may be planned by the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD&GR), in consultation with the states/UTs, for bridging the reported gap between the IPC and the IPU of 15.6 million ha in surface irrigation and 7.5 million ha in groundwater irrigation.
- 24.13. Repair, Renovation and Restoration (RRR) of existing water bodies, which are not in use, needs to be given high priority for water management particularly in drought-prone areas. In such areas, inventory of water bodies in the villages and nearby areas may be prepared and geo-mapped. These bodies should be restored and put in use for water storage which would also facilitate recharging of ground water. This scheme should be implemented in convergence with other schemes such as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).
- 24.14. A nationwide Information, Education and Communication (IEC) campaign needs to be launched making farmers aware of the benefits of adopting Micro-Irrigation Systems with use of solar energy for better on-farm water use efficiency. This activity can be undertaken through the recently announced Micro Irrigation Fund in the Budget 2017-18.
- 24.15. The projects sanctioned under Integrated Watershed Management Programme (IWMP), numbering 8,214, require Rs. 22,610.14 Crore as central share and carry potential to provide irrigation to 27.3 Lakh ha. The Department of Land Resources (DoLR) has proposed that an additional allocation of Rs. 9,020.14 Crore over and above Rs. 13,590 Crore allocated under PMKSY will result in bringing an area of 15.81 Lakh ha under irrigation in addition to the target of 11.50 Lakh ha set under "Watershed Development" component of PMKSY. The proposal of the DoLR may be agreed as works taken up under "Watershed Development" also contribute significantly to re-charging of groundwater.
- 24.16. There are 4,181 on-going surface minor irrigation schemes in 19 states which require Rs. 9,127 Crore as central assistance and carry potential to provide irrigation over 10.18 Lakh ha. These projects may be taken up on priority in

states getting fewer benefits under AIBP and Command Area Development & Water Management (CAD&WM).

Encourage industries to utilize recycled/treated water and ensure zero discharge of untreated effluents

24.17. A program needs to be launched to ensure universal adoption of smart water meters by 2021 for industrial units consuming large volume of water. Also, an initiative can be launched to ensure different types of industries meet certain share of their demand through recycled water. To achieve efficiency, tradable permits for the use of regular (non-recycled) water may be introduced. Under such a scheme, each industrial unit will be given permits to use regular water up to their quota. Units wishing to use regular water in volume exceeding their quota would be allowed to purchase additional permits from units able to save on their quota.

24.18. By 2019, benchmarks may be established for water use in water-intensive industries.

24.19. Domestic and international private players have expressed interest and have even begun participating in projects at the confluence of Swachh Bharat Mission, National Mission for Clean Ganga, sewage treatment in urban areas and solid waste management, among others. By the end of 2017, a committee of experts can be constituted to look at ways of unlocking potential for participation of the international private players in the water sector. A continuous reform to bring investments, technical and management expertise and global best practices has to be absorbed through this opportunity.

To create additional water storage capacity to enhance utilization of surface water resources potential of 690 BCM

24.20. By 2019, monitor and complete majority of the 313 large dams that are under construction. These dams will add 33 to 37 BCM to the existing storage capacity. By 2019, specific programmes may be launched to reduce siltation of existing dams and reduce seepage loss through selective lining of canals.

Ensure long-term sustainability of the limited ground water resources

24.21. The Government of India has launched a scheme “Groundwater Development and Management” with an estimated cost of Rs. 3,319 Crore. The basic objective of the programme is preparation of aquifer management plans, quantifying water availability and water quality in various aquifers, for facilitating sustainable management of ground water with active participation of key stakeholders. However, the pace of programme implementation needs to be accelerated. Aquifer mapping needs to be completed covering an area of 13.78 Lakh sq km on 1:50,000 scale from the present 2.28 Lakh sq km mapped area (up-to March 2016). This scheme should be prioritised in the blocks falling under over-exploited, critical, semi-critical and saline categories.

24.22. In areas, where groundwater is available in plenty, sustainable development of ground water should be promoted which would also facilitate creation of sinks to store excess water during the rainy season. In 4,530 blocks, especially in the Eastern and North-Eastern states of the country, where groundwater development has been reported as safe, groundwater-based irrigation may be developed sustainably and used efficiently by adopting micro irrigation systems for better on-farm water-use efficiency.

24.23. A feasibility study should be conducted for assessing groundwater banking potential in India by 2018¹⁵. Groundwater banking is “the practice of recharging specific amounts of water in a groundwater basin that can later be withdrawn and used by the entity that deposited the water¹⁶. ” A recent policy phenomenon in California¹⁷, groundwater banking is yet to be fully evaluated for its long term benefits. Some clear advantages of groundwater banking are: low fixed costs as compared to dam and reservoir construction, no requirement for rehabilitation and resettlement and less environmental changes. However, it is accompanied by limitations of establishing distribution networks, pumping costs, and Operations and Maintenance (O&M) costs, among others.

Water Governance

24.24. The following measures to facilitate effective water governance to manage the available water resources may be studied:

1. State-specific water policies including an independent regulator with powers to regulate water uses and pricing;
2. Enactment of legislation for protection of water bodies and prevention of encroachment on water bodies;
3. Enactment of River Basin Management Act and formation of River Basin Organizations (RBOs) for management of inter-State river basins by 2019;
4. Enactment of National Water Framework Act in accordance with the National Water Policy, 2012 by September, 2017.

Water footprint

- 24.25. By 2018, the benchmarks for water footprint in the irrigation sector needs to be developed initially for the major crops i.e. wheat and rice and then for other crops for adoption at farm-level.
- 24.26. Pilot projects for improving water use efficiency and testing their viability and scalability should be launched during the Action Agenda period. Depending upon the success, the projects can be expanded to state/region/all-India level.

National Hydrology Project (NHP)

- 24.27. Apart from establishing and upgrading the existing Hydro-met network stations across India as per NHP target, establish National Water Informatics Centre (NWIC) by 2017 so that it is operational by 2018. It is proposed to commence the studies on Integrated Water Resources Management (IWRM) in 2017-18 and complete the same for all the river basins by 2020. Similarly, development of Flood Forecasting models for all the river basins is proposed to be completed by 2020.

Inter-Linking of Rivers (ILR)

- 24.28. The MoWR, RD & GR is undertaking the task of inter-linking of rivers through the National Water Development Agency (NWDA). The NWDA has identified 30 links (16 under peninsular rivers and 14 under Himalayan rivers) for the preparation of the feasibility reports. Out of these, feasibility reports of 16 links have already been prepared. The Detailed Project Reports (DPRs) for Ken-Betwa Link (Phase I and Phase II), Damanganga - Pinjal Link and Par-Tapi-Narmada Link have also been completed. The ILR works in respect of links, where DPRs have already been completed, have to be taken up and implemented.

Namami Gange

- 24.29. ‘Namami Gange’, an integrated Ganga conservation mission under the National Ganga River Basin Authority, was launched in the year 2014-15 with an estimated cost of Rs. 21,272 Crore. Its objective is “Aviral and Nirmal Dhara” of the Ganga river, and to ensure its ecological and geological integrity. The programme covers the entire Ganga River Basin and major tributaries located in the states of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Madhya Pradesh, Chhattisgarh and Rajasthan. In order to achieve the objective, the points envisaged as in the Action Agenda, listed in Table 24-1, are to be completed by 2020.

- 24.30. The targets for the above mentioned Action Agenda activities are mentioned in Table 24-1. It also includes Action Agenda activities under other water resources-related Governments schemes and policies.

Table 24-1: Action Agenda Targets for the Water Sector

Sl. No.	Name of the Scheme/sub scheme	Expected Output/ Outcome	Physical Target						
			Unit	2017-18	2018-19	2019-20			
National Water Mission									
1	Improving water use efficiency	Pilot/Demonstration projects	Nos.	5	10	15			
2	Study on Water Footprints	Water Footprint benchmarks – Irrigation sector	crops	Rice and Wheat	Other crops				
Irrigation Sector - PMKSY									
1	AIBP (with CAD&WM) ¹⁸	Creation and Utilization of Irrigation Potential	No. of Projects	31	45				
			Irrigation coverage (Lakh ha)	12.95	48.54 ¹⁹				
2 (a)	HarKhet Ko Pani-CAD&WM	Utilization of created Irrigation Potential	(Lakh ha)	25.00	40.00	50.00			
2 (b)	HarKhet Ko Pani – Minor Irrigation (Surface)	Increased Irrigation Coverage	(Lakh ha)	5.00	5.00	5.00			
2 (c)	HarKhet Ko Pani – Minor Irrigation (Groundwater)	Increased Irrigation Coverage	(Lakh ha)	0.55	0.55	0.55			
2 (d)	HarKhet Ko Pani – RRR of Water Bodies	Creation of irrigation potential	(Lakh ha)	4.00	4.00	4.00			
3	Per Drop More Crop	Improved on-Farm Water Use Efficiency	(Lakh ha)	25.00	25.00	25.00			
4	Watershed Development	Irrigation coverage in rain-fed areas	(Lakh ha)	6.00	8.00	8.00			
Inter-Linking of Rivers where DPRs are complete ²⁰									
1	Ken-Betwa link Phase-I	Irrigation coverage	(Lakh ha)	6.36					
		Population coverage with drinking water	(Lakh)	13.42					
		Power Generation	MW	78					
2	Ken-Betwa link Phase-II	Irrigation coverage	(ha)	98,847					
		Population coverage with drinking water	(Lakh)	1.70					
3	Damanganga-Pinjal link	Population coverage with drinking water	-	579 million cum annually to Mumbai					
		Power Generation	MW	5					
4	Par-Tapi-Narmada link	Irrigation coverage	(Lakh ha)	2.30					
		Power Generation	MW	21					
Inter-Linking of Rivers – other projects									
1	Preparation of DPRs	Preparation of DPRs for Mahanadi (Barmul) – Godavari link; Manas – Sankosh – Teesta - Ganga; Ganga – Damodar- Subernarekha link; Subarnarekha – Mahanadi link; and Sarda – Yamuna link would be initiated and completed during the period 2017-18 to 2019-20.							

Sl. No.	Name of the Scheme/sub scheme	Expected Output/ Outcome	Physical Target			
			Unit	2017-18	2018-19	2019-20
2	Feasibility/Pre-feasibility Study	Preparation of FRs for Mahanadi (Barmul) – Godavari link; Manas – Sankosh –Teesta-Ganga; Ganga- Damodar- Subernarekha link; and Subarnarekha–Mahanadi link would be completed during 2017-18. Preparation of FRs for Sarda-Yamuna Link will be completed during 2018-19.				
Intra-State Links						
1	Wainganga-Nalganga (Maharashtra)	Preparation of DPR to be completed, construction work to start during the period 2017-18 to 2019-20. The expected outputs/outcomes are irrigation coverage over 4,13,750 ha. In addition, 253 million cum of water would be made available for drinking and industrial water.				
2	Damangan-Sabarmati-Chorwad link (Gujarat)	Preparation of DPR to be completed, construction work to start during the period 2017-18 to 2019-20. The expected output/outcome is irrigation coverage over 10.54 Lakh ha.				
3	Barakar-Damodar-Subarnrekha link (Jharkhand)	Preparation of DPR to be completed, construction work to start during the period 2017-18 to 2019-20. The Project would provide 207 MCM for irrigation and 30 MCM for domestic uses. Further, 493 MCM of water diverted to Subarnrekha river would be used for industrial and navigation purposes.				
Flood Management Programme						
1	Flood Management Programme	River management works in critical areas (Anti-erosion works, drainage development works etc)	Population to be benefited	30 Lakh	35 Lakh	38 Lakh
2			Area Protected (ha)	4,30,000	4,70000	5,00000
3		Anti-sea erosion works in critical areas in the country	Population to be benefited	5 Lakh	6 Lakh	7 Lakh
4			Area Protected (ha)	7000	8000	8500
Groundwater Management and Regulation						
1	Ground Water Management & Regulation	Preparation of Aquifer Management Plan	(Lakh sq km)	4.04	4.90	4.84
2		Automation through establishing real time water level monitoring stations	(Nos)	487	1929	3607
3		Ground Water Quality Monitoring / Surveillance	(Nos)	25584	26071	31607
4		Ground Water Resource	(Nos)	1		1

Sl. No.	Name of the Scheme/sub scheme	Expected Output/ Outcome	Physical Target			
			Unit	2017-18	2018-19	2019-20
		Assessment with improved data once in every two years				
1	National Ground Water Management Improvement Scheme (NGMIS)	Construction of recharge structures to augment water availability	Nos.	729	3184	4274
2		Development of water security plans at Gram Panchayat Level for sustainable ground water management	Nos.	6697	6697	6697
3		Area to be brought under micro irrigation (drip/sprinkler) for optimum water use in agriculture	Ha	24175	42675	47175
National Hydrology Project (NHP)						
1	NHP	Establishment and upgradation of existing Hydro-met network stations	Number of Hydro-met stations	500	2000	2500
2		Establishment of National Water Informatics Centre (NWIC)	-	NWIC to be established	NWIC to be made functional	
3		Commencement of Integrated Water Resources Management (IWRM) Studies	Nos. of river basins	3	5	Remaining basins
4		Development of Flood Forecasting model	Nos. of water basin	6	6	Remaining basins
Brahmaputra Board						
1	Flood control and anti-erosion works	Protection of Majuli island from flood and erosion				
Special Project						
1	Polavaram Multi-purpose Project	Irrigation coverage (a) New Area (b) Stabilization of existing area	(Lakh ha)	2.91 10.35		
		Population coverage	(Lakh)	28.50 Lakh people in 540		

Sl. No.	Name of the Scheme/sub scheme	Expected Output/ Outcome	Physical Target			
			Unit	2017-18	2018-19	2019-20
		with drinking water		villages		
		Power Generation	MW	960		
		Industrial Water	MCM	665		
Water Resource Information System (WRIS)						
1	Development of WRIS	Hydrological Observation (HO) and data collection (old and new sites)	(nos.)	878 old + 800 new	878 old + 800 new + 400 new	878 old + 800 new+400 new + 400 new
2		Opening of new HO sites	(nos.)	400	400	317
3		Monitoring visits to major and medium irrigation projects	(nos.)	196	163	175
Namami Gange						
1	Namami Gange	Creation/ Rehabilitation of Ghats	Nos.	198	492	55
2		Creation/ Rehabilitation of Crematoria	Nos.	132	65	8
3		River Surface Cleaning (No. of Trash Skimmers deployed along entire stretch of River Ganga)	Nos.	10	10	10
4		Creation/ rehabilitation of Sewage Treatment Plants (STPs)	Nos.	3	17	98
5		Creation of industrial effluent treatment plants	Nos.	3	2	1
6		Afforestation	ha	30115.93	34855.12	2000
7		Biodiversity centres	Nos.	1	0	0

¹ Central Water Commission, Water and Related Statistics 2015.

² Central Water Commission, Water and Related Statistics 2015.

³ Report of the National Commission on Integrated Water Resources Development (NCIWRD), 1999

⁴ As per the National Register of Large Dams maintained by the CWC

⁵ Central Water Commission, Water and Related Statistics 2015.

⁶ FAO Water (Land and Water Division).

⁷ Ministry of Agriculture, "Agricultural Statistics at a Glance 2014", p 366.

⁸ CGWB, MoWR, RD&GR, "Dynamic Ground Water Resources of India (as on 31st march 2011)", July 2014.

⁹ The stage of ground water development is the percentage of ground water draft with respect to the net annual ground water availability.

¹⁰ Dynamic Ground Water Resources of India (as on 31st march 2011), CGWB, MoWR, RD&GR, July 2014.

¹¹ Planning Commission, "Report of the Task force on Irrigation", 2009.

¹² Net Irrigated Area is the total area which is irrigated counting area irrigated more than once on the same land in a year once only.

¹³ Ministry of Water Resources, "Report of the National Commission for Integrated Water Resources Development", September, 1999.

¹⁴ Ministry of Drinking Water & Sanitation

¹⁵ “Quenching India's Thirst: The 5 Ps Of Water Security”, The Huffington Post, July 2016.

¹⁶ Christian-Smith, J. “Improving Water Management through Groundwater Banking: Kern County and the Rosedale-Rio Bravo Water Storage District”.

¹⁷ <http://www.alternet.org/environment/can-groundwater-banking-solve-californias-water-shortages>

¹⁸ 23 projects to be completed by March, 2017, to cover 14.53 Lakh ha

¹⁹ To be completed by December, 2019

²⁰ Construction to start in 2017-18 and to be completed over a period of next 6 to 8 years; The outputs/outcomes would be achieved after completion of the project.

Annexures

ANNEXURE 1

PRIME MINISTER'S OFFICE

SOUTH BLOCK
NEW DELHI-110 011

Sub: Mid-Term Appraisal of the 12th Five Year Plan.

Reference is invited to NITI Aayog's (i) U.O. No. N-11016/19(1)/2015-CSS dated 14/12/2015; (ii) DO Letter No. VCH/I/1158/2016 dated 22/02/2016; and (iii) DO letter No. VCH/I/1206/2016 dated 18/03/2016 from Vice-Chairman, NITI Aayog on the above subject.

2. In this regard, the undersigned is directed to invite attention to the following:

- Fwd*
- 
- (i) In the Budget Speech delivered on 29.02.2016, Finance Minister: (A) has observed: 'Successive committees have questioned the merit in having Plan and Non-Plan classification of Government expenditure. A broad understanding over the years has been that Plan expenditures are good and Non-Plan expenditures are bad. This results in skewed allocations in the Budget. This need to be corrected and give greater focus to Revenue and Capital classification of Government expenditure'; (B) has accordingly announced the Government's intention to (a) do away with the Plan and Non-Plan classification of expenditure from the fiscal 2017-18; (b) give greater focus to Revenue and Capital classification of Government expenditure; and (c) Finance Ministry would closely work with the State Finance Department to align Central and State Budgets in this matter.
- (ii) Any planning cycle should factor in the periodicity of Finance Commission recommendation and political mandate (5 years of Government). It may be seen that while 12th Plan is for the period 2012-13 to 2016-17, the recommendations of 13th Finance Commission end in 2014-15 and the recommendation for 14th Finance Commission gets implemented from 2015-16 till 2019-20. Thus, there is no certainty of availability of financial resources for deciding the Central allocation for the Ministries as well to the States. Similarly, the political mandate presently is not coterminous with the plan period. Accordingly, a comprehensive new approach combining long term vision with medium term national agenda and short term action plans is required to be adopted.

3. In the light of the foregoing, the undersigned is directed to convey that the Prime Minister has approved the following:

(A) REGARDING THE 12TH FIVE YEAR PLAN

- (i) As the Budget for 2016-17 has been presented, NITI may update the draft appraisal document of the 12th Five Year Plan by incorporating to the extent possible: (a) consolidated physical/ financial **targets** for the period **ending March, 2017** and (b) by considering physical performance up to 2015-16 and financial performance up to BE 2016-17.
- (ii) A brief summary on learnings from the appraisal may be prepared.
- (iii) The above may be completed by early June, 2016.
- (iv) The draft Appraisal document of the 12th Five Year Plan incorporating items (i) and (ii) above may be brought before the Governing Council of NITI and Inter-State Council for consideration.

(B) REGARDING THE FUTURE

- (iv) Five years plans will be discontinued after the end of 12th Five Year Plan period.
- (v) A longer vision of 15 years may be formulated keeping in view the social goals set and/ or proposed and Sustainable Development Goals.
- (vi) To convert the longer vision into implementable policy and action, a 7 year strategy from 2017-18 may be formulated as part of a "National Development Agenda" with a mid term review after three years.
- (vii) The three year time frame from 2017-18 to 2019-20 will be aligned to predictability of financial resources during the 14th Finance Commission award period. This will also help translating into action the goals of the Government to be achieved by 2019.
- (viii) The above National Development Agenda should go beyond the traditional area of 'Plan' and cover the aspects of Internal Security, Defence etc. as well and may be prepared by NITI.

Navnit,
(Brajendra Navnit)
Director
Tel: 2301 2613

CEO, NITI Aayog

PMO ID No. 360/31/C/38/2014-ES-II

Dated:09/05/2016

ANNEXURE 2

During the preparation of the Action Agenda, the NITI Aayog consulted extensively with groups of scientists, economists, journalists, voluntary organisations and industry associations in the fields of education, health culture, transport and others. This Annexure provides a comprehensive list of these outside experts and institutions. Any omissions are inadvertent.

LIST OF EXPERTS THAT PROVIDED WRITTEN INPUTS

- Dr. M. Govinda Rao, Emeritus Professor, National Institute of Public Finance and Policy (NIPFP) and Member of 14th Finance Commission
- Prof. Eswar Prasad, Cornell University and Senior Fellow at the Brookings Institution
- Isha Agarwal, PhD Student, Department of Economics, Cornell University
- Dr. Raghunath Mashelkar, Chairman, National Innovation Foundation
- Prof. E. Somanathan, Indian Statistical Institute
- Prof. P. Somasundaram, Columbia University
- Dr. Wilima Wadhawa, Director, Annual Status of Education Report (ASER) Centre
- Prof. Victoria Fan, Assistant Professor of Health Policy, University of Hawaii at Manoa
- Admiral Arun Prakash
- Dr. Sher Singh Verick, Deputy Director, International Labour Organization
- Prof. Ajit K. Ghose, Visiting Professor, Institute of Human Development
- Prof. Ravi Srivastava, Professor of Economics, Jawaharlal Nehru University
- Prof. B. N. Goldar, Professor and ICSSR National Fellow, Institute of Economic Growth, Delhi University
- Prof. S. Mahendra Dev, Director and Vice Chancellor, Indira Gandhi Institute of Development Research
- Prof. Dev Nathan, Visiting Professor, Institute for Human Development and Visiting Research Fellow, Center on Globalization, Governance and Competitiveness, Duke University, USA
- Prof. Sonalde Desai, Senior Fellow, National Council of Applied Economic Research and Professor of Sociology, University of Maryland
- Prof. Jeemol Unni, Director and Professor of Economics, Institute of Rural Management Anand (IRMA)
- Prof. Arup Mitra, Institute of Economic Growth
- Country Director's Office, Asian Development Bank, India Resident Mission
- Ms. Gayathri B. Kalia, Former COO, Deen Dayal Upadhyaya Grameen Kaushalya Yojana, Ministry of Rural development
- Ms. Bidisha Ganguly, Chief Economist, Confederation of Indian Industry (CII)
- Shri Anil Bhardwaj, Secretary General, Federation of Indian Micro and Small & Medium Enterprises (FISME)
- Dr. Ashok K. Gaba, Professor, School of Vocational Education and Training, Indira Gandhi National Open University (IGNOU)
- Ms. Shobha Mishra Ghosh, Federation of Indian Chambers of Commerce and Industry (FICCI)

- Dr. Bimal Patel, President and Director, Center for Environmental Planning and Technology (CEPT)
- Prof. Chetan Vaidya, Director, School of Planning and Architecture (SPA) Delhi
- Prof. Debolina Kundu, Associate Professor at the National Institute of Urban Affairs
- Shri Martin Scherfler, Founder Auroville Consulting
- Dr. O. P. Agarwal, Executive Director at the Indian School of Business, Mohali and former Director General of the Institute of Urban Transport
- Ms. Swati Ramanathan, Co-founder of Jana Group
- Dr. Suresh Kumar Rohilla, Programme Director, Centre for Science and Environment
- Prof. Shreekant Gupta, Associate Professor, Delhi School of Economics
- Prof. Jagan Shah, Director at National Institute of Urban Affairs
- Shri Partha Mukhopadhyay, Senior Fellow, Centre for Policy Research (CPR)
- Dr. Rajesh Tandon, Founder and President Participatory Research in Asia (PRIA)
- Dr. Renu Khosla, Director of the Centre for Urban and Regional Excellence
- Shri S. Vijay Kumar, former Secretary, D/o Rural Development and Presently Distinguished Fellow, The Energy and Resources Institute (TERI)
- Prof. Aasha Kapur Mehta, Professor of Economics, Indian Institute of Public Administration
- Prof. Ravi Srivastava, Professor Economics, JNU
- Shri Meenakshi Sundaram, Retired Professor
- Prof. Pinaki Chakraborty, NIPFP
- Dr. N. C. Saxena, Adviser, United Nations Development Programme
- Ms. Meenakshi Kathel, Programme Specialist, United Nations Resident Commissioners Office
- Shri Shanti Narain, Former Member Traffic Railway Board & Ex Officio Secretary, Government of India and Presently National Chairman, Chartered Institute for Logistics and Transport (India Chapter)
- Shri S. B. Ghosh Dastidar, Former Member Traffic, Railway Board and Ex Officio Secretary, Government of India, presently Independent Expert on Rail Transport and Logistics
- Shri S. Vijay Kumar, Former Secretary, Ministry of Rural Development, Government of India and Presently Distinguished Fellow, TERI
- Shri D. P. Gupta, Former Director General Road Development, Ministry of Road Transport and Highways and Presently Director (Roads and Highways), Asian Institute for Transport Development (AITD)
- Shri Anupam Vibhuti, Architect & Urban Transport Planner, Worxspace CPL
- Dr. Kulwant Singh, Coordinator, Smart Move High Level Group (India), UN-Habitat
- Ms. Yamini Aiyar, Director, Accountability Initiative and Senior Fellow, CPR
- Shri Amod Kanth, Prayas Institute of Juvenile Justice
- Dr. T. Chatterjee, Director, Indian Institute of Public Administration
- Dr. Sanjeevan Bajaj, Adviser, FICCI Quality Forum
- Prof. K. Seeta Prabhu, Tata Institute of Social Sciences
- Prof. K. Srinath Reddy, Public Health Foundation of India
- Prof. T. Sundararaman, Tata Institute of Social Sciences
- Shri Alok Mukhopadhyay, Voluntary Health Association of India

- Dr. Devi Shetty, Narayana Hrudalaya
- Dr. Abhay Bang, Founder, Society for Education, Action and Research in Community Health
- Prof. Jeff Hammer, Visiting Professor in Economic Development, Woodrow Wilson School of Public and International Affairs
- Prof. Dileep Mavlankar, Indian Institute of Public Health, Gandhinagar
- Office of Chief Minister of Assam
- Office of Chief Minister of Gujarat
- Dr. Jacob John, Christian Medical College (CMC) Vellore
- Dr. Sakthivel Selvaraj, Public Health Foundation of India
- Dr. M. K. Bhan, Former Secretary of Biotechnology, Government of India (GoI)
- Prof. Supten Sarbadhikari, Centre for Health Informatics for National Health Portal
- ORF Health Forum
- Shri Muttur Ranganathan Narayana
- Shri V. Selvaraju
- Shri Srinivas Lanka
- Dr. Purnima Menon, International Food Policy Research Institute
- Dr. Manjula Singh, Children's Investment Fund Foundation
- Dr. B. Sesikeran, Former Director, National Institute of Nutrition
- Shri T. Longvah, Former Director, National Institute of Nutrition
- Shri Jack Sim, Founder of World Toilet Organization
- Ms. Naina Lal Kidwai, former Country Head, HSBC India
- Prof. Rama Baru, JNU
- Dr. Rinku Murgai, World Bank
- Ms. Diya Nanda, UN Women
- Prof. Mary E. John, Centre for Women's Development Studies
- Ms. Mridula Bajaj, Mobile Crèches
- Ms. Bharti Ali, HAQ
- Kailash Satyarthi Foundation
- Shri Nipun Malhotra, CEO, Nipman Foundation
- Shri Kartikeya V. Sarabhai, Director, Centre for Environment Education (CEE)
- IDFC Institute
- National Institute of Rural Development and Panchayati Raj
- CSIR-Central Road Research Institute
- World Health Organization
- World Bank
- Population Foundation of India
- Bill & Melinda Gates Foundation
- Vidhi Centre for Legal Policy

LIST OF OTHER EXPERTS CONSULTED

1) *Three-Year Revenue And Expenditure*

- Dr. Rathin Roy, Director, NIPFP

2) *Economist and Business Editors*

- Dr. Y. V. Reddy, Former Governor, RBI
- Dr. Surjit S. Bhalla, Managing Director, Oxus Investments
- Dr. Pronab Sen, Former Chairman, National Statistical Commission
- Dr. Radha Binod Barman, Chairman, National Statistical Commission
- Shri T. N. Ninan, Chairman, Business Standard
- Dr. Rathin Roy, Director, NIPFP
- Shri Shekhar Shah, Director-General, National Council of Applied Economic Research
- Dr. Sanjaya Baru, Consulting Senior Fellow for India, Director, International Institute for Strategic Studies-India
- Shri Sunil Jain, Managing Editor, The Financial Express
- Shri Raj Chengappa, Group Editorial Director (Publishing), India Today Group
- Shri R. Jagannathan, Editorial Director, Swarajya Magazine
- Shri Saubhik Chakrabarti, Deputy Executive Director, Economic Times
- Shri Anil Padmanabhan, Deputy Managing Editor, Mint

3) *Agriculture*

- Dr. Pramod K. Joshi, Director, International Food Policy Research Institute (IFPRI) South Asia
- Dr. A. K. Sikka, Regional Director, International Water Management Institute (IWMI) India
- Dr. Mangala Rai, Former Director General, Indian Council of Agricultural Research (ICAR)
- Dr. V. K. Taneja, Former Vice Chancellor, Guru Angad Dev Veterinary & Animal Science University, Punjab
- Dr. R. S. Paroda, Former Director General, ICAR
- Shri S. Shivkuamr, Divisional Chief Executive Agri Business Division, ITC
- Dr. Suresh Pal, Former Member, Commission for Agricultural Costs and Prices (CACP)
- Shri Anil B. Jain, MD, Jain Irrigation
- Dr. Shyam Khadka, Food and Agriculture Organization (FAO) Representative India
- Dr. Dileep Kumar, Former FAO Consultant (Fisheries)
- Dr. T. Mohapatra, Director General, ICAR
- Dr. Mohan Kanda, Former Member, National Disaster Management Authority (NDMA), GoI
- Dr. K. M. Bujarbarua, Vice-Chancellor, Assam Agricultural University

4) *Trade, Industry and Services: Creating Well-Paid Jobs*

- Shri Vishnu Mathur, Director General, Society of Indian Automobile Manufacturers (SIAM)
- Shri Sugato Sen, Deputy Director General, SIAM
- Shri Atanu Ganguli, Senior Director, SIAM
- Shri Sumitro Kar, Executive Director, World Travel & Tourism Council, India Initiative

- Shri Sujit Banerjee, Secretary General, World Travel & Tourism Council, India Initiative
- Shri Aashish Gupta, Consulting CEO, Federation of Associations in Indian Tourism and Hospitality (FAITH)
- Shri Manav Thadani, Chairman, Asia-Pacific, HVS
- Shri Kapil Chopra, President, Oberoi Group
- Shri B. Hariharan, Vice President – Marketing, ITC Limited – Hotels Division
- Representatives of CII
- Dr. Ajit Kumar, Vice Chancellor, National Institute of Food Processing Technology and Management (NIFTEM)
- Dr. R. K. Gupta, Director Central Institute for Post-Harvest Technology, Ludhiana
- Dr. Krishna Kumar, Former Deputy Director General Horticulture, ICAR
- Shri N. K. Murali, Coordinator, ILO-SCORE (Sustaining Competitive and Responsible Enterprise)

5) *Regional Strategies*

- Admiral Robin K. Dhowan (Retd.), former Chief of Naval Staff
- Shri Vivek Rae, Ex-Secretary, GoI
- Shri Shashi Shekhar, Ex-Secretary, GoI
- Shri Alkesh Kumar Sharma, CEO, Delhi Mumbai Industrial Corridor Development Corporation (DMIDC)
- Shri Ravi Kapoor, Additional Chief Secretary to the Government of Assam

6) *Transport and Connectivity*

- Shri K. L. Thapar, Chairman, AITD, Delhi
- Shri Raghu Dayal, Former, Managing Director, CONCOR and Fellow of AITD, Delhi
- Edelweiss Institutional Equities Research
- International Road Federation
- CII Institute of Logistics
- Shri Reuben Abraham, CEO and Senior Fellow, IDFC Institute
- Ms. Ragini Chopra, Vice President – Corporate Affairs and Public Relations, Jet Airways
- Shri Ajay Singh, Chairman and Managing Director, SpiceJet Limited
- Shri Rahul Bhatia, Non-Executive Director, IndiGo
- Shri Ujjwal Dey, Associate Director, Federation of Indian Airlines (FIA)

7) *Energy*

- Dr. Ajay Mathur, Director General of TERI
- Dr. Kirit Parikh, Former Member, Planning Commission, Government of India and Chairman, Integrated Research and Action for Development (IRADe)
- Dr. Anil Kakodkar, former Chairman, Atomic Energy Commission
- Dr. Vijay Kelkar, Chairman, NIPFP and former Chairman of the Thirteenth Finance Commission
- Shri Sumant Sinha, CII Renewable Energy Committee
- Shri Vipul Tuli, Head of Group Strategy, Country Head of Sembcorp India and Chief Executive Officer of Sembcorp India
- Shri Partha Bhattacharya, former Chairman, Coal India Ltd

- Dr. Suman Berry, former Director General, National Council of Applied Economic Research (NCAER)
- Dr. Somit Dasgupta, former Adviser Energy (Planning Commission) and presently Member (Economics), Central Electricity Authority (CEA)
- Shri R. S. Sharma, former CMD, Oil and Natural Gas Corporation Ltd (ONGC)
- Shri I. A. Khan, Chairman, Telangana Electricity Regulatory Commission
- Shri Pramod Deo, former Chairman, Central Electricity Regulatory Commission (CERC)

8) *Science, Technology and Innovation*

- Dr. Anil Kakodkar, Chairman, Technology Information, Forecasting and Assessment Council (TIFAC)
- Prof. Goverdhan Mehta, former Director of Indian Institute of Science, Bengaluru
- Prof. P. Balaram, Indian Institute of Science (IISc)
- Prof. H. S. Jamadagni, Department of Electronic Systems Engineering (DESE), IISc
- Dr. Devang V. Khakhar, Director, IIT Bombay
- Dr. Kota Harinarayana, Chairman, Indian Institute of Information Technology, Design and Manufacturing, Jabalpur
- Dr. Kiran Mazumdar, Chairman and Managing Director, Biocon Limited
- Prof. Baldev Raj, Director, National Institute of Advanced Studies (NIAS)
- Prof. P. Rama Rao, Chairman Governing Council, International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)
- Dr. K. D. Nayak, Chief Controller R&D (MED & MIST), DRDO. Bangalore
- Shri Ravi Subrahmanyam, Director, Raman Research Institute
- Dr. P. S. Goel, Raja Ramanna Chair Visiting Professor, NIAS
- Dr. Suresh Das, former Director, CSIR-NIIST and President, Materials Research Society of India (MRSI), IISc
- Dr. P. Goswami, Director, CSIR- National Institute of Science Technology and Development Studies (NISTADS)
- Prof. Bikramjit Basu, Professor, Materials Research Center, IISc
- Dr. S. E. Hasnain, Kusuma School of Biological Sciences, IIT Delhi
- Dr. Prabhat Ranjan, Executive Director, TIFAC
- Shri V. Gowtama, Chairman & Managing Director, Bharat Electronics Ltd
- Dr. A.V. Sapre, Member Secretary, Rajiv Gandhi Science & Technology Commission
- Prof. Pramod K. Verma, Director General, Government of Madhya Pradesh Council of Science & Technology
- Dr. S. G. S. Swamy, Executive Secretary, Karnataka State Council for Science & Technology, IISc
- Dr. Arup Mishra, Director, Assam Science Technology & Environment Council
- Er. Y. Nagesh Kumar, Member Secretary, Telangana State Council of, Science & Technology

9) *Governance*

- Shri Adil Zainulbhais, Chairman, Quality Council of India
- Shri Harish Narasappa, Daksh

10) *Civil Society Organizations*

- Shri Amod Kanth, Prayas

- Shri Debashish Mukherjee, Ramakrishna Mission
- Shri Bunker Roy, Barefoot College, Rajasthan
- Dr. Bindeshwar Pathak, Sulabh International
- Shri Manas Satpathy, PRADAN
- Shri Methew Cherian, Help Age India
- Shri Prashant Agarwal, Narayan Seva Sansthan
- Dr. Bhanuja Sharan , Manav Sansadhan Eevam Mahila Vikas Sansthan
- Dr. J. Paul Baskar, Peace Trust
- Shri Shanti Narain, IC Centre For Governance
- Ms. Chetna Gala Sinha, Mann Deshi Foundation
- Shri Neichute Doulo, Entrepreneur Associates, Nagaland
- Shri Aloysis P. Fernandez, Myrada
- Ms. Anjlee Agarwal, Samarthyan
- Husk Power Systems
- Akshaya Patra Foundation
- Kerala Sastra Sahitya Parishad

11) *Pro-Competition Policies and Regulation*

- Prof. Allan Fels, Former Chairman, Australian Competition and Consumer Commission
- Shri D.K. Sikri, Chairman, Competition Commission of India

12) *Education and skill development*

- Prof. Karthik Muralidharan, University of California, San Diego
- Shri Ashish Dhawan, Central Square Foundation (CSF)
- Shri Anand Sudarshan, Founder & Director of Sylvant Advisors Private Limited
- Dr. Pramath Sinha, Vedica Scholars Programme for Women
- Prof. Jandhyala B. G. Tilak Vice-Chancellor, National University of Educational Planning and Administration (NUEPA)
- Prof. R. Govinda, Ex-Vice Chancellor, NUEPA

13) *Health, Nutrition, Drinking Water and Sanitation*

- Shri Henk Bekedam, World Health Organization Representative to India
- Dr. Rajesh Narwal, World Health Organization
- Dr. Somil Nagpal, World Bank
- Dr. Nachiket Mor, Bill & Melinda Gates Foundation
- Shri Gautam Chakraborty, USAID
- Ms. Marietou Satin, USAID
- Ms. Priyanka Saksena, World Health Organization
- Ms. Poonam Muttreja, Population Foundation of India

- Shri Aman Gupta, Partnership to Fight Chronic Disease
- Shri Owen Smith, World Bank
- Dr. Darez Ahamed, MD, National Health Mission, Government of Tamil Nadu
- Shri V. Kiran Gopal, MD, National Health Mission, Government of Madhya Pradesh
- Dr. Pavana Murthy, World Health Organization
- National Council of Applied Economic Research
- Dr. Arundati Muralidharan, WaterAid India
- Prof. Vinod Paul, All India Institute Of Medical Sciences, New Delhi
- Dr. J Radhakrishnan, Government of Tamil Nadu
- Shri Nitya Jacob

14) *Building an Inclusive Society*

- Dr. Indu Agnihotri, JNU
- Dr. Siddhartha Sarkar, Associate Professor, A. C. College of Commerce
- Dr. Govardhan Wankhede, Former Professor, Tata Institute of Social Sciences
- Shri G. B. Panda, Former Senior Adviser, Planning Commission
- Dr. G. N. Karna, Honorary President, Society for Disability and Rehabilitation Studies
- Ms. Ruma Banerjee, Seva-in-Action
- Dr. Aloka Guha, Founder-Chairperson of the National Trust for persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities
- Dr. Lalit Kumar, Former Adviser, Voluntary Sector, Planning Commission
- Shri Vijay K. Sardana, President, Socio Research and Reform Foundation (NGO)-SRRF

15) *Environment and Forests*

- Prof. Mudit Kapoor, Associate Professor, Indian Statistical Institute
- Dr. P.K. Khosla, Vice Chancellor, Shoolini University
- Dr. T.P Singh, ADG (Biodiversity & Climate Change), Indian Council of Forestry Research and Education (ICFRE)
- Dr. Ashwani Kumar, Retired DG, ICFRE
- Dr. C. Ramesh, Scientist -C, Wildlife Institute of India
- Ms. Shivani Jain, Scientist- F, Director, Centre for Environment Education (CEE)

16) *Sustainable Management of Water Resources*

- Dr. Tushar Shah, Senior Fellow, IWMI
- Shri R. S. Julaniya, Additional Chief Secretary (Water Resources), Government of Madhya Pradesh
- Prof. A. K. Gosain, IIT Delhi

17) *Cultural and Creative Industries*

- Shri Rajeev Sethi, Founder, Asian Heritage Foundation
- Shri Sunil Munjal, Hero Enterprise

- Dr. Pushpesh Pant, Asian Heritage Foundation
- Shri Darshan Shankar, Asian Heritage Foundation
- Ms. Sanjana Kapoor, Junoon Theatre
- Ms. Tasneem Mehta, Dr. Bhau Daji Lad Mumbai City Museum
- Shri Ankush Seth, Asian Heritage Foundation
- Shri Bhagwati Halwal, Asian Heritage Foundation
- Shri Shashank Chaudhary, Serendipity
- Ms. Sameen Almas, Asian Heritage Foundation
- Ms. Smriti Rajgarhia, Serendipity Arts Trust
- Shri Mohd. Ayaz, Asian Heritage Foundation
- Shri Abhilash Shukla, Asian Heritage Foundation
- Shri Praveen Kumar, Asian Heritage Foundation

Praise for the Three Year Action Agenda

“On the whole the Three Year Action Agenda is a very well drafted, comprehensive yet crisp document which covers all the significant areas that require attention both over the next three years and in the longer term. I compliment the NITI Aayog for having prepared a very readable document that captures all the important issues.”

- Edappadi K. Palaniswami, Chief Minister, Tamil Nadu

“I want to congratulate the NITI Aayog on preparing such a far-reaching, clear and relevant policy document. As the first document of its kind, the Draft Three Year Action Agenda is groundbreaking in its ambition and coverage. The Agenda is impressive in its scope ... Yet it also manages to go into sufficient depth in the areas covered, making it highly useful for policymakers at the central and state levels.

- Nara Chandrababu Naidu, Chief Minister, Andhra Pradesh

“I would like to compliment the Aayog for preparing a very comprehensive Three Year Action Agenda that outlines all important development priorities. This Action Agenda should allow the Central and the states to align their development strategies so that inclusive, equitous and holistic development is assured.”

- Vasundhara Raje, Chief Minister, Rajasthan

“The Three Year Action Agenda document prepared by NITI Aayog reflects the complex and diverse aspects of developmental action required to transform Indian economy and society towards achieving the full potential of the Indian nation.”

- Vijay Rupani, Chief Minister, Gujarat

“निती आयोग द्वारा तैयार किये गए त्रीवर्भाय एकशन ऐजेंड़ में उत्तर प्रदेश से सम्बंधित लगभग सभी बिंदुओं का समावेश है।”

योगी आदित्यनाथ, मुख्यमंत्री, उत्तर प्रदेश

“I would like to convey my deep appreciation for the remarkable effort by Niti Aayog in putting together the 3 years Action Plan Agenda, which was deliberated at length in the recent meeting of NITI Aayog at New Delhi.”

- Pema Khandu, Chief Minister, Arunachal Pradesh

“[The] three year action agenda prepared by NITI Aayog is very much in line, both in spirit and strategy, with the State Government’s „New Economic Development Policy (NEDP) – Comprehensive Growth Strategies for Mizoram’ being implemented since 2016-17.”

- Lal Thanhawla, Chief Minister, Mizoram