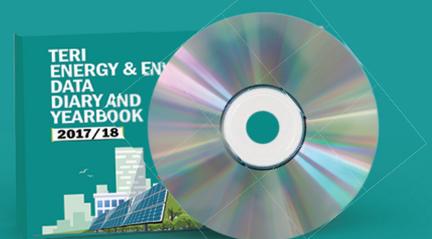


TERI ENERGY & ENVIRONMENT DATA DIARY AND YEARBOOK

2017/18



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**TERI
ENERGY & ENVIRONMENT
DATA
DIARY AND
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2017/18**



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Contents

Preface	xi
About TEDDY 2017/18.....	xiii
Contributors	xv
Acknowledgements.....	xvii
List of tables.....	xix
List of figures.....	xxv
List of maps	xxx
1 Energy and environment: an overview	1
Energy supply	
2 Coal and lignite.....	21
3 Petroleum and natural gas.....	37
4 Power.....	69
5 Renewable energy	87
Energy demand	
6 Agriculture.....	115
7 Industry	133
8 Transport.....	149
9 Household energy.....	171
Local and global environment	
10 Air quality and pollution	213
11 Solid waste management.....	263
12 Water resource management.....	283
13 Land and forest resource management	299
14 Climate change	317
Index	341

Preface

The Energy and Resources Institute (TERI) takes pride in presenting the thirty-third edition of its flagship publication *TEDDY* (*TERI Energy & Environment Data Diary and Yearbook*), which provides the latest information and statistics in the energy and environment sectors in India. *TEDDY* serves as a ready reckoner for energy and environment related information and statistics sourced from government bodies, policy documents, and other secondary sources.

In this latest publication, energy supply is discussed through chapters on coal and lignite, petroleum and natural gas, power, and renewable energy. The section on energy demand extensively covers the major energy-consuming sectors of the economy: agriculture, industry, transport, and households. The section on environment contains the chapter on climate change along with the newly added chapters in this year's publication on air quality and pollution, solid waste management, water resource management, and land and forest resource management. The publication also provides a review of government policies with implications for the energy and environment sectors and contains data tables providing enhanced information on the sectors covered. An updated commercial energy flow in India with explanations prepared by TERI researchers is an important aspect of this publication as it predicts the flow of net available energy and its consumption by demand sectors in the future.

A key feature of the energy supply data is the increasing share of renewable energy in the electricity mix. Over the past decade, renewable energy has played a significant role in enabling energy access, growth of grid power, reducing consumption of fossil

fuels, and aiding India in pursuing its low-carbon development path. India is gradually increasing the share of renewable energy sources in the electricity generation mix. The country has set a target of achieving 175 GW of renewable energy capacity by 2022. Out of this, 69 GW has already been achieved till 31 March 2018. At the global level as well, countries are moving towards the sustainable use of energy to reduce risks associated with climate change and improve human well-being.

For a sustained development, it is imperative to take into consideration the increasingly deteriorating environment and a growing scarcity of natural resources as energy choices made today would shape the course of development in the coming decades.

TERI Energy & Environment Data Diary and Yearbook continues to be a much sought-after reference document across the world and it has been cited in government policy documents, scholarly articles, journals, and other peer-reviewed books in India and abroad.

At TERI, we bring constant refinements to *TEDDY* with a view to enhance its value to policymakers, business organizations, academic institutions, and research scholars. Comments and suggestions from readers shall be appreciated as they would help us improve subsequent issues of this publication.



Dr Ajay Mathur
Director General

The Energy and Resources Institute (TERI)

About TEDDY 2017/18

TERI Energy & Environment Data Diary and Yearbook (TEDDY) is an annual publication brought out by The Energy and Resources Institute (TERI) since 1986. It provides updated information on energy supply sectors (coal and lignite, petroleum and natural gas, power, and renewable energy sources), energy-consuming sectors (agriculture, industry, transport, residential, and commercial), and environment (local and global). The publication uses interactive graphs, figures, maps, and tables to explain facts, which makes the book an interesting read. The publication also provides a review of the government policies that have implications for energy and environment.

The data in the yearbook provide the latest available information at the time of compilation of the chapters. The analytical narrative supported by data has been well researched by sector experts at TERI. Care has been taken to ensure that continuity of information is maintained so that the readers can understand and analyse the trends and patterns of change in the energy and environment sectors over a period of time.

The launch of *TEDDY 2016/17* witnessed the presence of eminent people, including Dr Ajay Mathur (Director General, TERI), Mr Anand Kumar (Secretary, Ministry of New and Renewable Energy), Mr Ajay Shankar (Distinguished Fellow, TERI), Mr Pankaj Kumar (Secretary, Bureau of Energy Efficiency), Dr Arunabha Ghosh (CEO, Council on Energy, Environment and Water), Mr Suman Bery (former Chief Economist, Royal Dutch Shell), and Mr Chintan Shah (Director, Indian Renewable Energy Development Agency).

The overall structure of this year's *TEDDY* is different from the previous editions, with certain improvisations. One of the main highlights of

TEDDY 2017/18 is the addition of four new chapters under the environment section. For the reference of our readers, the chapters of the publication are listed in the following table.

Chapter 1: Energy and environment: an overview
Energy supply
Chapter 2: Coal and lignite
Chapter 3: Petroleum and natural gas
Chapter 4: Power
Chapter 5: Renewable energy
Energy demand
Chapter 6: Agriculture
Chapter 7: Industry
Chapter 8: Transport
Chapter 9: Household energy
Local and global environment
Chapter 10: Air quality and pollution
Chapter 11: Solid waste management
Chapter 12: Water resource management
Chapter 13: Land and forest resource management
Chapter 14: Climate change

The thirty-third edition of the publication, *TEDDY 2017/18*, comes with several interesting changes. This year's *TEDDY* has been restructured to make it less prose intensive. Besides, the publication includes more data represented with the help of infographics, thus making it more interactive and user-friendly.

We are hopeful that like all the previous editions of the publication, *TEDDY 2017/18* would be of immense value to our readers, including policymakers, business organizations, academic institutions, research scholars, and development practitioners. Suggestions and comments from the readers shall be highly appreciated as they would help us improve subsequent issues of this publication.

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The thirty-third edition of *TERI Energy and Environment Data Diary and Yearbook (TEDDY)* is a product of the collective effort of the research and publishing team at The Energy and Resources Institute (TERI). The publication provides the latest information and statistics on the energy and environment in India.

Throughout the preparation of the publication, the team gained guidance and support from Dr Ajay Mathur, Director General, TERI; without his leadership, this publication would not have been possible. We especially thank Mr Ajay Shankar, Distinguished Fellow, TERI, for his leadership and guidance in restructuring this publication.

We extend our gratitude to all the authors and reviewers of the publication who have done due fact-

checking and put together research narratives for the chapters. We greatly acknowledge the colleagues at TERI Press for their constant support in bringing out the publication. We would also like to thank Ms Lakshmi Subramaniam for extending all possible executive support. Finally, we would like to thank Ms Shikha Kumari, Ms Ritu Ahuja, Ms Aishwarya Raj, and Ms Tanisha Nag for their support in aiding the authors with the research required for compiling the chapters.

We are confident that *TEDDY 2017/18* meets the highest standards of scholarship and would be immensely useful to our readers, including policymakers, business organizations, academic institutions, and research scholars working in areas of energy and environment.

List of tables

Coal and Lignite

- Pithead run of mine (ROM) price of non-coking coal applicable for Eastern Coalfields Limited, Bharat Coking Coal Limited, Central Coalfields Limited, Northern Coalfields Limited, Mahanadi Coalfields Limited, South Eastern Coalfields Limited, and North Eastern Coalfields Limited with effect from 9 January 2018 34
- Pit head price of non-coking coal applicable for Western Coalfields Limited with effect from 9 January 2018 35

Petroleum and Natural gas

- 1 Crude oil pipelines and capacity status..... 42
- 2 Infrastructure status of petroleum products' pipelines 43
- 3 Status on existing natural gas pipeline infrastructure 48
- 4 Status on under construction natural gas pipeline infrastructure 48
- 5 Trend in installed refining capacity of Indian refineries..... 52
- 6 Trend in extent of subsidies in India 54
- 7 List of taxes for production and sale of natural gas in India 55
- 8 List of taxes for production and sale of crude oil in India..... 55
- 9 Retail selling price and taxes on petrol and diesel in India and other countries 57
- 10 Trend in CNG stations, CNG vehicles, and CNG sales quantity in India 63
 - City gas distribution bidding parameters..... 65
 - Year-wise work programme for successful CGD bidders 66
 - Price build-up of PDS Kerosene (SKO) at Mumbai 67
 - Price build-up of liquefied petroleum gas at Mumbai 67
 - Price build-up of diesel (HSD) in Delhi..... 68
 - Price build-up of petrol (MS) in Delhi..... 68

Power

- 1 Growth in transmission sector 77
- 2 AT&C loss trajectory submitted by states (in %) 80
- 3 Average tariff..... 80
- 4 Selected state- /union territory-wise average tariff for sale of electricity in India (2007/08 to 2013/14) (in paise/kWh)81
- 5 Sanctioned smart grid pilot projects and implementation status..... 82
- 6 Status of electrified households 2018 83

Renewable Energy

- 1 Top five players in solar photovoltaic sector..... 93

List of tables

- 2 Benchmark costs for various technologies 94
- 3 States/union territories with maximum municipal solid waste generation 103

Agriculture

- 1 State-wise cold storage capacity as of 31 March 2017..... 120
- 2 Irrigation water productivity of rice, wheat, and sugar cane in major growing states..... 122
- 3 Source-wise net irrigated area in India (in Mha) 125
- 4 State-wise cumulative installation of solar water pumps (as of 31 December 2017)... 127
- 5 Production, imports, and consumption of fertilizers (in '000 tonnes of nutrients) 128
 - Policy categories and key nodal agencies impacting energy use in agriculture 131
 - Electricity consumption in the agriculture sector 132

Industry

- 1 Energy-saving target and achievement of aluminium sector..... 134
- 2 Production of aluminium by primary aluminium producers 134
- 3 Emission norms for aluminium sector..... 135
- 4 Specific energy consumption in aluminium smelting (2016)..... 135
- 5 Energy-saving target and achievement of cement sector 136
- 6 Cement production (from 2011/12 to 2015/16)..... 136
- 7 Emission norms for cement plants in India..... 137
- 8 General trend of SEC in Indian cement plants 138
- 9 Energy-saving target and achievement of chlor-alkali sector 138
- 10 Product-wise production of alkali chemicals..... 139
- 11 Emission/effluent norms for caustic soda industry..... 139
- 12 Average operating SEC of chlor-alkali sector..... 139
- 13 Energy-saving target and achievement of fertilizer sector..... 140
- 14 Production of urea, DAP, and complexes (in million tonnes)..... 140
- 15 Emission norms for fertilizer sector..... 141
- 16 Energy-saving target and achievement of iron and steel sector 142
- 17 Emission norms for blast furnace in integrated iron and steel plant..... 142
- 18 Comparison of Indian and international SEC for steel industry 143
- 19 Energy-saving target and achievement of pulp and paper sector..... 144
- 20 Effluent discharge norms of pulp and paper sector 144
- 21 Energy-saving target and achievement of textile sector 145
- 22 Break-up of spun yarn production..... 146
- 23 Effluent discharge norms..... 146
- 24 Typical specific energy consumption (in kWh/kg) for yarns with different yarn counts and final use (weaving versus knitting) 146
- 25 Typical energy requirements for textile wet processes, by product form, machine type, and process..... 147

Transport

- 1 Share of different modes of transport in gross value added during 2015/16 150

2	Trends in consumption (in MT) of select petroleum products in India	150
3	CO ₂ emissions from fuel combustion (in MT)	151
4	India's road network	151
5	Lane-wise length (in km) of national highways in India.....	152
6	Freight and passenger movement by roads	152
7	Gauge-wise growth in network of Indian Railways	153
8	Capacity addition (in km) by the Indian Railways over the past 10 years.....	154
9	Capacity and traffic of major ports (in MT).....	156
10	Traffic handled at other than major ports (in MT).....	156
11	Cargo movement through inland waterways transport.....	157
12	Airports in India (as on 31 March 2017)	157
13	Operational statistics of scheduled airlines in India	158
14	Passenger traffic carried by scheduled airlines (in million)	159
15	Freight traffic carried by scheduled airlines (in MT).....	159
16	ATF consumption in aviation (in '000 tonnes).....	160
17	CO ₂ emissions from the aviation sector in India	160
18	Share of public transport vehicles in the total registered vehicles in million-plus cities in India	160
19	Operational metro rail length in Indian cities as of June 2018	161
	▪ New policies and programmes	164
	▪ Current status of NHDP (as of June 2018).....	165
	▪ Overall physical progress of PMGSY (up to October 2017).....	165
	▪ New acts/bills/rules	167
	▪ New railways policies and their provisions.....	166
	▪ Medium-term investment plan of the Indian Railways	167
	▪ Summary of projects under Sagarmala till 2019	168
	▪ Projects under implementation and development	168
	▪ Port-wise capacity addition.....	168
	▪ Status of rail connectivity projects	168
	▪ Capacity addition projects at major ports	169
	▪ Status of development of seven new national waterways.....	169

Household Energy

1	Average hours of outage per month in urban areas	179
2	Percentage distribution of rural households by the primary energy source for cooking	180
3	Percentage distribution of urban households by the primary energy source for cooking	181
4	Percentage distribution of rural households by primary energy source for lighting (from 2001/02 to 2011/12)	187
5	Percentage distribution of urban households by primary energy source for lighting (2001/02–2011/12)	187
6	Per capita expenses incurred on various energy sources (rural).....	189
7	Per capita expenses incurred on various energy sources (urban)	190

8	Monthly per capita value of consumption: electrical and electronic equipment used by rural households in India	190
9	Monthly per capita value of consumption: electrical and electronic equipment used by urban households in India	191
10	Saving potential comparison of LED with CFL and incandescent bulbs	191
11	Share (in %) of BEE-labelled air conditioners sold	192
12	Share (in %) of BEE-labelled refrigerators sold	192
13	Star rating band valid from 1 January 2016 to 31 December 2017 (for split and window air conditioners)	192
14	Energy efficiency standards in different countries	192
	▪ Residential energy consumption and per capita electricity consumption in 2015	196
	▪ State-/union territory-wise distribution of households by the source of lighting	197
	▪ State-/union territory-wise distribution of households by source of lighting (rural India)	198
	▪ State-/union territory-wise distribution of households by the source of lighting (urban India)	199
	▪ Growth across states/union territories in terms of rural household electrification	201
	▪ Power supply in rural areas during June 2017	202
	▪ Distribution of households by type of fuel used for cooking by state/union territory	203
	▪ Number of households by type of fuel used for lighting	203
	▪ Distribution of rural households (per 1000) of each household type by primary source of energy for cooking from July 2011 to June 2012	205
	▪ Distribution of urban households (per 1000) of each household type by primary source of energy for cooking from July 2011 to June 2012	205
	▪ Source of energy for cooking in slums	206
	▪ Consumption of various energy sources from 2006/07 to 2016/17	206
	▪ Per capita consumption (in kWh) of electricity across states and union territories ...	207
	▪ Plan-wise growth in per capita consumption of electricity (in kWh)	208
	▪ State-/union territory-wise number of LPG domestic consumers (in lakh)	209

Air Quality and Pollution

1	State-wise distribution of manual and continuous monitoring stations in operation under NAMP	214
2	Revised ambient air quality standards	215
3	Breakpoints for AQI scale 0–500	216
4	State-wise estimates of 24 h concentrations of PM _{2.5} in kitchens from the use of solid cooking fuels	220
5	Stack emission standards for major air polluting industries	221
6	New emission standards for thermal power plants	221
7	Emission standards for two-wheeler and three-wheeler categories	222
8	Emission standard for four-wheeler (4W) category	222
9	Emission norms for heavy diesel vehicles	223
10	Emission standards for generator sets (gensets)	224
11	Odds ratio of diseases associated with indoor air pollution in India	224

12	Recent policies in different sectors to improve air quality in India	225
▪	Comparison of ambient air quality standards of different countries	229
▪	Annual ambient SO ₂ concentration at different Ambient Air Quality Monitoring stations under the National Ambient Air Quality Monitoring Programme	231
▪	Annual ambient NO _x concentration at different Ambient Air Quality Monitoring stations under National Ambient Air Quality Monitoring Programme	239
▪	Annual ambient respirable suspended particulate matter concentration at different Ambient Air Quality Monitoring stations under National Ambient Air Quality Monitoring Programme	247
▪	Annual ambient PM _{2.5} concentration at different Ambient Air Quality Monitoring stations under National Ambient Air Quality Monitoring Programme	255
▪	Number of days different monitoring stations exceed the NAAQ standard of PM _{2.5} in 2017	258
▪	Summary of source apportionment studies during the last decade in India	260
▪	Studies conducted relating to health effects of air pollution	262
Solid Waste Management		
1	Recycling facilities located in different cities of India	273
2	Management of C&D waste in major cities of India	274
3	Various treatment technologies for plastic waste and their environmental impacts	276
Water Resource Management		
1	Water resource potential (in BCM) in river basins of India	285
2	Criteria for categorization of assessment units	286
Land and Forest Resource Management		
1	Category-wise total area under wastelands (in km ²)	302
2	Area under desertification in India during 2011–13	304
3	Changes in area under wetlands from 2005/06 to 2011/12	304
4	Status of wetland conservation in India	305
5	Number of animals, plants, and fungi and protists in the IUCN Red List Categories	311
6	Details of the PAs of India	312
7	Some key acts related to the forestry and biodiversity sector in India	313
Climate Change		
1	Level of CO ₂ emissions	326
2	Emission trends across four major CO ₂ emitters	327
3	Global emissions and emission gap under the implementation of INDCs for 2025 (medium and range in GtCO ₂ e)	327
4	Global emissions and emission gap under the implementation of INDCs for 2030 (median and range in GtCO ₂ e)	328
5	GHG emission trends in India by gases (in MtCO ₂ e)	330
6	Current status of state action plans on climate change	331
▪	Carbon dioxide emissions across regions	336
▪	Missions under National Action Plan on Climate Change	337
▪	Projects sanctioned under National Adaptation Fund on Climate Change	337

List of figures

Energy and Environment: An Overview

1	Energy mix in 2016/17.....	1
2	Sankey diagram for 2016/17.....	2
3	Installed capacity of power stations (2017/18)	3
4	All-India coal consumption/actual supply of coal, including import, for power generation and steel and coke sector from 2012/13 to 2017/18	4
5	Petroleum consumption.....	4
6	LNG imports for consumption	5
7	Grid power sources as percentage shares (till March 2018).....	5
8	Growth of gross electricity generation in India (mode-wise).....	6
9	Top 10 countries on the basis of renewable energy capacity for the year 2017	6
10	Final energy consumption in India by sector	6
11	Electricity consumption in the agriculture sector	7
12	HSD consumption in the agriculture sector	7
13	Trends in electricity consumption in the industry sector.....	8
14	Consumption of selected petroleum products.....	8
15	Sector-wise fuel consumption in 2017/18	9
16	Trends in the total fuel consumption in the transport sector from 2009/10 to 2017/18	9
17	Consumption of electricity by the domestic sector from 2007/08 to 2016/17	10
18	Sources of energy for domestic cooking in India	10
19	Annual ambient concentrations of PM _{2.5} across the country.....	10
20	Annual ambient concentrations of PM ₁₀ across the country.....	11
21	Solid waste management in India.....	11
22	Per capita water availability.....	12
23	Classification of drylands in India in 2011/13	12
24	CO ₂ emissions in India compared to GDP (PPP)	13
	▪ Sankey diagram for 2015/16	17

Coal and Lignite

1	Coal reserves in India as on 1 April 2017	21
2	Production of coal from opencast and underground mining (in %) from 2007/08 to 2016/17	22
3	Coal consumption/actual supply of coal including import (in MT) for power sector (utilities and captive)	23
4	Coal consumption/actual supply of coal including import (in MT) for steel and coke sector	23

List of figures

5	Coal blocks allocated.....	24
6	Sector-wise allocation of coal.....	24
7	Domestic coal pricing trends in the power sector.....	25
8	International coal pricing trends	26
9	Coal transportation by various modes for 2016/17	27
10	Country-wise import of coal to India in 2016/17	28
11	Modes of fly ash utilization during 2016/17.....	29

Petroleum and Natural gas

1	Statistics of crude oil and petroleum products in India	38
2	Trend in domestic crude oil production	38
3	Crude oil imports, product imports, and total imports	39
4	Trend in crude oil price (Indian basket) and value of crude oil imports	39
5	Trend in production of petroleum products from refineries and fractionators	40
6	Trend in net petroleum products' export	43
7	Status of petroleum products consumption during 2017/18	45
8	Trend in petroleum product consumption in India.....	45
9	Trend in self-sufficiency of petroleum products.....	46
10	Statistics of natural gas in India	46
11	Trend in domestic natural gas production	47
12	Trend in natural gas imports and share of imported natural gas in overall supply.....	47
13	Industry off-take of natural gas during 2016/17	51
14	Trend in consumption of natural gas by different sectors.....	51
15	Crude throughput of Indian refineries	53
16	Trend in gross refining margin of Indian refineries	53
17	Trend in subsidies for the sale of petroleum products in India	54
18	Total indirect tax collection from the petroleum sector and its share in the total indirect tax collection	55
19	Contribution of taxes from the oil and gas industry to the central exchequer	56
20	Trend of excise duty on petrol and diesel vis-à-vis crude oil price in India	56
21	Contribution of taxes from the oil and gas industry to state exchequer.....	57
22	State-wise collection of sales tax/VAT/SGST from the oil and gas industry in 2017/18	58
23	Trend in retail selling price and taxes of gasoline in India vis-à-vis other countries ...	58
24	Trend in retail selling price and taxes of diesel in India vis-à-vis other countries	59
25	Trends in the price of domestic gas produced in India on GCV basis.....	60
26	Trend in the geographical areas offered and awarded under City Gas Distribution bidding	62
27	Status of domestic PNG connections across states.....	62
28	Status of industrial and commercial PNG connections across states	63

Power

1	Installed generating capacity in India by mode (utilities) as on 31 March 2018	70
2	Installed generating capacity in India by sector (utilities) as on 31 March 2018.....	70

3	Growth rate of installed generating capacity in India (2017/18)	70
4	CAGR of installed generating capacity in India (2011–18).....	71
5	Growth rate of electricity generation in India (2017/18)	71
6	Growth of gross electricity generation in India by mode	72
7	CAGR of electricity generation in India (2011–18)	72
8	PLF of coal- and lignite-based power plants.....	73
9	Power supply position—energy (in MU)	74
10	Power supply position—peak (in MW).....	74
11	Growth rate of peak demand and met (2011–18)	75
12	Growth rate of energy requirement and availability (2011–18)	75
13	Sector-wise electricity consumption pattern (2011–18).....	76
14	Electricity intensity of economy	76
Renewable Energy		
1	Grid power sources (in GW) and their percentage shares	88
2	Growth of renewable energy sources (till March 2018).....	88
3	Installed solar capacity (2014–18)	90
4	Top Indian states in terms of grid-connected installed solar capacity	90
5	Solar tariff	92
6	Top 10 countries with annual PV capacity addition	93
7	Cumulative solar thermal installations in India (till December 2016)	95
8	Installation under UNDP–GEF supported project (till March 2017).....	95
9	CST installations during 2013–17 (till Feb 2017)	96
10	State-wise wind energy potential at 100 m above ground level	96
11	Growth of wind energy sector (in MW)	98
12	Monthly electricity generation from wind energy (from April 2016 to March 2017) ..	98
13	State-wise installed capacity (in MW) as on March 2017 and target achieved (in %)	99
14	Cumulative biomass power, gasification, and bagasse cogeneration projects (up to June 2018).....	100
15	State-wise cumulative commissioned biomass power and bagasse cogeneration grid-connected projects (up till December 2017).....	102
16	Family-size biogas plants (up to March 2017)	102
17	Cumulative waste-to-energy/power projects (up to June 2018)	103
18	State-wise ethanol manufacturing capacity in India	104
19	Year-wise cumulative installed capacity (in MW) till June 2018.....	104
20	Tidal energy potential (in MW).....	106
21	Target for geothermal energy deployment	107
Agriculture		
1	Production of different agricultural products in India	116
2	HSD and LDO consumption in agriculture sector	117
3	Electricity consumption in agriculture sector	117
4	Region-wise electricity consumption in agriculture sector	118

List of figures

5	Percentage share of major farm machineries used in Indian agriculture	119
6	Farm power availability and foodgrain yield	119
7	Share of major crops in the gross cropped area in India	121
8	Number of tractors sold	124
9	Number of power tillers sold	124
10	Number of diesel and electric pumps used in India	125
11	Selected state-wise area covered under micro-irrigation (drip and sprinkler) in India	126
12	Production of urea, diammonium phosphate, and other complex fertilizers	128

Industry

1	Crude steel production by different process routes	142
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Transport

1	Total fuel consumption by transport sector in India	151
2	Total number of registered motor vehicles in India	152
3	Trend in electrification of route network of Indian Railways	153
4	Trend in passenger traffic movement on the Indian Railways	154
5	Trend in railways freight segment earnings on average rate per tonne km basis	155
6	Trend in fuel consumption in the Indian Railways	155
7	Growth in capacity in Indian shipping industry in terms of the number of vessels and gross tonnage	157
8	Trend in the passenger load factor of scheduled Indian airlines in the domestic market	159

Household Energy

1	Sustainable Development Goals	172
2	Residential energy consumption and per capita electricity consumption in 2015	173
3	Disparity among rural and urban households in terms of primary reliance on electricity for lighting	176
4	Growth in rural household electrification across states	177
5	Sources of lighting used by households in slums (percentage of households)	179
6	Source of energy for domestic cooking in India	180
8	Percentage distributions of urban households by type of occupation for primary source of energy for cooking	182
9	Sources of energy for cooking in slums	182
10	Consumption of electricity by residential sector (percentage of total consumption by all sectors)	183
11	Growth in per capita consumption of electricity in India	183
12	Mid-year population versus per capita electricity consumption and mid-year population versus actual electricity consumed by domestic sector	184
13	State-wise per capita consumption of electricity	185
14	State-wise percentage households using clean fuel for cooking	186
15	Percentage distributions of rural households by primary source of energy used for lighting for each household type	187

16	Percentage distributions of urban households by primary source of energy used for lighting for each household type	188
17	All-India LPG domestic customers (number in lakh) of oil marketing companies (public sector undertakings) as on 1 April 2017.....	188
18	Consumption of LPG and kerosene (in '000 tonnes).....	189
	▪ Plan-wise growth of village electrification	201

Air Quality and Pollution

1	Annual ambient concentrations of different pollutant parameters across the country	217
2	State-wise average ambient air quality status of different pollutant parameters for the period 2007–16.....	219
3	PM _{2.5} concentration over India (in µg/m ³)	219
	▪ Institutional framework of air quality governance in India.....	229

Solid Waste Management

1	India's GDP growth rate	264
2	Population projection for India along with urban growth share.....	265
3	Trajectory of average MSW generated in India between 2009–12 and 2016 (in g/capita/day)	265
4	MSW status in India	266
5	Status of solid waste treatment.....	267
6	Major e-waste contributors in India	268
7	Major recycling infrastructure in some states of India	268
8	Plastic waste generation in Indian states.....	269
9	Composition of plastic waste in major plastic waste generating cities in India as of 2015/16	269
10	Management of plastics in India	270
11	Average constituents of C&D waste	272
12	C&D waste generated in major cities of India (in TPD)	272
13	C&D waste management in India	273
14	C&D waste recycling in a typical recycling facility	274
15	GHG emissions from solid waste disposal sites and reduction potential	275
16	GHG emission points from the MSW sector	277

Water Resource Management

1	Per capita water availability in relation to population	284
2	(a) Category of groundwater exploitation in monitored blocks in India and (b) the number of groundwater assessment units	286
3	Depth to water level maps for (a) pre-monsoon and (b) post-monsoon in 2012	287
4	Number of districts with fluoride in groundwater above the permissible limit	287
5	Number of districts with arsenic concentration in groundwater above the permissible limit.....	289
6	Net irrigated area in India from 1950 to 2017.....	289
7	Access to safe drinking water in rural households.....	291

List of figures

8	Access to safe drinking water in urban households	291
9	BOD (in mg/L) trends of waterbodies in India	292
10	Total coliform (in MPN/100 mL) trends of waterbodies in India	292
11	Faecal coliform (in MPN/100 mL) trends of waterbodies in India	293

Land and Forest Resource Management

1	Percentage of land area under various uses in 2015/16	300
2	Land-use change from 2010/11 to 2014/15	301
3	Area under agriculture	301
4	Percentage of area under desertification in India between 2011 and 2013	304
5	Forest cover in terms of percentage of the total geographical area	305
6	Forest cover in terms of percentage of the total geographical area	307
7	The forest area of six regions of the country along with annual fire alerts	309
8	Fire alerts in different density classes	309
9	Trend in afforestation from 2007/08 to 2014/15	310
10	CAMPA fund (in ₹ crore) available for states and UTs	310
11	Endemic and threatened endemic species of India	312
12	The total area under protected areas in India	312

Climate Change

1	All-India annual mean temperature anomalies for 1901–2017 (based on the 1971–2000 average)	318
2	Spatial patterns of liner trends of (a) maximum and (b) minimum temperatures	319
3	Spatial pattern of trend (°C/100 years) in mean annual temperature anomalies (1901–2017)	320
4	Decadal means of all-India summer monsoon rainfall (per cent departure from mean)	321
5	All-India annual mean percentage departures of annual rainfall for 1901–2017 (based on the 1961–90 average)	321
6	Sub-divisional trends of (a) seasonal and (b) monsoon rainfall for 1901–2003	323
7	Time series of active (upper panel) and break (lower panel) events during the monsoon season	324
8	Cyclone tracks of depressions and cyclonic storms formed during 2017: (a) monsoon season and (b) other seasons	325
9	Emission trends across four major CO ₂ emitters	327
10	CO ₂ emissions (in MtCO ₂) in India as compared to GDP (PPP)	328
11	Carbon dioxide emissions within subsectors in India	329
12	Emissions by fuel type in India	330
13	Comparison of coal cess collected, amount transferred, and projects recommended under NCEEF	331

List of maps

Petroleum and Natural gas

- 1 Crude oil and product infrastructure in India 41
- 2 Natural gas infrastructures in India 50

Renewable Energy

- 1 State-wise solar energy potential (in GW) 89
- 2 State-wise wind energy potential (in MW) at 80 m above ground level 97
- 3 Biomass power (BP), bagasse cogeneration (BC), and waste-to-energy (W2E) potential..... 101
- 4 Small hydropower potential (in MW) in India.....105
- 5 Geothermal potential (in MW) in India.....108

Agriculture

- 1 State-wise area under degraded land in India123

Household Energy

- 1 Average hours of daily power supply in rural areas..... 178

Water Resource Management

- 1 Places with fluoride concentration more than 1.5 mg/L..... 288
- 2 Groundwater quality issues (electrical conductivity and arsenic) 290

Land and Forest Resource Management

- 1 Wasteland map (2008/09) of India..... 303
- 2 State-wise number of wetlands in India..... 306
- 3 Forest cover of India 308

Overview of India's energy mix

India's energy mix comprises both primary and secondary fuels, with coal and lignite capturing the major share. Consumption of coal and lignite remained almost unchanged between 2015/16 and 2016/17, while natural gas consumption declined by 2% during the period. Electricity consumption across sectors rose by 6.5%, indicating the increasing electricity demand in the economy.

Figure 1 shows the fuel-wise energy consumption in India for 2016/17. Coal and lignite has the largest share in India's fuel mix. It is largely consumed in the industry sector, which is the largest consumer of energy among all sectors.¹ Petroleum products are majorly consumed by the transport sector, with high-speed diesel (HSD) accounting for 74% of

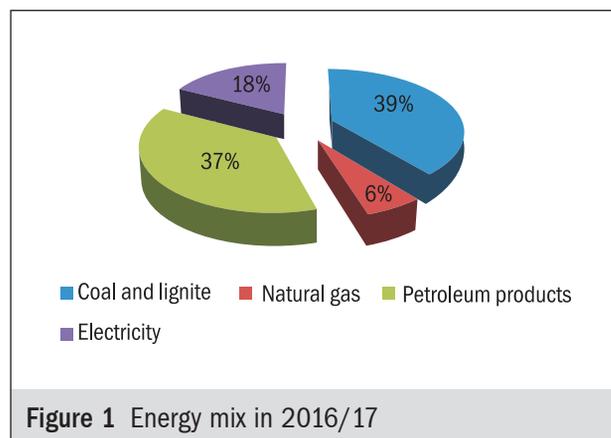


Figure 1 Energy mix in 2016/17

the total fuel consumed in the sector. Electricity is majorly consumed by the industry sector (40%), which includes both utilities and non-utilities.² This is followed by the residential sector, accounting for 24% of the total power consumption.

The overall energy supply and consumption pattern in the country is represented by the Sankey diagram (Figure 2). The Sankey diagram is the visual representation of the country's energy balance and it shows the contribution and flow of various energy commodities (e.g. fuels and electricity) into different sectors of the economy (residential, industrial, transport, commercial, and agriculture) in million tonnes of oil equivalent (MTOE).

- Figure 2 shows the allocation of the net availability of fuels to different sectors of the economy for 2016/17. The energy flows are illustrated as bands. The width of the band is proportional to the extent of the energy flow.
- The electricity generation in 2016/17 was 254.30 MTOE, of which ~87% was contributed by coal, ~4% by natural gas, ~3% by renewables, and ~5% by nuclear and hydro. Energy loss from power generation is 64% of the total electricity generation. Of the remaining 36%, 40% is consumed by the industry sector and 34% is consumed by the residential and commercial sectors.
- Of the available natural gas, 25% is used in natural gas-fired power plants to generate electricity. The remaining 75% is used for consumption across various sectors, and of which 50% is used for

¹ The share of industrial sector is 56% in the total energy consumption for 2016/17, followed by transport (17%) and residential sectors (11%).

² Utilities – power derived from the grid; non-utilities – captive power

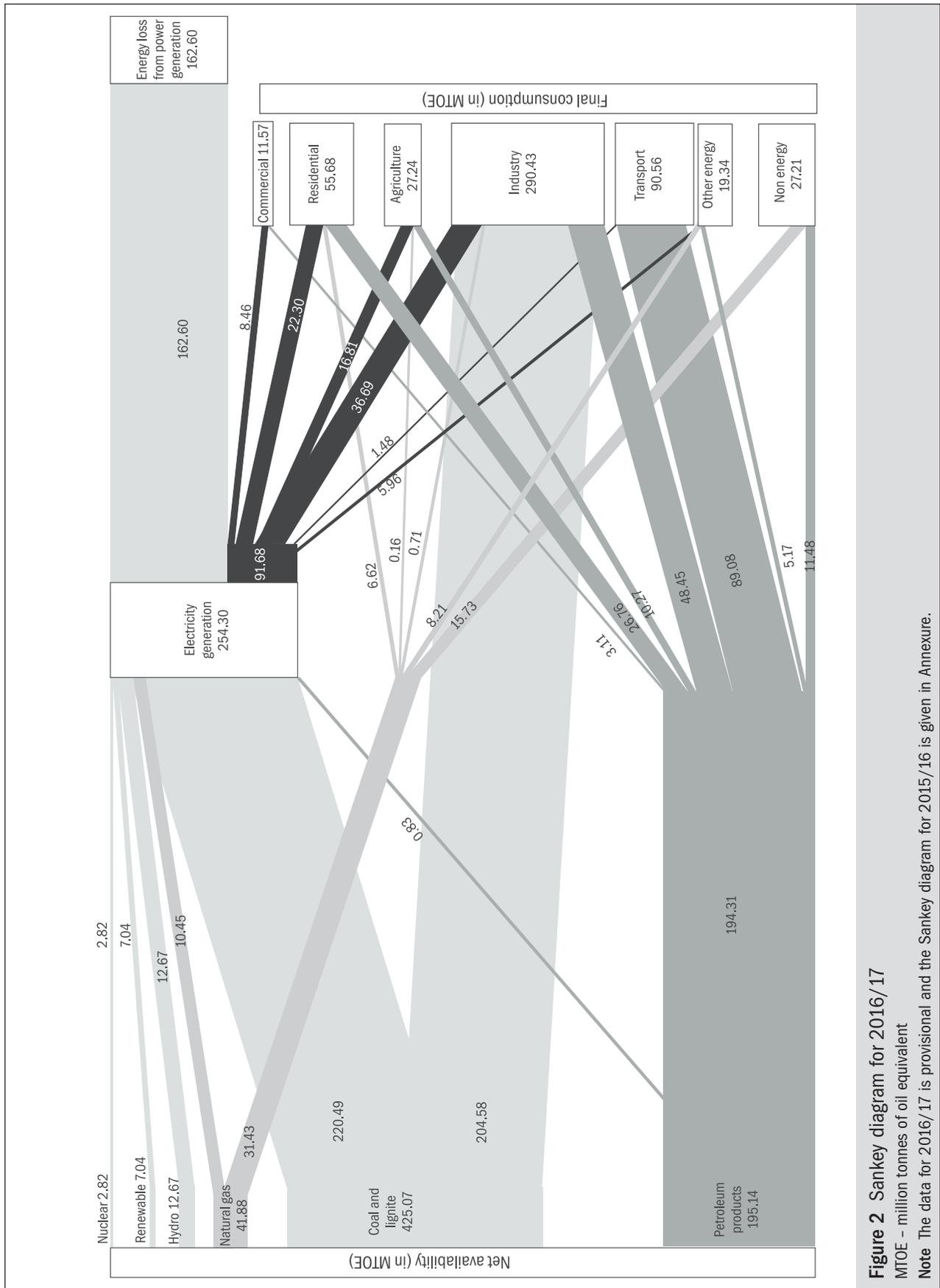


Figure 2 Sankey diagram for 2016/17
MTOE - million tonnes of oil equivalent
Note: The data for 2016/17 is provisional and the Sankey diagram for 2015/16 is given in Annexure.

non-energy purposes (e.g feedstock in fertilizer industry, sponge iron, and petrochemicals).

- The total stock of coal and lignite was consumed by the industry (48%) and power sectors (52%) in 2016/17, with iron and steel and the cement being the major players in the industry sector.
- As only a negligible fraction of the total available petroleum products is used for power generation, almost all of it is consumed across various sectors of the economy. The major consumer of petroleum products is the transport sector, which accounts for ~46% of the total consumption.

Energy supply

Coal

Currently, coal dominates India’s energy mix by accounting for more than 60% of the country’s total installed capacity (power) (Figure 3).

- The overall production of coal for the year 2017 from April to December 2017 was recorded at 461.42 million tonnes (MT).
- In 2016/17, the all-India coal consumption for power generation stood at 527.25 MT, while consumption for steel and coke sector was around 54.15 MT. The consumption of coal for power generation and in steel and coke sector is projected to be 713.3 and 63.17 MT, respectively, for 2017/18 (Figure 4).
- In 2016/17, the amount of non-coking coal imported was 149.30 MT against 159.33 MT imported the

previous year (CCO 2016, 2017). In the same year, coking coal imported amounted to 41.06 MT, which was down as compared to 44.56 MT in the previous year (CCO 2016, 2017).

Petroleum and natural gas

- India’s domestic crude oil production (including condensate production) declined from 36.0 MT in 2016/17 to 35.7 MT in 2017/18 (PPAC 2018c).
- The consumption in the petroleum sector increased from 100.07 MT in 2000/01 to 206.17 MT in 2017 (Figure 5).
- Total refinery capacity increased to 247.5 million tonnes per annum (MTPA) (provisional) as on 1 April 2018 from 233.9 MTPA in 2017.
- In India, crude oil import has increased from 214 MT in 2016/17 to 219 MT in 2017/18.
- Domestic natural gas production saw the growth of 2.5% after continuously witnessing a decline for the past 7 years. The production increased to 32.65 billion cubic metres (BCM) (provisional) in 2017/18 from last year’s production level of 31.90 BCM (PPAC 2018b).
- Natural gas import in the form of liquefied natural gas (LNG) has increased from 24.68 BCM in 2016/17 to 26.33 BCM in 2017/18 (Figure 6).

Power

- The per capita electricity consumption was 1149 kWh in 2017/18, showing a growth of 2.4% over 2016/17 (CEA 2018b).

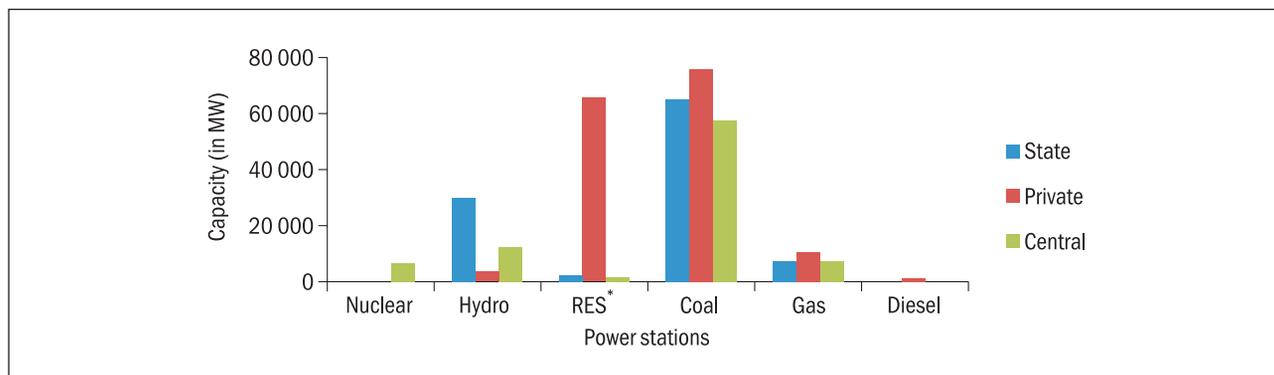


Figure 3 Installed capacity of power stations (2017/18)

MW - megawatt; RES - renewable energy sources

*RES include small hydro projects (≤25 MW), biomass power, urban and industrial waste power, and solar and wind energy. The installed capacity in respect of RES (MNRE) is as on 31 December 2016.

Source CEA (2018a)

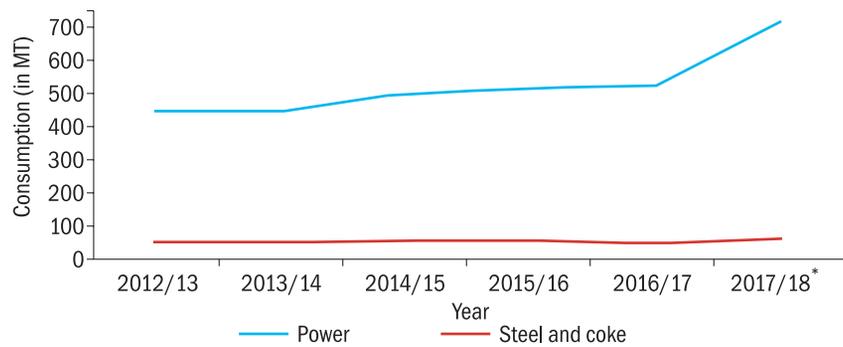


Figure 4 All India coal consumption/actual supply of coal, including import, for power generation and steel and coke sector from 2012/13 to 2017/18.

*Provisional; MT - million tonnes

Source MoC (2017, 2018)

- The total installed capacity was recorded at 344 GW till March 2018 (CEA 2018a) (Figure 7).
- Electricity generation increased from 1236 BU (billion units) in 2016/17 to 1302 BU (including imports) in 2017/18 (CEA 2018c).
- Coal (61%), RES (98%), nuclear (18%) witnessed percentage increase in electricity generated in 2017/18 as compared to 2011/12.
- Currently, India ranks fifth in the world in terms of the renewable energy capacity (Figure 9).
- India's installed solar capacity was recorded at 21.65 GW as of 31 March 2018, which was 60% rise over the previous year.
- India ranks fourth in the world in terms of the installed wind capacity, which was 34.05 GW in 2017.
- Cumulatively, 9502 MW of biopower projects, including biomass power, gasification, and bagasse cogeneration, was installed in India till March 2018 (MNRE 2018).

Renewable energy

- In India, the cumulative installed capacity from renewable sources was 69.02 GW till March 2018 (20% of total).

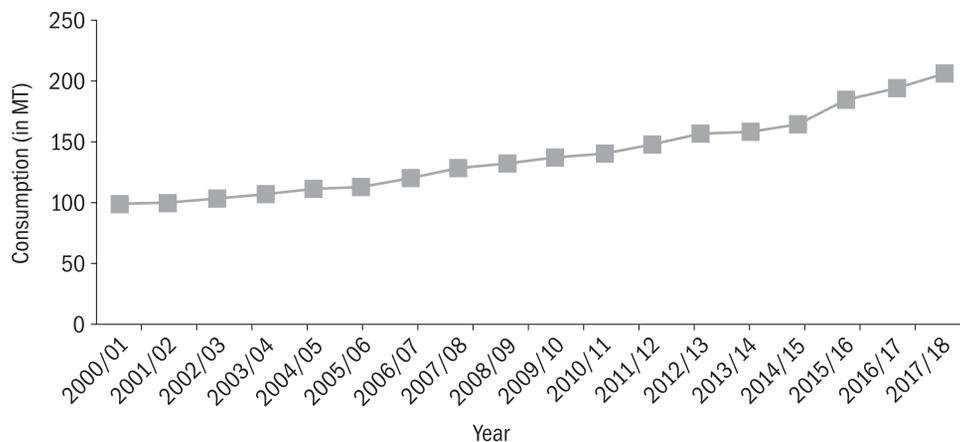


Figure 5 Petroleum consumption

MT - million tonnes

Source PPAC (2018a)

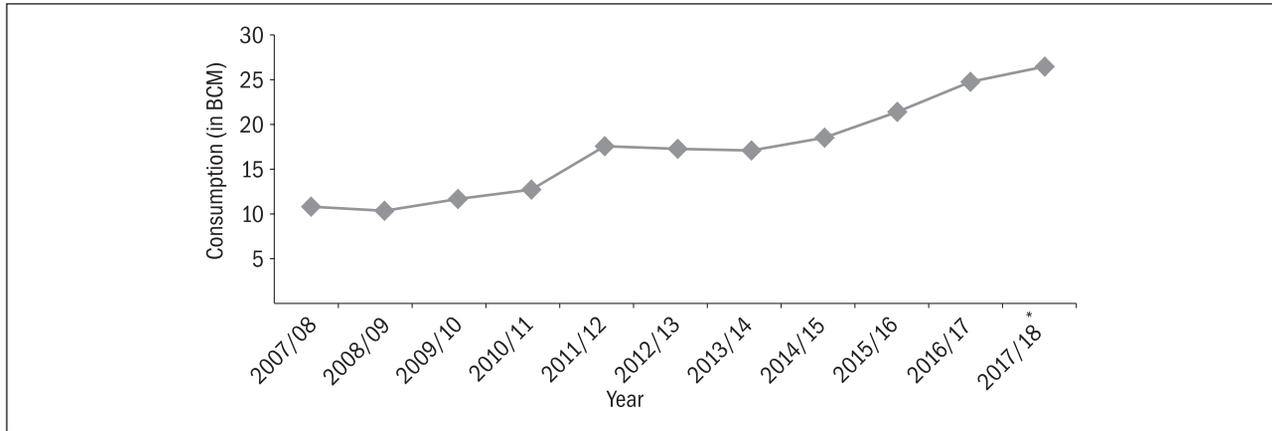


Figure 6 LNG imports for consumption
 *Provisional; BCM - billion cubic metres; LNG - liquefied natural gas
 Source PPAC (2018d)

- In terms of RE consumption³ India (21.8 MTOE) ranked sixth, whereas China (106.7 MTOE), USA (94.8 MTOE), Germany (44.8 MTOE) were the top three consumers in 2017 (BP 2018).

Energy consumption

- The energy consumption in India has increased more than three times since 2000 (Figure 10).
- The residential and commercial sectors have registered maximum growth, followed by industrial sector

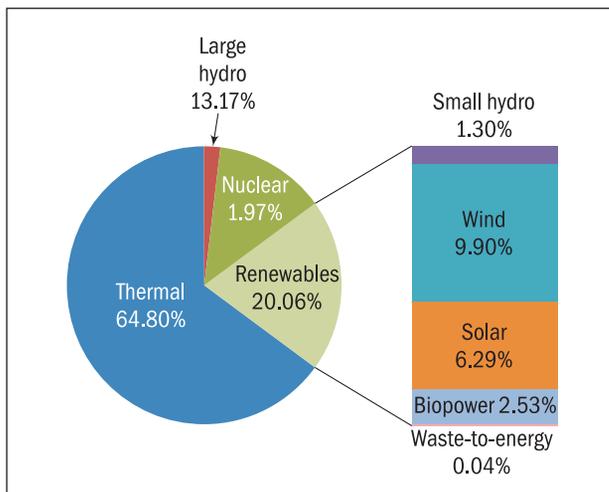


Figure 7 Grid power sources as percentage shares (till March 2018)
 Source CEA (2018a)

Agriculture

- Electricity consumption in agriculture sector was 195 473 GWh (18% of total) in 2016/17 (provisional) (Figure 11), while petroleum consumption in sector stood at 668 ('000 tonnes) (0.63% of total).
- Diesel consumption in the agriculture sector has shown a slight increase of 0.3% in 2017/18 over the previous year (Figure 12).

Industry

- Electricity consumption in industry sector stood at 426 665 GWh (40% of total) in 2016/17 (provisional) (Figure 13). Petroleum consumption was 16 369 ('000 tonnes) (13.21% of total).
- Consumption of petroleum products in the industry sector increased from 8879 ('000 tonnes) in 2006/07 to 14 430 ('000 tonnes) in 2017/18 (provisional) (Figure 14).

Transport

- Petroleum consumption in the transport sector was 14 444 ('000 tonnes), while electricity consumption was 2% of the total consumption.
- Road sector accounted for the largest share of 43% (provisional) in regard to the fuel⁴ consumption in the transport sector in 2017/18 (Figure 15).

³ It is based on gross generation from renewable sources, including wind, geothermal, solar, biomass, and waste, and it does not take into account the cross-border electricity supply. The conversion is based on thermal equivalence, assuming 38% conversion efficiency in a modern thermal power station.

⁴ Fuels include HSD, LPG, LDO, and FO.

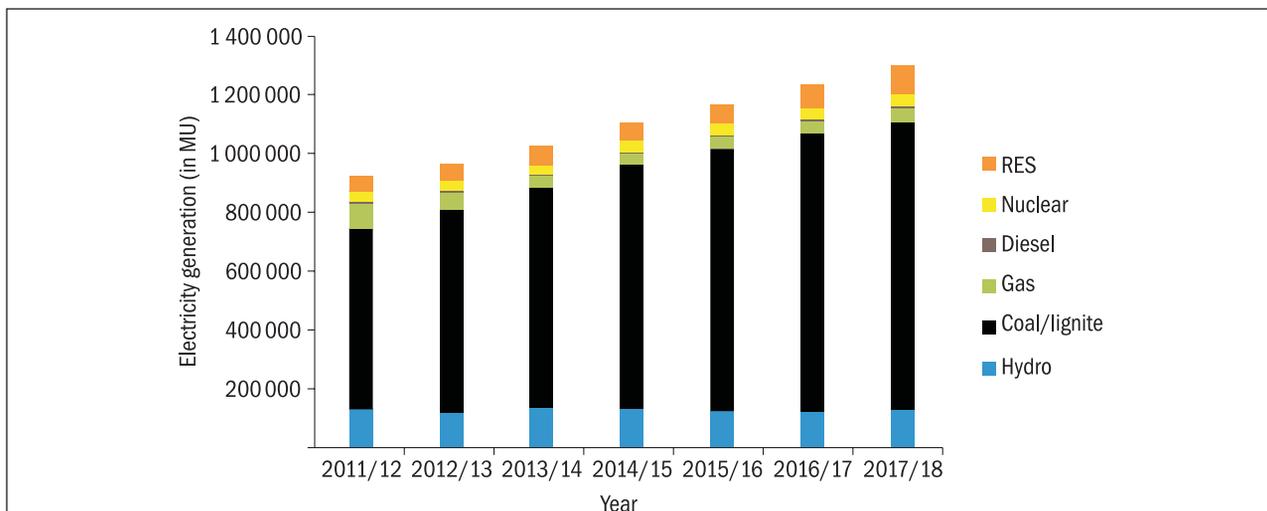


Figure 8 Growth of gross electricity generation in India (mode-wise)

MU - million units; RES - renewable energy sources

Source CEA (2018c)

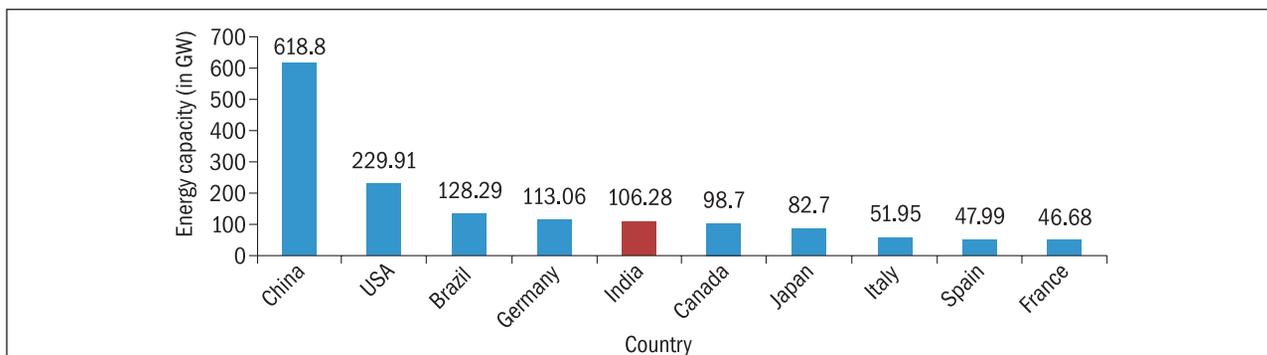


Figure 9 Top 10 countries on the basis of renewable energy capacity for the year 2017

GW - gigawatt

Note RE capacity in the figure includes large hydro.

Source Statista (2017)

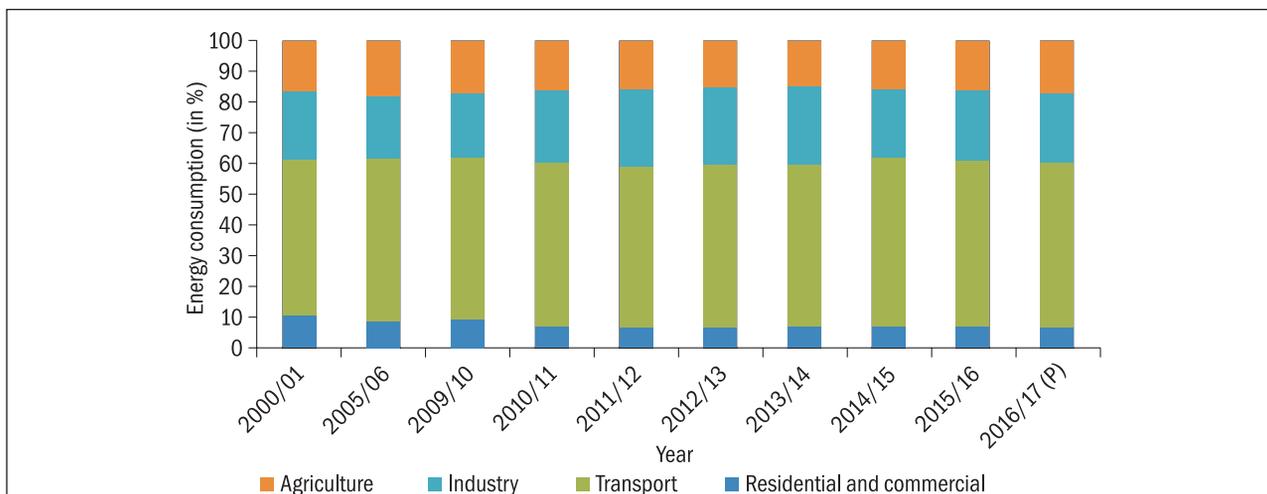


Figure 10 Final energy consumption in India by sector

P - provisional

Sources CEA (2017); MoPNG (2017); CCO (2016)

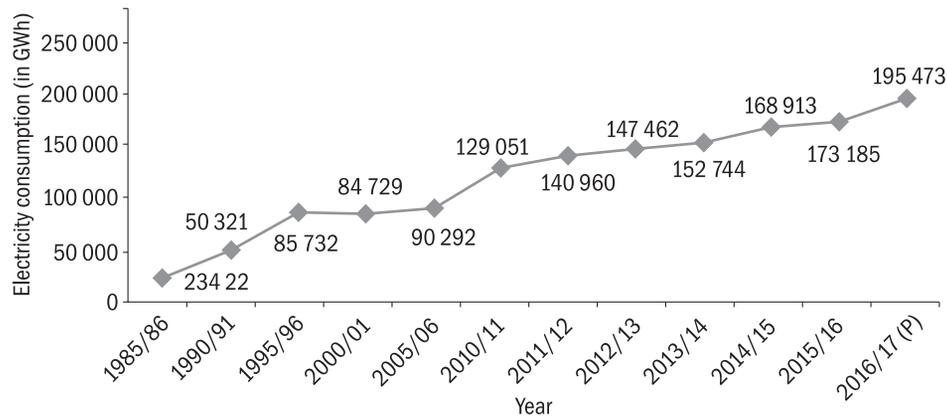


Figure 11 Electricity consumption in the agriculture sector

GWh - gigawatt hour; P - provisional

Source CEA (2017)

- Indian Railways was the second largest consumer of fuels in the transport sector in 2017/18, accounting for 39% (provisional) of the total consumption.
- Shipping sector had the third largest share of 18% (provisional) in the total fuel consumption in the transport sector in India in 2017/18.
- The consumption of aviation turbine fuel (ATF) increased significantly in the aviation sector from 4627 ('000 tonnes) in 2009/10 to 7623 ('000 tonnes) in 2017/18 (Figure 16).

Household energy

- As per the most recent estimate, India is home to over 150 million people with no access to electricity and over 700 million people with no access to clean cooking fuel (IBRD/World Bank/IEA 2017).

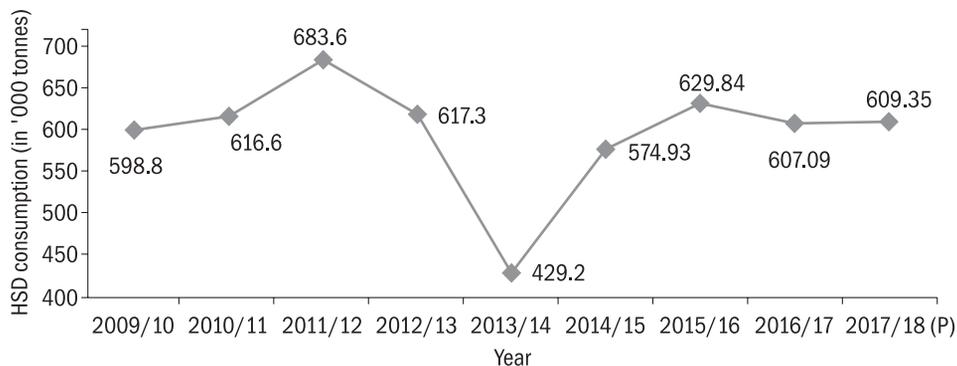


Figure 12 HSD consumption in the agriculture sector

HSD - high-speed diesel; P - provisional

Source MoPNG (2018)

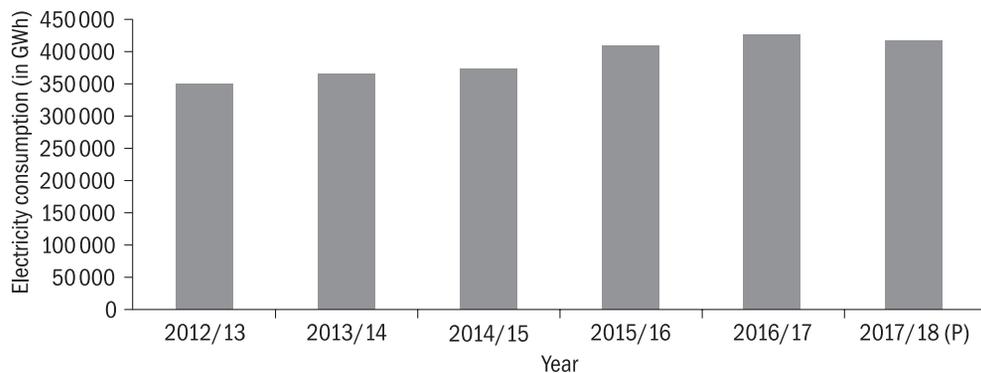


Figure 13 Trends in electricity consumption in the industry sector

GWh - gigawatt hour; P - provisional

Source MoSPI (2018)

- As of March 2018, all census villages were declared electrified.
- Figure 17 shows the consumption of electricity by the domestic sector.
- At the all-India level, as per Census 2011, 49% of households use firewood for cooking, while 29% of households use liquefied petroleum gas (LPG) or piped natural gas (PNG) for cooking purposes. Further, 18% of the total households use crop residues, cow dung cake, coal, lignite or charcoal for cooking and 6% of the total households use kerosene for cooking (Figure 18).

Environment

Air

- Seventy-seven per cent of continuous air quality monitoring stations in India violate national standards for PM_{2.5} (CPCB 2017a).

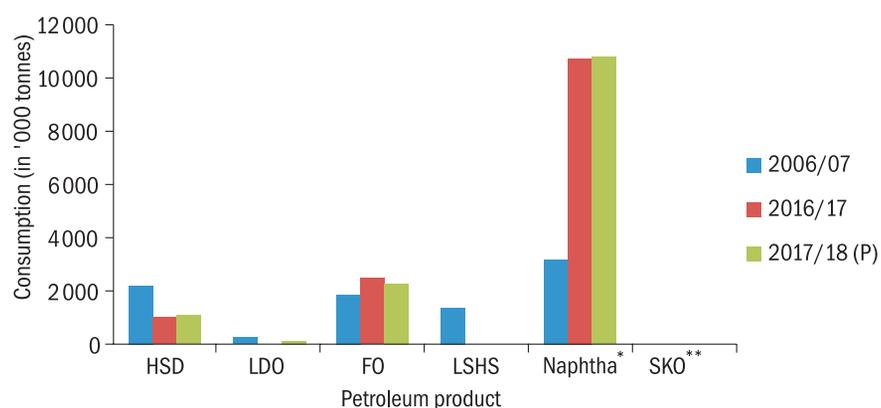


Figure 14 Consumption of selected petroleum products

FO - furnace oil; HSD - high-speed diesel; LDO - light diesel oil; LSHS - low-sulphur heavy stock; P - provisional; SKO - superior kerosene oil

*Includes fertilizer sector, petrochemicals, and steel sector

**Includes commercial and industry sectors

Sources MoPNG (2018); MoSPI (2017)

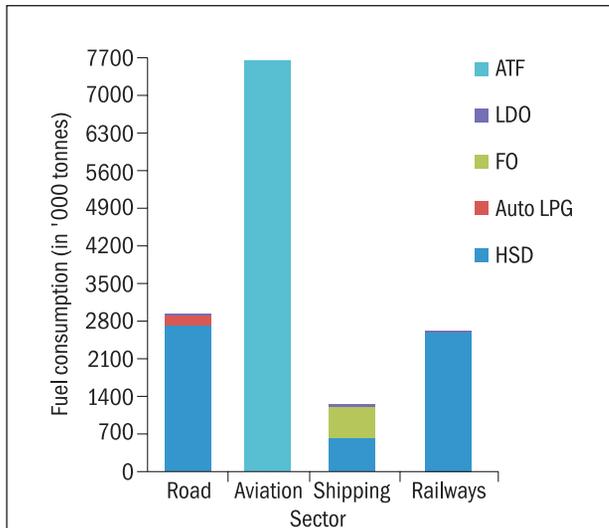


Figure 15 Sector-wise fuel consumption in 2017/18
 ATF - aviation turbine fuel; FO - furnace oil; HSD - high-speed diesel; LDO - light diesel oil; LPG - liquefied petroleum gas
 Source MoPNG (2018)

- India's 13 cities are listed among the top 20 cities in the world with the highest level of ambient PM_{2.5} concentration (WHO 2018).
- Ambient air pollution causes approximately 1.8 million premature deaths and results in loss of 49 million disability-adjusted life-year (DALY) in

India. It was ranked among the top risk factors for ill health in the country (GBD MAPS Working Group 2018).

- Annual ambient concentration of PM_{2.5} met the standards while PM₁₀ exceeded the NAAQS standards in 2016 (Figures 19 and 20).

Waste

- Municipal solid waste (MSW) generated by urban India stood at 49.35 MT annually as of 2017 (CPCB 2017b).
- The current global MSW generation is expected to increase to approximately 2.2 billion tonnes per year by 2025. The per capita waste generation was 182.5 kg per year in 2017 (Waste Atlas 2017).
- The greenhouse gas (GHG) emissions from solid waste disposal (SWD) are expected to increase to 22.77 and 39.71 million tonnes CO₂e by 2031 and 2051, respectively, compared to 13.75 million tonnes CO₂e in 2011.
- The percentage of sold waste treated declined at the rate of 26.8% in 2016/17 as compared to 2013/14 (Figure 21)

Water

- The average annual per capita availability of water in the country was 1545 m³ in 2011 (CWC 2017).

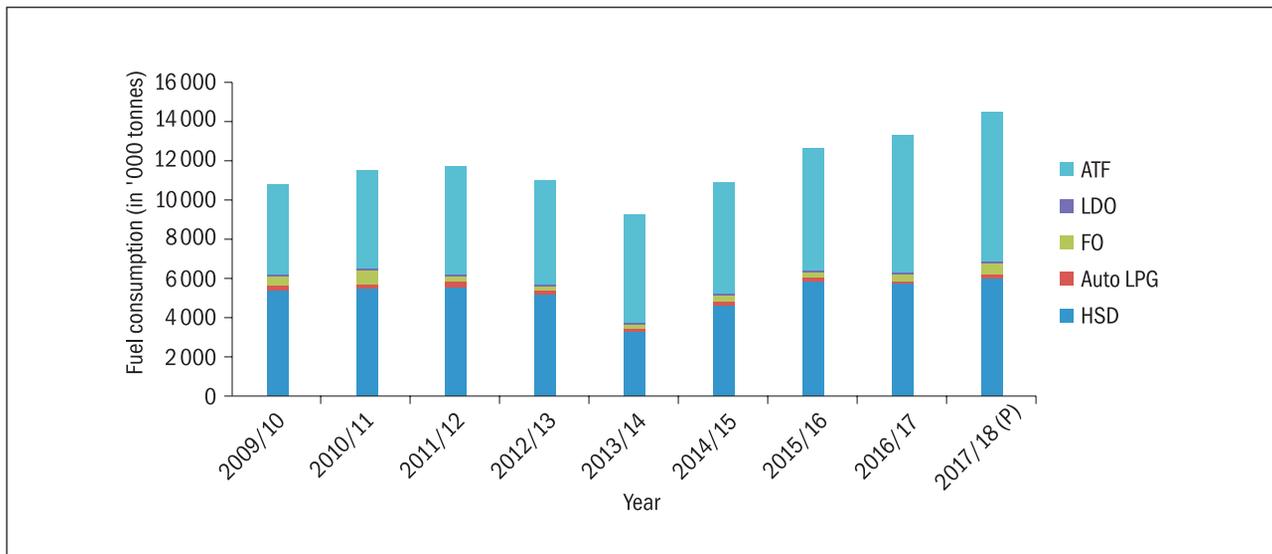


Figure 16 Trends in the total fuel consumption in the transport sector from 2009/10 to 2017/18
 ATF - aviation turbine fuel; FO - furnace oil; HSD - high-speed diesel; LDO - light diesel oil; LPG - liquefied petroleum gas; P - provisional
 Sources MoPNG (2018); DGCA (2018)

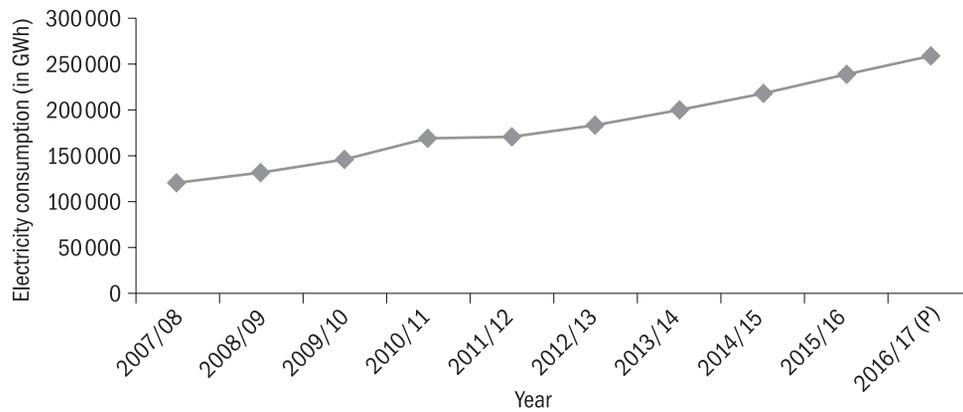


Figure 17 Consumption of electricity by the domestic sector from 2007/08 to 2016/17

GWh - gigawatt hour; P - provisional

Source MoSPI (2018)

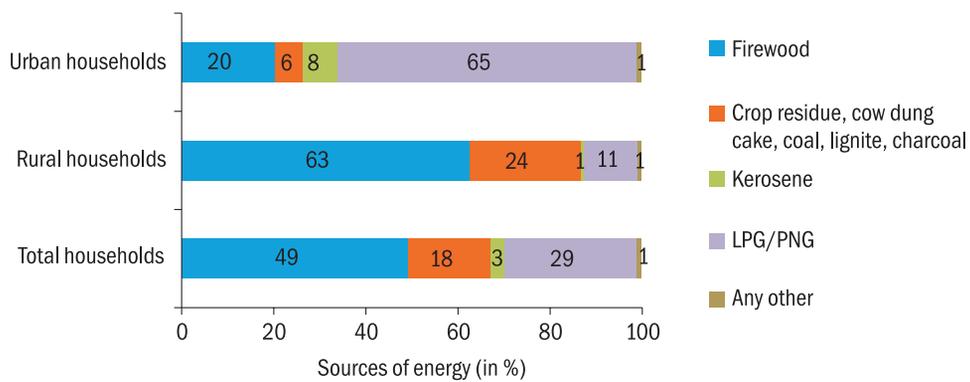


Figure 18 Sources of energy for domestic cooking in India

LPG - liquefied petroleum gas; PNG - piped natural gas

Source Census of India (2011)

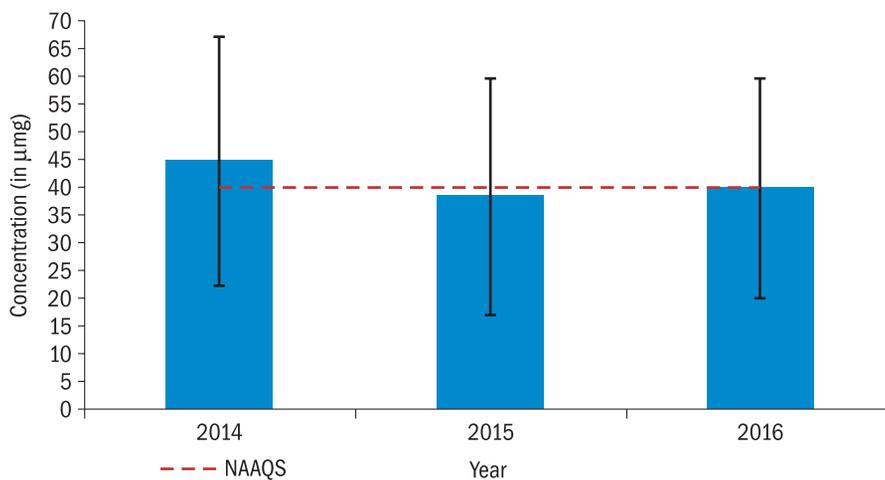


Figure 19 Annual ambient concentrations of $PM_{2.5}$ across the country

Note For $PM_{2.5}$, the analysis was carried out during 2014-16. Bars indicate the average annual concentration. Dashed line indicates the National Ambient Air Quality Standards.

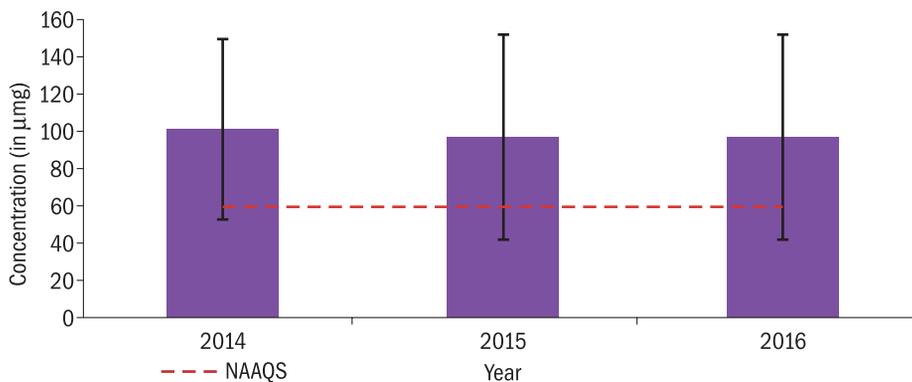


Figure 20 Annual ambient concentrations of PM₁₀ across the country

Note Bars indicate the average annual concentration. Dashed line indicates the National Ambient Air Quality Standards.

- The average annual per capita availability of water in the country is estimated to decline to 1174 m³ by 2051 (CWC 2017) (Figure 22).
- Around 62000 million litres per day (MLD) of sewage is generated by urban India, while the treatment capacity is 23277 MLD from 816 sewage treatment plants (STPs).
- National Water Mission strived to increase the water use efficiency in all sectors by 20% by 2017. However, the target was not achieved.

Forest and biodiversity

- India has a total forest cover of 70.82 million hectares (in Mha), which constitutes 21.54% of the total geographical area of the country (FSI 2017).
- In India, an area of approximately 10.56 Mha is under inland wetlands, while coastal wetlands cover an area of 4.14 Mha.
- The drylands in India comprise arid areas (30.54 Mha), semi-arid areas (35.40 Mha), and

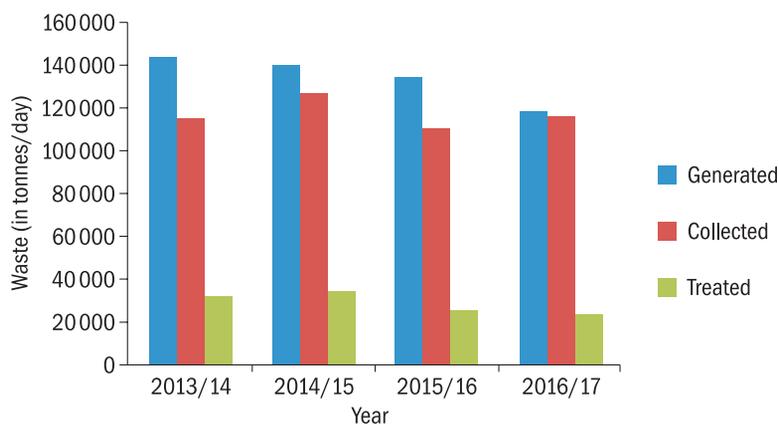


Figure 21 Solid waste management in India

Source CPCB (2015, 2016, 2017c, 2018)

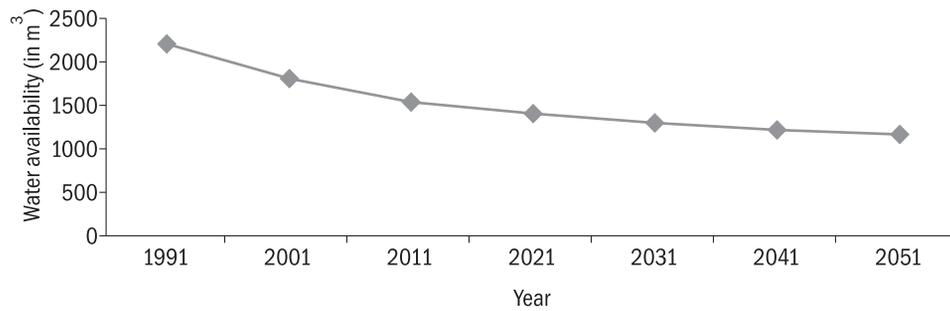


Figure 22 Per capita water availability

Note The calculation of per capita availability from 2021 onwards is based on 2017 Water Resource Assessment (WRA) tool estimates.

Source CWC (2017)

dry sub-humid areas (16.70 Mha) (SAC 2016) (Figure 23).

- There was 1.16% increase in the desertification of the dryland area during 2011–13 as compared to 2003–05.
- In India, there are 771 protected areas that spread over 16.20 Mha, constituting 4.93% of the country's total geographical area.
- India is home to 7.8% of the recorded species of the world.

Climate change

- The annual mean temperature in India in 2017 was +0.71°C above the 1971–2000 average. The

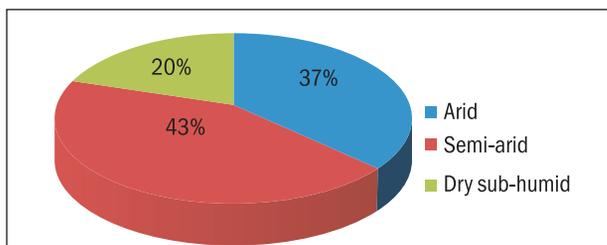


Figure 23 Classification of drylands in India in 2011/13

Source SAC (2016)

year 2017 was the fourth warmest year on record since 1901.

- As per the *Fifth Assessment Report* of the Intergovernmental Panel on Climate Change (IPCC), the current emission trajectories point towards a likely increase of 3.20–5.40°C in temperature above the pre-industrial levels by the year 2100.
- India's per capita GHG emissions stood at 1.56 tCO₂ in 2010 according to the 2015 Biennial Update Report (BUR).
- CO₂ emissions in India stood approximately in the range of 2088–2271 MtCO₂ in 2016 (Figure 24).

The following chapters provide the latest information and statistics on energy and environment in India. Energy supply is covered in chapters on coal and lignite, petroleum and natural gas, power, and renewable energy. Energy demand is described in chapters on agriculture, industry, transport, and household energy. The section on local and global environment discusses the state of environment in India. The publication also provides a review of government policies and analyses the latest policy discourse that has implications on the energy and environment sector of India.

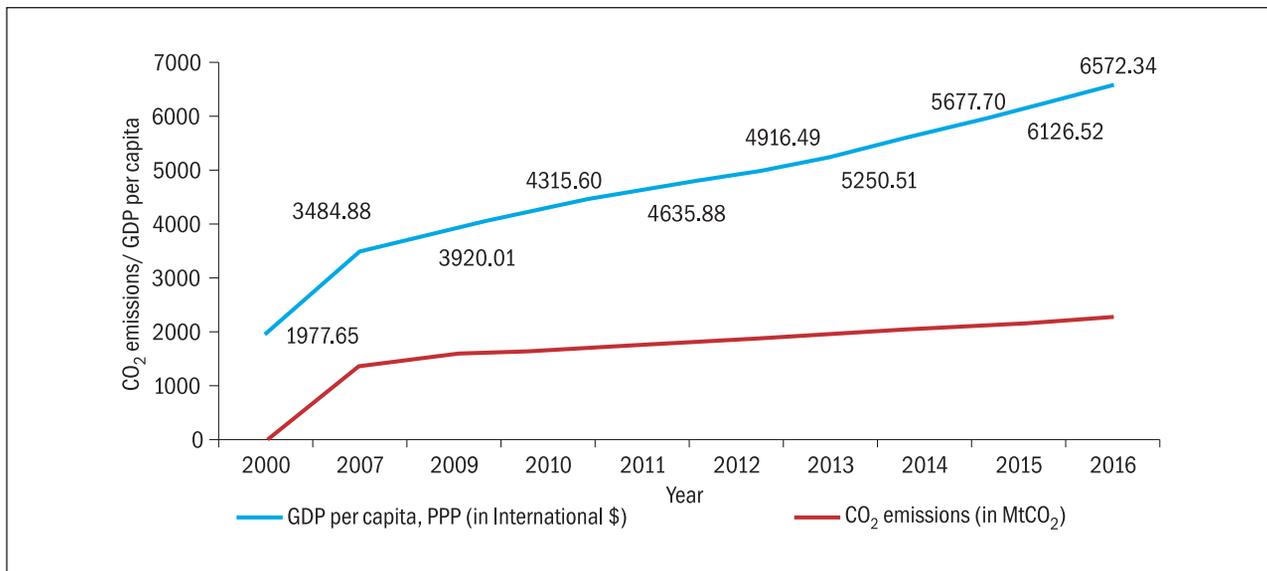


Figure 24 CO₂ emissions in India compared to GDP (PPP)

GDP - gross domestic product; PPP - purchase power parity

Sources World Bank (2017); BP (2017)

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ANNEXURE

Annexure I

The figure on page 17 shows the allocation of the net availability of fuels to different sectors of the economy for 2015/16. The energy flows are illustrated as bands. The width of the band is proportional to the size of the energy flow.

The electricity generation in 2015/16 was 230.10 MTOE, of which ~87% was contributed by coal, ~4% by natural gas, ~3% by renewables, and ~6% by nuclear and hydro. Energy loss from power generation is 63% of the total electricity generation. Of the remaining 37%, 42% is consumed by the industry sector and 32% is consumed by the residential and the commercial sector.

Of the available natural gas 23% is used in natural gas-fired power plants to generate electricity. The remaining 77% is used for consumption across various sectors and of which 71% is used for non-energy purposes (e.g. feedstock in fertilizer industry, sponge iron, and petrochemicals).

The total stock of coal and lignite was consumed equally by the industry and power sectors in 2016/17, with iron and steel and the cement being the major players in the industry sector.

As only a negligible fraction of the total available petroleum products is used for power generation, almost all of it is consumed across various sectors of the economy. The major consumer of petroleum products is the transport sector, which accounts for ~47% of the total consumption.

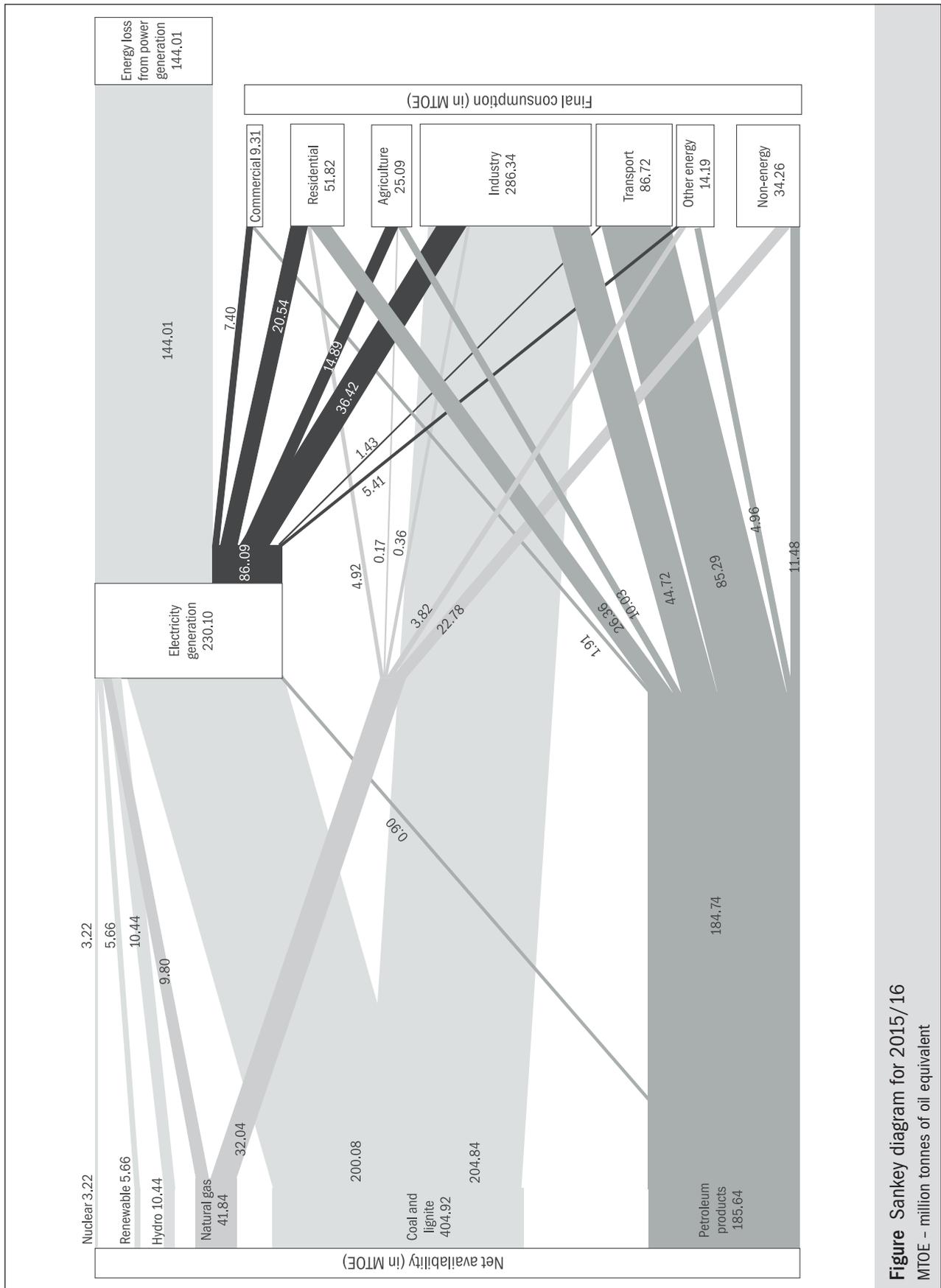


Figure Sankey diagram for 2015/16
MTOE – million tonnes of oil equivalent

TERI ENERGY & ENVIRONMENT DATA DIARY AND YEARBOOK **2017/18**

TERI Energy and Environment Data Diary and Yearbook (TEDDY) is an annual publication brought out by The Energy and Resources Institute (TERI) since 1986. It is the only comprehensive energy and environment yearbook in India that provides updated information on the energy supply sectors (coal and lignite, petroleum and natural gas, power, and renewable energy sources), energy demand sectors (agriculture, industry, transport, residential, and commercial), and environment (local and global). It also provides a review of the government policies that have implications on energy and environment in India.

TEDDY 2017/18 gives an account of India's commercial energy balances which provide comprehensive information on energy flows within different sectors of the economy and how they have been changing over time. These energy balances and conversion factors are a valuable reference for researchers, scholars, and organizations working on energy and related sectors. After the introductory chapter, *TEDDY* is divided into sections on energy supply, energy demand, and local and global environment. The overall structure of this year's *TEDDY* is different from the previous editions, with certain improvisations. One of the main highlights of *TEDDY 2017/18* is the addition of four new chapters under the environment section. Thirty-third edition of *TEDDY* has been restructured to make it less prose intensive.

Graphs, figures, maps, and tables have been used in all chapters to explain facts, which make the book an interesting read. The publication is accompanied by a complimentary CD containing full text. The publication is often cited in international peer-reviewed journals and policy documents.

