CHAPTER FIVE
LAND AND SOIL

5.1 Crop and Land Use

5.1.1 In India, on the basis of nine-fold land-use classification, the land use statistics is available for roughly 306 million hectares (mha) of land out of the 329 million hectares of the total geographic area which accounts for 93% of the total land. **The land use classification of India over the years is presented in table 5.1.1.**

5.1.2 The data shows that land use in the country over the last five decades has undergone drastic change. Land under agriculture has almost doubled, forest cover has dwindled to less than half, large tracts of fertile agriculture and forest land have been diverted for urbanization and settlements. Deforestation contributes to loss of precious top soil which amounts to about 35 percent of the global sediment load going to oceans even though water flowing through our rivers is only about five percent of the flow of rivers in the world.

5.1.3 The area under barren and uncultivable land is generally unsuitable for agriculture either because of topography or its inaccessibility. Instances are the desert areas in Rajasthan, the saline land in part of the Rann of Kutch in Gujarat, and the weed infected and ravine land in Madhya Pradesh. Recently, the area under non-agricultural land has increased due to increase in developmental activities; e.g. housing, transport system, irrigation, etc. About 24 mha are occupied by the housing, the industry and for other non-agricultural uses, 19.2 mha are snowbound and remote, leaving only 263 million hectare for agriculture, forestry, pasture and other biomass production. The net sown area increased from 119 mha in 1950-51 to 140 mha in 1970-71, mostly through reclamation of old fallow and cultivable wastelands and diversion of groves. Since 1970-71, the net area sown has remained almost the same at around 141 mha levels. However, there is an increase of 48.48% in the gross sown area, which indicates areas sown more than once have increased considerably. The net irrigated area showed a three fold increase. **Table 5.1.2 depicts the selected categories of land use classification. Table 5.1.3 depicts the uses of Agriculture inputs in production of seeds, consumption of fertilizers, etc.**

5.1.4 The crop yields have increased greatly in India over the past 20-25 years. Most of these increases have been due to the development of crop varieties which respond to fertilizers. The different types of cropping systems practised in traditional agriculture have given way to systems involving only a few crops which are highly nutrient depleting but high yielding. The legumes, grasses, and millets which were regular components of cropping systems in Indian agriculture have largely been phased out in highly productive areas due to poor economic returns and replaced by high yielding rice, wheat, sugarcane, etc. As a result, the water level is receding at an alarming rate. This has created the problems of soil erosion and the destruction and disturbances to wild life habitats. **Tables 5.1.4 and 5.1.5 at depicts the changing pattern of crop production in India.**

5.1.5 The pesticides and insecticides used in agriculture have a negative impact on the productivity conditions of the soil. **Tables 5.1.6 and Table 5.1.7 at shows the capacity and production of chemical industry for insecticides, fungicides, herbicides, weedicides, roddenticides and fumigents.**

5.1.6 The use of pesticides above permissible limits enters the food chain, causing health hazards. A major concern particularly about chlorinated hydrocarbons like DDT is their persistence in soil.

5.2 Soil Health

5.2.1 Traditionally Indian soils are divided into four major groups namely: (1) red, (2) black, (3) alluvial, and (4) laterite. Soild health is fundamental for agricultural sustainability. State of soil health is governed by number of physical, chemical and biological attributes/processes.

5.2.2 Soil and Land Use Survey of India (SLUSI) under Deptt. of Agriculture and Cooperation, Ministry of Agriculture has been engaged in conducting soil survey of the country since 1958 for National Land Based Developmental Programme. Soil survey aims at generating scientific database on soil and land resources for planning and implementation of soil and water conservation (through watershed programmes) for natural resource management.

5.2.3 Rapid Reconnaissance Survey (RRS) is to demarcate and identify priority watersheds in the catchment area on 1:50K scale based on either sediment yield index or runoff generation potential index. Detailed Soil Survey (DSS) is to generate information on soil and land characterization of the priority areas using cadastral map (1:4/1:8K) or large scale aerial photograph/satellite images (1:10k to 1:20k) for micro level developmental planning.

The details of this survey are given in Table 5.2.1(a), 5.2.1(b), 5.2.1(c), 5.2.2(a) and 5.2.2(b).

Table 5.1.1 : Land use classification in India

(Million Hectare)

Classification	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2001-02	2002-03	2003-04
1	2	3	4	5	6	7	8	9	10
I. Geographical Area	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**
II. Reporting Area for Land Utilisation Statistics (1 to 5)	**284.32**	**298.46**	**303.75**	**304.16**	**305.02**	**305.19**	**305.13**	**305.36**	**305.57**
1. Forests	40.48	54.05	63.83	67.46	67.70	69.84	69.72	69.82	69.97
2. Not Available for Cultivation (a+b)	**47.52**	**50.75**	**44.61**	**39.55**	**40.73**	**41.23**	**41.33**	**41.64**	**41.98**
(a) Non Agricultural Uses	9.36	14.84	16.48	19.60	21.22	23.75	23.91	24.12	24.52
(b) Barren and Unculturable Land	38.16	35.91	28.13	19.96	19.51	17.48	17.41	17.52	17.47
3. Other Uncultivated Land excluding fallow land (a+b+c)	**49.45**	**37.64**	**35.13**	**32.31**	**30.22**	**27.74**	**27.49**	**27.53**	**27.11**
(a) Permanent Pastures and Other Grazing Land	6.68	13.97	13.26	11.99	11.41	10.66	10.53	10.45	10.48
(b) Land Under Miscellaneous Tree Crops and Groves not Included in Net Area Sown	19.83	4.46	4.37	3.58	3.81	3.44	3.44	3.43	3.38
(c) Culturable Wasteland	22.94	19.21	17.50	16.74	15.00	13.63	13.52	13.65	13.24
4. Fallow Land (a+b)	**28.12**	**22.82**	**19.33**	**24.55**	**23.50**	**25.04**	**25.86**	**34.43**	**25.80**
(a) Fallow Lands Other Than Current Fallows	17.45	11.18	8.73	9.72	9.66	10.27	10.51	11.97	11.31
(b) Current Fallows	10.68	11.64	11.12	14.83	13.84	14.78	15.34	22.46	14.49
5. Net Area Sown (6-7)	118.75	133.20	140.86	140.29	142.87	141.34	140.73	131.94	140.71
6. Gross Cropped Area	131.89	152.77	165.79	172.63	185.74	185.34	188.01	173.89	189.66
7. Area Sown More Than Once	13.15	19.57	24.93	32.34	42.87	44.00	47.28	41.95	48.95
8. Cropping Intensity*	111.07	114.69	117.70	123.05	130.01	131.13	133.60	131.79	134.79
III. Net Irrigated Area	**20.85**	**24.66**	**31.10**	**38.72**	**48.02**	**55.20**	**56.94**	**53.90**	**57.10**
IV. Gross Irrigated Area	**22.56**	**27.98**	**38.20**	**49.78**	**63.20**	**76.19**	**78.37**	**73.10**	**78.00**

Source: Directorate of Economics & Statistics, Department of Agriculture & Cooperation, Ministry of Agriculture. Cont..

P : Provisional * : Cropping intensity is percentage of the gross cropped area to the net area sown.

2. In 2002-03 there is significant decline in Total Cropped Area and Net Area Sown due to decline in net area sown in the States of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, West Bengal and Haryana. This was mainly due to deficient rainfall.

3. In 2009-10 there is significant decline in Total Cropped Area and Net Area Sown due to decline in net area sown in the States of Andhra Pradesh, Bihar, Jharkhand, Rajasthan,Tamil Nadu, Uttar Pradesh and West Bengal. This was mainly due to deficient rainfall.

Table 5.1.1 : Land use classification in India

Classification	2004-05	2005-06	2006-07	2007-08	2008-09 (P)	2009-10 (P)	2010-11 (P)	2011-12 (P)	2012-13 (P)	2013-14 (P)
1	11	12	13	14	15	16	17	18	19	19
I. Geographical Area	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**	**328.73**
II. Reporting Area for Land Utilisation Statistics (1 to 5)	**305.59**	**305.45**	**305.63**	**305.67**	**307.41**	**307.41**	**307.48**	**307.39**	**307.491**	**307.80**
1. Forests	69.96	69.99	70.03	69.96	71.54	71.56	71.59	71.60	71.57	71.83
2. Not Available for Cultivation (a+b)	**42.23**	**42.32**	**42.73**	**42.90**	**43.06**	**43.33**	**43.58**	**43.53**	**43.58**	**43.86**
(a) Non Agricultural Uses	24.76	24.99	25.45	25.88	26.21	26.16	26.40	26.31	26.50	26.91
(b) Barren and Unculturable Land	17.47	17.33	17.29	17.02	16.85	17.18	17.18	17.22	17.07	16.95
3. Other Uncultivated Land excluding fallow land (a+b+c)	**27.09**	**27.06**	**27.04**	**26.81**	**26.42**	**26.50**	**26.16**	**26.12**	**26.08**	**25.83**
(a)Permanent Pastures and Other Grazing Land	10.45	10.44	10.42	10.36	10.34	10.34	10.31	10.31	10.26	10.26
(b) Land Under Miscellaneous Tree Crops and Groves not Included in Net Area Sown	3.36	3.39	3.35	3.40	3.34	3.21	3.20	3.16	3.18	3.19
(c) Culturable Wasteland	13.27	13.22	13.27	13.04	12.74	12.95	12.65	12.64	12.64	12.39
4. Fallow Land (a+b)	**25.67**	**24.91**	**26.03**	**24.98**	**24.48**	**26.85**	**24.60**	**25.18**	**26.32**	**24.85**
(a) Fallow Land Other Than Current Fallows	10.88	10.70	10.52	10.33	10.29	10.84	10.32	10.67	11.04	10.69
(b) Current Fallows	14.79	14.21	15.51	14.65	14.19	16.01	14.28	14.51	15.287	14.154
5. Net Area Sown (6-7)	140.64	141.16	139.82	141.02	141.90	139.17	141.56	140.98	139.94	141.43
6. Gross Cropped Area	191.10	192.74	192.38	195.22	195.33	189.00	197.56	195.69	194.14	200.86
7. Area Sown More Than Once	50.46	51.58	52.56	54.21	53.43	49.83	56.00	54.72	54.20	59.43
8. Cropping Intensity*	135.88	136.54	137.59	138.44	137.70	135.80	139.60	138.80	138.70	142.00
III. Net Irrigated Area	**59.20**	**60.80**	**62.70**	**63.19**	**63.64**	**61.94**	**63.66**	**65.70**	**66.27**	**68.10**
IV. Gross Irrigated Area	**81.10**	**84.30**	**86.80**	**88.10**	**88.90**	**85.09**	**88.93**	**91.78**	**92.246**	**95.772**

Concluded.

Source : Directorate of Economics & Statistics, Dept of Agricultre & Cooperation, Ministry of Agriculture.

P : Provisional (except geographical area)

* : Cropping Intensity is obtained by dividing the gross cropped area by the net area sown expressed in percentage.

& In 2009-10 there is significant decline in total cropped area and net area sown due to decline in net area sown in the states of Andhra pradesh, Bihar, Jharkhand, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal. This was mainly due to deficient rainfall

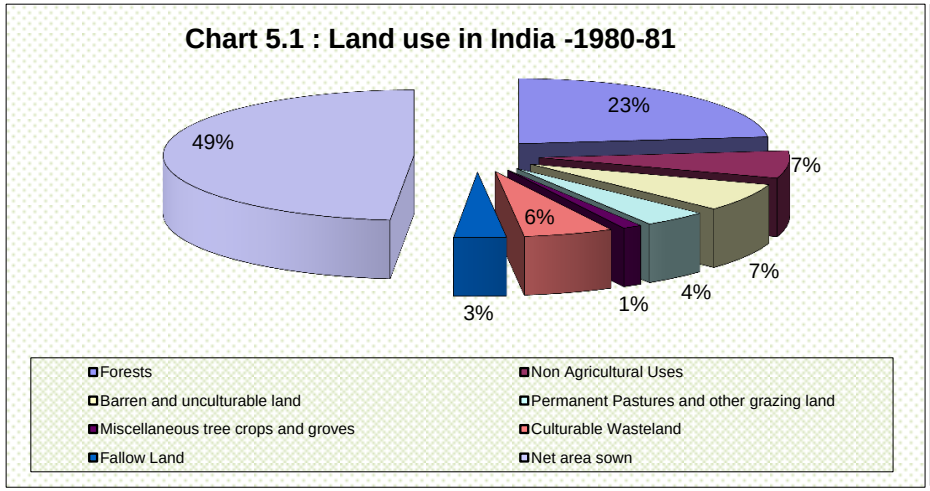
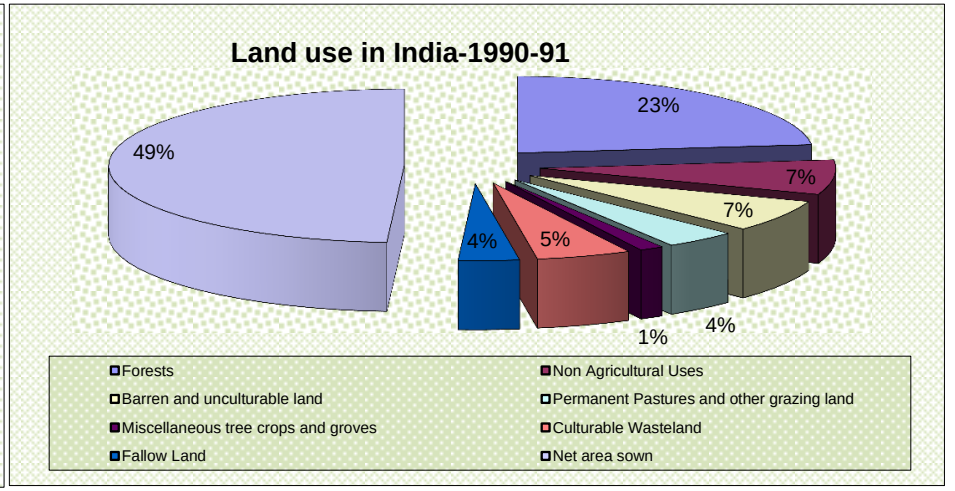
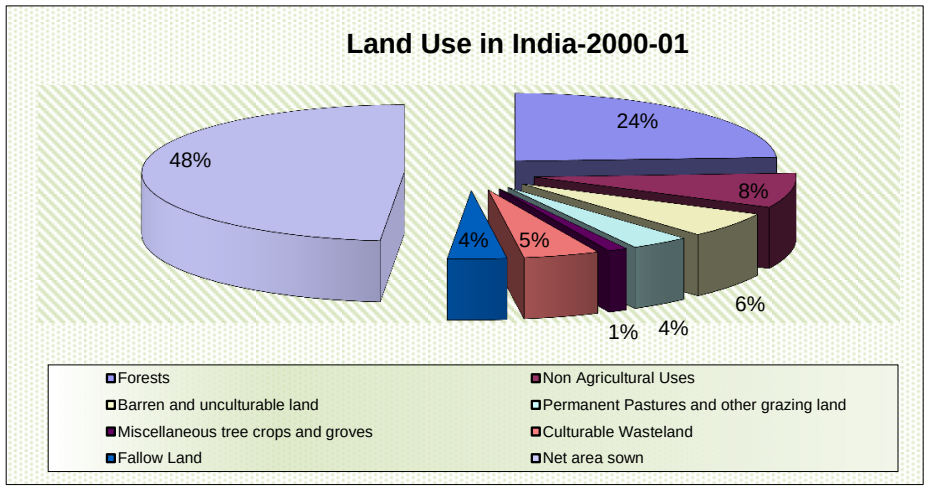


Chart 5.1 : Land use in India -1980-81
49%
23%
7%
6%
7%
3%
1%
4%
Forests
Non Agricultural Uses
Barren and unculturable land
Permanent Pastures and other grazing land
Miscellaneous tree crops and groves
Culturable Wasteland
Fallow Land
Net area sown


Land use in India-1990-91
49%
23%
7%
7%
4%
5%
1%
4%
Forests
Non Agricultural Uses
Barren and unculturable land
Permanent Pastures and other grazing land
Miscellaneous tree crops and groves
Culturable Wasteland
Fallow Land
Net area sown


Land Use in India-2000-01
48%
24%
8%
4%
5%
6%
1%
4%
Forests
Non Agricultural Uses
Barren and unculturable land
Permanent Pastures and other grazing land
Miscellaneous tree crops and groves
Culturable Wasteland
Fallow Land
Net area sown

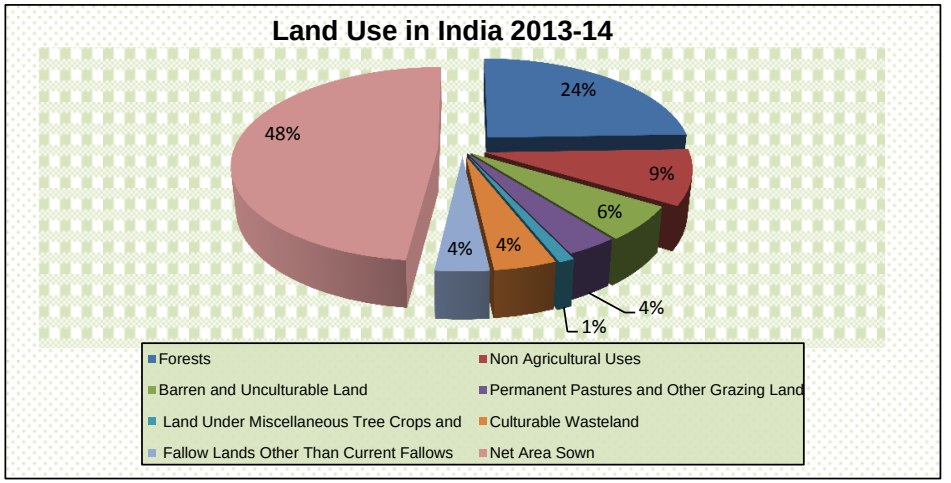

Land Use in India 2013-14
48%
24%
9%
6%
4%
4%
4%
1%
Forests
Non Agricultural Uses
Barren and Unculturable Land
Permanent Pastures and Other Grazing Land
Land Under Miscellaneous Tree Crops and
Culturable Wasteland
Fallow Lands Other Than Current Fallows
Net Area Sown

Table 5.1.2: Selected categories of land use in India						
						(Million Hectares)
Year	Net area sown	Total cropped area	Area sown more than once (3-2)	Net Irrigated Area	Gross Irrigated Area	Area Irrigated more than once (6-5)
1	2	3	4	5	6	7
1950-51	118.75	131.89	13.15	20.85	22.56	1.71
1951-52	119.40	133.23	13.83	21.05	23.18	2.13
1952-53	123.44	137.68	14.23	21.12	23.31	2.18
1953-54	126.81	142.48	15.67	21.87	24.36	2.49
1954-55	127.85	144.09	16.24	22.09	24.95	2.86
1955-56	129.16	147.31	18.16	22.76	25.64	2.88
1956-57	130.85	149.49	18.64	22.53	25.71	3.17
1957-58	129.08	145.83	16.75	23.16	26.63	3.47
1958-59	131.83	151.63	19.80	23.40	26.95	3.55
1959-60	132.94	152.82	19.89	24.04	27.45	3.42
1960-61	133.20	152.77	19.57	24.66	27.98	3.32
1961-62	135.40	156.21	20.81	24.88	28.46	3.58
1962-63	136.34	156.76	20.42	25.67	29.45	3.79
1963-64	136.48	156.96	20.48	25.89	29.71	3.82
1964-65	138.12	159.23	21.11	26.60	30.71	4.11
1965-66	136.20	155.28	19.08	26.34	30.90	4.56
1966-67	137.23	157.36	20.12	26.91	32.68	5.78
1967-68	139.88	163.74	23.86	27.19	33.21	6.01
1968-69	137.31	159.53	22.22	29.01	35.48	6.47
1969-70	138.70	162.27	23.57	30.20	36.97	6.78
1970-71	140.86	165.79	24.93	31.10	38.20	7.09
1971-72	139.72	165.19	25.47	31.55	38.43	6.88
1972-73	137.14	162.15	25.01	31.83	39.06	7.22
1973-74	142.42	169.87	27.46	32.55	40.28	7.74
1974-75	137.79	164.19	26.40	33.71	41.74	8.03
1975-76	141.65	171.30	29.64	34.59	43.36	8.77
1976-77	139.48	167.33	27.86	35.15	43.55	8.40
1977-78	141.95	172.23	30.28	36.55	46.08	9.53
1978-79	142.98	174.80	31.82	38.06	48.31	10.25
1979-80	138.90	169.59	30.69	38.52	49.21	10.69
1980-81	140.29	172.63	32.34	38.72	49.78	11.06
1981-82	142.12	176.75	34.63	40.50	51.41	10.91
1982-83	140.81	172.75	31.94	40.69	51.83	11.14
1983-84	143.21	179.56	36.35	41.95	53.82	11.88
1984-85	140.90	176.33	35.43	42.15	54.53	12.38
1985-86	140.90	178.46	37.56	41.87	54.28	12.42
1986-87	139.58	176.41	36.83	42.57	55.76	13.19
1987-88	134.09	170.74	36.65	42.89	56.04	13.14
1988-89	141.89	182.28	40.39	46.15	61.13	14.98
1989-90	142.34	182.27	39.93	46.70	61.85	15.15
1990-91	143.00	185.74	42.74	48.02	63.20	15.18

Cont..

Table 5.1.2: Selected categories of land use in India						
						(Million Hectares)
Year	Net area sown	Total cropped area	Area sown more than once (3-2)	Net Irrigated Area	Gross Irrigated Area	Area Irrigated more than once (6-5)
1	2	3	4	5	6	7
1991-92	141.63	182.24	40.61	49.87	65.68	15.81
1992-93	142.64	185.62	42.97	50.30	66.76	16.47
1993-94	142.42	186.60	44.18	51.34	68.25	16.91
1994-95	142.96	188.05	45.09	53.00	70.65	17.65
1995-96	142.20	187.47	45.27	53.40	71.35	17.95
1996-97	142.93	189.50	46.57	55.11	76.03	20.91
1997-98	141.95	189.99	48.04	55.21	75.67	20.46
1998-99	142.75	191.65	48.90	57.44	78.67	21.23
1999-00	141.06	188.40	47.33	57.53	79.22	21.69
2000-01	141.34	185.34	44.00	55.20	76.19	20.98
2001-02	140.73	188.01	47.28	56.94	78.37	21.44
2002-03	131.94	173.89	41.95	53.90	73.06	19.16
2003-04	140.71	189.66	48.95	57.06	78.04	20.98
2004-05	140.64	191.10	50.46	56.23	81.08	21.85
2005-06	141.16	192.74	51.58	60.84	84.28	23.44
2006-07	139.82	192.38	52.56	62.74	86.75	24.01
2007-08	141.02	195.22	54.21	63.19	88.06	24.87
2008-09(P)	141.90	195.33	53.43	63.64	88.90	25.26
2009-10(P)	139.17	189.00	49.83	61.94	85.08	23.15
2010-11(P)	141.56	197.56	56.00	63.66	88.93	25.27
2011-12(P)	140.97	195.63	54.72	65.70	91.78	26.88
2012-13 (P)	139.93	194.40	54.20	66.27	92.25	25.98
2013-14(P)	141.43	200.86	59.43	68.10	95.77	27.67

Concluded.

Source: Directorate of Economics & Statistics, Department of Agriculture & Cooperation,Ministry of Agriculture

(P): Provisional

Table 5.1.3 : Use of agricultural inputs

Sl. No.	Programme	Unit	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-2001	2001-02
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	**Seeds**												
	I. Production of Breeder Seeds	Thousand Quintals	34.90	36.00	37.00	40.11	43.36	46.03	46.13	38.99	51.13	42.69	45.54
	II. Production of Foundation Seeds	Lakh Quintals	3.75	3.93	4.06	4.73	4.76	5.76	6.84	6.75	4.66	5.91	5.44
	III. Distribution of Certified/Quality Seeds	Lakh Quintals	57.50	60.33	62.20	65.86	69.90	73.27	78.79	84.97	87.98	86.27	91.80
2.	**Consumption of Chemical Fertilizers (I+II+III)**												
	I. Nitrogenous(N)	Lakh Tonnes	80.46	84.26	87.88	95.07	98.23	103.02	109.02	113.54	115.92	109.20	113.10
	II. Phosphatic(P)	Lakh Tonnes	33.21	28.43	26.69	29.32	28.98	29.77	39.14	41.12	47.99	42.15	43.82
	III. Potassic(K)	Lakh Tonnes	13.61	8.84	9.09	11.25	11.56	10.29	13.72	13.32	16.78	15.67	16.67
	Total (N+P+K)	Lakh Tonnes	127.28	121.53	123.66	135.64	138.77	143.08	161.88	167.98	180.69	167.02	173.59
	Per Hectare**	Kg	69.84	65.48	66.27	72.13	74.02	75.47	84.94	87.02	94.94	89.63	91.13
3.	**Consumption of Pesticides(Technical Grade)**	Thousand Tonnes	72.13	70.79	63.65	61.36	61.26	56.11	52.24	49.16	46.20	43.58	47.02
4	**Area covered under Soil Conservation**	Lakh ha	-	-	-	-	-	-	-	-	-	4.36	4.70

Source : Agricultural Statistics at a Glance 2015

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2. Department of Agriculture & Cooperation, Ministry of Agriculture 3. States/UTs Zonal Conference, Kharif & Rabi

**Based on Gross Cropped Area upto 2012-13 and for 2013-14 and 2014-15,GCA is estimated in Zonal conference. #updated as on 14 May 2015

Table 5.1.3 : Use of agricultural inputs

Sl. No.	Programme	Unit	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
1	2	3	15	16	17	18	19	20	21	22	23	24	25	26	27
1.	**Seeds**														
	I. Production of Breeder Seeds	Thousand Quintals	48.42	61.82	66.46	68.64	73.83	91.96	94.41	102	118.85	123.38	110.2	82.29	86.21
	II. Production of Foundation Seeds	Lakh Quintals	6.14	6.50	6.90	7.40	7.96	8.22	9.69	10.5	17.53	21.86	16.17	17.43	15.76
	III. Distribution of Certified/Quality Seeds	Lakh Quintals	98.03	108.59	120.26	126.75	155.01	179.05	215.81	257.11	277.34	294.85	313.44	301.39	303.12
2.	**Consumption of Chemical Fertilizers**														
	I. Nitrogenous(N)	Lakh Tonnes	104.74	110.77	117.13	127.23	137.73	144.19	150.91	155.8	165.58	173.00	168.21	167.5	169.46
	II. Phosphatic(P)	Lakh Tonnes	40.19	41.24	46.24	52.04	55.43	55.15	65.06	72.74	80.5	79.14	66.53	56.33	60.98
	III. Potassic(K)	Lakh Tonnes	16.01	15.98	20.60	24.13	23.35	26.36	33.13	36.32	35.14	25.76	20.62	20.99	25.32
	Total (N+P+K)	Lakh Tonnes	160.94	167.99	183.97	203.40	216.51	225.70	249.10	264.86	281.22	277.90	255.36	244.82	255.76
	Per Hectare**	Kg	91.45	88.05	94.52	105.50	111.76	115.27	127.53	140.15	142.52	142.33	130.79	125.39	128.08
3.	**Consumption of Pesticides(Technical Grade)**	Thousand Tonnes	48.30	41.00	40.67	39.77	43.41	41.64	43.86	41.82	55.54	52.98	45.62	60.28	57.35*
4	**Area covered under Soil Conservation**	Lakh ha	4.30	5.55	7.37	8.67	11.41	7.34	6.90	5.32	7.49	4.72	5.46	5.46	

Source : Agricultural Statistics at a Glance 2015 Concluded

2. Department of Agriculture & Cooperation, Ministry of Agriculture 3. States/UTs Zonal Conference, Kharif & Rabi #updated as on 14 May 2015

**Based on Gross Cropped Area upto 2012-13 and for 2013-14 and 2014-15,GCA is estimated in Zonal conference.

Table 5.1.4 : Performance of crop production

(Million Tonnes)

Sl. No.	Crops	Year										
		2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15*
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Rice	83.13	91.79	93.35	96.69	99.18	89.09	95.98	105.30	105.24	106.65	104.80
2	Wheat	68.64	69.35	75.81	78.57	80.68	80.80	86.87	94.88	93.51	95.85	88.94
3	Coarse Cereals	33.47	34.07	33.92	40.76	40.03	33.55	43.40	42.01	40.04	43.29	41.75
4	**Total Cereals**	**185.24**	**195.21**	**203.08**	**216.02**	**219.89**	**203.44**	**226.25**	**242.19**	**238.79**	**245.79**	**235.49**
5	Total Pulses	13.13	13.39	14.23	14.76	14.57	14.66	18.24	17.09	18.34	19.25	17.20
6	**Total Foodgrain**	**198.37**	**208.60**	**217.31**	**230.78**	**234.46**	**218.10**	**244.49**	**259.28**	**257.13**	**265.04**	**252.69**
7	Sugarcane	237.08	281.17	355.52	348.19	285.03	292.30	342.38	361.04	341.20	352.14	359.33
8	Total Oilseeds	24.35	27.98	24.29	29.76	27.72	24.88	32.48	29.80	30.94	32.74	26.68
9	Cotton $	16.43	18.50	22.63	25.88	22.28	24.02	33.00	35.20	34.22	35.90	35.48
10	Jute & Mesta #	10.27	10.84	11.27	11.21	10.37	11.82	10.62	11.40	10.93	11.69	11.45

Source : Directorate of Economics & Statistics,Annual Report -2015-16, Ministry of Agriculture

: Production in million bales of 180 kg. each

* As per 4th Advance Estimates

$: Production in million bales of 170 kg. each

Table 5.1.5 :Area under crops - All India

(Thousand Hectares)

Year	FOODGRAINS													
	Rice	Jowar	Bajra	Maize	Ragi/ Marua	Wheat	Barley	Other Cereals & Millets	Total Cereals & Millets (col.2 to 9)	Gram	Tur or Arhar	Other pulses (Excl. Gram & Tur or Arhar)	Total Pulses (col.11 to 13)	Total Foodgrains (col.10+14)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1950-51	31056	15554	9744	3250	2254	10010	3198	5576	80642	7803	2228	10523	20554	101196
1951-52	30434	15960	10083	3435	2229	9624	3384	5396	80545	6963	2521	10824	20308	100853
1952-53	29991	18023	11489	3721	2315	9938	3346	5597	84420	7392	2499	10901	20792	105212
1953-54	31186	17876	12727	3877	2423	10745	3547	6057	88438	8097	2476	11426	21999	110437
1954-55	30660	17273	11436	3928	2407	11344	3401	5899	86348	9295	2474	11238	23007	109355
1955-56	31633	17447	10972	3811	2333	12704	3405	5412	87717	9844	2336	11428	23608	111325
1956-57	32365	16663	11301	3834	2292	13625	3518	5200	88798	9694	2333	11837	23864	112662
1957-58	32292	17298	11185	4146	2355	11758	3072	5033	87139	9087	2357	11185	22629	109768
1958-59	33195	17935	11405	4259	2454	12616	3314	5225	90403	10038	2466	11938	24442	114845
1959-60	33888	17715	10852	4348	2472	13384	3379	5200	91238	10348	2433	12338	25119	116357
1960-61	34056	18426	11470	4401	2478	12931	3140	4997	91899	9274	2429	11962	23665	115564
1961-62	34656	18220	11275	4501	2459	13565	3309	4908	92893	9562	2439	12387	24388	117281
1962-63	35734	18402	10961	4646	2426	13589	3021	5000	93779	9192	2447	12739	24378	118157
1963-64	35745	18370	11103	4586	2420	13519	2774	4855	93372	9353	2513	12458	24324	117696
1964-65	36359	18023	11916	4617	2410	13453	2675	4803	94256	8875	2560	12728	24163	118419
1965-66	35338	17623	11959	4794	2408	12539	2638	4807	92106	8004	2533	12244	22781	114887
1966-67	35060	18117	12787	5119	2419	12775	2859	4804	93940	7975	2621	11462	22058	115998
1967-68	36108	17900	12798	5612	2417	14926	3377	5099	98237	8012	2653	12352	23017	121254
1968-69	35864	17633	12447	5590	2411	15612	2828	5059	97444	6718	2610	12537	21865	119309
1969-70	37141	16985	12570	5717	2545	16782	2780	5185	99705	7631	2639	12739	23009	122714
1970-71	37381	16871	13391	5856	2474	18293	2556	4962	101784	7820	2639	12667	23126	124910
1971-72	37843	16489	11961	5588	2452	19095	2456	4428	100312	7944	2347	12243	22534	122846
1972-73	36894	16705	12287	5807	2385	18684	2453	4486	99701	6985	2455	12202	21642	121343
1973-74	38215	17059	14132	6011	2344	18641	2656	4658	103716	7726	2643	13298	23667	127383
1974-75	37804	16238	11468	5815	2428	17940	2889	4723	99305	7036	2566	12889	22491	121796
1975-76	39372	16062	11598	5912	2632	20339	2810	4994	103719	8303	2728	13788	24819	128538
1976-77	38477	15740	10806	5978	2502	20876	2244	4800	101423	7975	2578	13101	23654	125077
1977-78	40280	16100	11006	5712	2682	21277	2003	4747	103807	7928	2634	13356	23918	127725
1978-79	40511	16052	11400	5784	2682	22540	1837	4504	105310	7671	2679	13606	23956	129266
1979-80	39542	16618	10798	5754	2603	22098	1771	4067	103251	6952	2825	12570	22347	125598
1980-81	40237	16412	11658	6032	2504	22225	1799	4033	104900	6547	2877	13284	22708	127608
1981-82	40778	16817	11826	5916	2555	21992	1728	3905	105517	7839	2989	13352	24180	129697

Contd..

Table 5.1.5 :Area under crops - All India

(Thousand Hectares)

Year	FOODGRAINS													
	Rice	Jowar	Bajra	Maize	Ragi/ Marua	Wheat	Barley	Other Cereals & Millets	Total Cereals & Millets (col.2 to 9)	Gram	Tur or Arhar	Other pulses (Excl. Gram & Tur or Arhar)	Total Pulses (col.11 to 13)	Total Foodgrains (col.10+14)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1982-83	38424	16343	11155	5720	2345	23523	1493	3585	102588	7339	2909	12726	22974	125562
1983-84	41485	16608	11796	5837	2561	25545	1383	3681	108896	7041	3135	13351	23527	132423
1984-85	41167	16179	10659	5821	2379	23488	1247	3306	104246	6769	3156	12877	22802	127048
1985-86	41220	16338	10854	5797	2372	23179	1361	3198	104319	7746	3247	13444	24437	128756
1986-87	41154	16184	11497	5955	2394	23196	1224	3003	104607	7003	3186	13196	23385	127992
1987-88	38866	16116	9171	5645	2242	23213	1139	2929	99321	5794	3346	12415	21555	120876
1988-89	41756	14499	12156	5894	2275	24065	1087	2722	104454	6798	3514	12807	23119	127573
1989-90	42178	14602	11056	5946	2299	23461	1001	2574	103117	6446	3600	13363	23409	126526
1990-91	42744	14158	10735	5893	2145	24046	972	2372	103065	7471	3609	13803	24883	127948
1991-92	42661	12481	10268	5878	2109	23378	964	2102	99841	5591	3639	13449	22679	122520
1992-93	41860	13222	10854	6087	2039	24644	925	2015	101646	6434	3596	13539	23569	125215
1993-94	42687	12942	9738	6102	2017	25202	809	1917	101414	6326	3454	13631	23411	124825
1994-95	42894	11843	10333	6104	1897	25887	897	1811	101666	7500	3283	13500	24283	125949
1995-96	43016	11477	9558	6117	1929	25105	838	1786	99826	7121	3470	13046	23637	123463
1996-97	43529	11435	10297	6270	1864	25991	765	1634	101785	7040	3517	12760	23317	125102
1997-98	43581	10798	9940	6376	1757	26741	871	1653	101717	7456	3341	13201	23998	125715
1998-99	44898	9905	9527	6338	1862	27466	806	1563	102365	8535	3404	12576	24515	126880
1999-00	45456	9882	9103	6574	1736	27671	746	1432	102600	6295	3454	12369	22118	124718
2000-01	44761	9915	10022	6805	1816	25797	789	1449	101354	5318	3665	12343	21326	122680
2001-02	44677	9807	9744	6683	1732	26318	682	1321	100964	6424	3340	13494	23258	124222
2002-03	41209	9278	7936	6742	1512	25271	689	1221	93858	5898	3339	12160	21397	115255
2003-04	42293	9403	10961	7275	1779	26964	675	1164	100514	7084	3451	13923	24458	124972
2004-05	42637	9048	9432	7434	1669	26885	620	1097	98822	6688	3432	13768	23888	122710
2005-06	43920	8682	9745	7628	1648	26687	630	1000	99940	6790	3537	13345	23672	123612
2006-07	43535	8459	9577	7775	1329	28325	654	963	100617	7375	3342	12774	23491	124108
2007-08	43684	7827	9700	8101	1521	28575	660	924	100992	7743	3598	13527	24868	125860
2008-09(P)	45211	7543	8858	8128	1505	28022	717	889	100872	7920	3274	12570	23764	124636
2009-10(P)	42567	7809	9065	8166	1232	28548	622	902	98911	7998	3272	11301	22571	121482
2010-11	*42862*	*7382*	*9612*	*8553*	*1286*	*29069*	*705*	*800*	100270	*9186*	*4367*	*12849*	26402	126671
2011-12	44006	6245	8777	8782	1176	29865	643	799	100293	8299	4007	12156	24462	124755
2012-13	42754	6214	7297	8673	1131	29995	695	754	97514	8522	3893	10842	23257	120771
2013-14	44136	5793	7811	9066	1194	30473	674	682	99829	9927	3904	11386	25218	125047
2014-15	44111	6161	7318	9185	1208	31466	708	590	100746	8251	3854	11448	23553	124299

Source : Department of Agriculture and Cooperation, Directorate of Economic & Statistics, Ministry of Agriculture. Concluded

P : Provisional

Table 5.1.6 : Capacity and production in the chemical industry in India (in '000MT)
(Fungicides, Herbicides, Weedicdes,Rodenticides, Fumigents)

Sl. No.	Products	2013-14		2014-15		2015-16	
		Capacity	Production	Capacity	Production	Capacity	Production
1	2	3	4	5	6	7	8
I	**Fungicides**						
1	Captan & Captafol	4.73	1.12	3.85	2.38	3.45	2.12
2	Ziram (Thio Barbamate)	0.65	0.60	0.70	0.58	0.70	0.51
3	Carbendazim (Bavistin)	0.98	0.31	0.98	0.36	0.98	0.24
4	Mancozab	71.56	57.82	71.56	61.40	72.46	66.38
5	Hexaconazole	0.50	0.58	1.08	0.59	1.08	0.62
6	Metconazole	0.75	0.70	0.75	0.61	0.75	0.39
II	**Herbicides**						
1	2, 4-D	22.00	17.90	22.00	11.62	22.00	18.46
2	Butachlor	0.50	0.04	0.50	0.00	0.50	0.00
3	Ethofumesate Technical	1.25	1.01	1.65	0.62	1.56	0.50
4	Thiamethoxam Technical	3.00	3.31	3.10	1.66	3.10	1.92
5	Pendimethalin	2.00	1.71	2	2.26	3	2.82
6	Metribuzin	0.75	0.74	0.75	0.52	1.2	0.91
7	Triclopyr Acid Tech	0.30	0.20	0.30	0.19	0.30	0.30
III	**Weedicides**						
1	Isoproturon	6.25	2.35	6.25	2.43	6.25	1.95
2	Glyphoshate	9.26	8.48	9.26	9.69	9.26	6.96
3	Diuron	0.05	0.07	0.33	0.12	3.30	1.26
4	Atrazine	0.50	1.24	0.50	1.20	0.50	1.21
IV	**Rodenticides**						
1	Zinc Phosphide	1.32	0.65	1.32	1.29	1.32	1.50
2	Aluminium Phosphide	3.9	4.47	3.9	5.05	3.90	5.75
V	**Fumigants**						
1	Dicofol	0.15	0.07	0.09	0.11	0.15	0.09

Source : Chemical and Petrochemical Statistics at a Glance-2016
Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers

Note: Among fertilizers, the conversion of fertilizer-N to gaseous forms-ammonia (NH3) and various oxides of Nitrogen lead to atmospheric pollution. Escape of fertilizer-N as ammonia gas is called ammonia volatilization. The presence of ammonia and sulphur dioxide may lead to acid rains which ultimately degrade the soil. Atmospheric ammonia contaminates water bodies, impairs visibility and causes corrosion. Nitrous oxide also contributes to global warming.

Table 5.1.7 : Capacity and production in the chemical industry in India (Insecticides) (in '000MT)							
Sl. No.	Product	2013-14		2014-15		2015-16	
		Installed capacity	Production	Installed capacity	Production	Installed capacity	Production
1	2	3	4	5	6	7	8
1	D.D.T	6.34	2.79	6.34	3.63	6.34	2.09
2	Malathion	3.80	2.04	2.60	2.24	3.80	2.04
3	Dimethoate	1.45	1.36	1.45	1.43	1.45	1.44
4	D.D.V.P.	32.48	5.52	35.72	6.66	35.72	7.22
5	Quinalphos	2.80	1.74	2.80	1.88	2.80	0.84
6	Monocrotophos	12.24	4.27	13.18	6.97	13.94	5.48
7	Phosphamidon	2.00	0.05	2.00	0.13	2.00	0.13
8	Phorate	10.13	6.85	10.13	6.62	10.13	5.92
9	Ethion	2.50	1.51	2.50	1.60	2.20	1.72
10	Endosulphan	0.00	0.00	0.00	0.00	0.00	0.00
11	Fenvalerate	2.10	0.75	2.10	0.51	2.10	0.56
12	Cypermethrin	15.69	9.26	15.69	8.59	13.92	8.53
13	Acephate	19.25	14.51	19.25	17.97	19.67	16.58
14	Chlorpyriphos	14.30	9.54	16.46	9.73	16.85	6.87
15	Triazophos	3.90	0.99	3.90	1.00	3.90	1.72
16	Temephos	0.25	0.25	0.25	0.00	0.25	0.08
17	Deltamethrin	0.63	0.52	0.63	0.51	0.59	0.38
18	Alphamethrin	0.35	0.56	0.51	0.75	0.50	0.23
19	Profenofos Technical	14.60	7.18	14.90	7.58	12.90	6.85
20	Pretilachlor Technical	2.84	2.22	2.56	1.88	2.58	1.94
21	Lambda Cyhalothrin	0.60	0.55	0.60	0.47	0.60	0.42
22	Phenthoate	0.90	1.24	0.90	1.40	0.90	1.11
23	Permethrin Tech	1.80	1.39	1.80	1.70	1.97	1.30
24	Imidacaloprid Tech	0.83	0.94	0.98	0.56	1.13	0.20

Source : Chemical and Petrochemical Statistics at a Glance-2016
Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers

Table 5.2.1(a) :State wise coverge under rapid reconnaissance survey (upto March 2016) (Area in ha)						
Sl. No.	**State**	**RVP**	**FPR**	**Non-RVP/FPR**	**Consultancy**	**Total**
1	2	3	4	5	6	7
1	Andhra Pradesh (including Telangana)	7766404	1454522	8416150		17637076
2	Arunachal Pradesh		2838213	1952958		4791171
3	Assam	58888	1223412	1596387		2878687
4	Bihar		4417870	5079614		9497484
5	Chandigarh		10437			10437
6	Chhattisgarh	9605094	2168115	551530	5000	12329739
7	Dadra & Nagar Haveli	12810				12810
8	Daman & Diu			3806		3806
9	Delhi		106025			106025
10	Goa			764057		764057
11	Gujarat	588961	108870	9574453		10272284
12	Haryana		1812850			1812850
13	Himachal Pradesh	3216445	644667			3861112
14	Jammu & Kashmir	1091767				1091767
15	Jharkhand	3400122	2477744	1555096	540715	7973677
16	Karnataka	11106666		5092032	8000	16206698
17	Kerala	399152		2898570		3297722
18	Madhya Pradesh	15017791	6252043	6129370	2289713	29688917
19	Maharashtra	20138101	451358	6982969	1721440	29293868
20	Manipur		210714	755909		966623
21	Meghalaya		527221			527221
22	Mizoram		4735	1220508		1225243
23	Nagaland		844554	757817		1602371
24	Odisha	2758843	1508770	5717609		9985222
25	Puducherry	7868		38621		46489
26	Punjab	8175	1024279			1032454
27	Rajasthan	2161700	9146868	3209825		14518393
28	Sikkim	1119806				1119806
29	Tamil Nadu	1795980		11033996		12829976
30	Telangana			1151143		1151143
31	Tripura	58056		990453		1048509
32	Uttar Pradesh	1671842	6810010	5770018	288260	14540130
33	Uttarakhand	312821	3394513		8475	3715809
34	West Bengal	1085095	1510521	6311035		8906651
	G.Total	**83382387**	**48948311**	**87553926**	**4861603**	**224746227**

Source: Soil and Land Use Survey of India, Department of Agriculture & Cooperation, Ministry of Agriculture

RVP : River Valley Project

FPR : Flood Prone Rivers

Table 5.2.1 (b) :State wise coverage under detailed soil survey (area in ha) upto March 2016

Sl. No.	State/UT	RVP	FPR	Non-RVP/FPR	Consultancy	Refuge Rehabilitation	Coal Mine Rehabilitation	Rainfed Area	Total
1	2	3	4	5	6	7	8	9	10
1	Andaman & Nicobar Islands					4400			4400
2	Andhra Pradesh(Including Telangana)	759772		354564		10115		3637	1128088
3	Arunachal Pradesh	0		24990		10591			35581
4	Assam	24241				7834			32075
5	Bihar	0	111422	41		7623			119086
6	Chandigarh	0		318					318
7	Chhattisgarh	1103886	21574			18750	8506		1152716
8	Dadra & Nagar Haveli	9933		10471					20404
9	Delhi	0		21613					21613
10	Goa	0		164302	5				164307
11	Gujarat	242495		45250					287745
12	Haryana	0	22352						22352
13	Himachal Pradesh	420480	64550	490					485520
14	Jammu & Kashmir	16007				456			16463
15	Jharkhand	791460	327804	96589		595	2922		1219370
16	Karnataka	1862654		82843	289	2031		29761	1977578
17	Kerala	88078		15277					103355
18	Madhya Pradesh	1895916	290479	68687		9979	13179	233382	2511622
19	Maharashtra	1724386		33351			13535	48770	1820042
20	Mizoram	0		166					166
21	Odisha	1129263		112109		21006		34421	1296799
22	Punjab	1350		2490					3840
23	Rajasthan	389011	384331	27155				35888	836385
24	Sikkim	110046							110046
25	Tamil Nadu	118856		23232					142088
26	Tripura	3970						47194	51164
27	Uttar Pradesh	45481	333843	27299		6199		17663	430485
28	Uttarakhand	30210	30957	4391	15006			55420	135984
29	West Bengal	433537	279430	4905		9842	1430		729144
Total		**11201032**	**1866742**	**1120533**	**15300**	**109421**	**39572**	**506136**	**14858736**

Source: Soil and Land Use Survey of India, Ministry of Agriculture

RVP : Rivers valley Project , FPR Flood Prone Rivers * Including Telangana

Table 5.2.1(c) :State wise coverage under RRS,DSS,LDM and SRM
(up to March 2016)

(Area in ha)

Sl. No.	State	RRS	DSS	LDM	SRM
1	Andaman & Nicobar Islands		4400		
2	Andhra Pradesh*	17637076	1128088	4561637	13134585
3	Arunachal Pradesh	4791171	35581		
4	Assam	2878687	32075		6455036
5	Bihar	9497484	119086	1864743	9520386
6	Chandigarh	10437	318		11400
7	Chhattisgarh	12329739	1152716		
8	Dadra & Nagar Haveli	12810	20404		
9	Daman & Diu	3806			10428
10	Delhi	106025	21613		148300
11	Goa	764057	164307	370200	370200
12	Gujarat	10272284	287745	2668091	19789416
13	Haryana	1812850	22352		1350000
14	Himachal Pradesh	3861112	485520	1238104	3524112
15	Jammu & Kashmir	1091767	16463		532500
16	Jharkhand	7973677	1219370	1940807	1201890
17	Karnataka	16206698	1977578	5099718	1787548
18	Kerala	3297722	103355	448000	3195483
19	Lakshadweep U/T				
20	Madhya Pradesh	29688917	2511622	6194392	30964012
21	Maharashtra	29293868	1820042	3093380	
22	Manipur	966623		109700	196236
23	Meghalaya	527221		1198600	2242100
24	Mizoram	1225243	166	2108700	592081
25	Nagaland	1602371		1657900	1657900
26	Odisha	9985222	1296799		
27	Puducherry	46489			
28	Punjab	1032454	3840		
29	Rajasthan	14518393	836385	3653666	
30	Sikkim	1119806	110046	709600	709600
31	Tamil Nadu	12829976	142088	3675734	
32	Telangana	1151143			11502360
33	Tripura	1048509	51164	1048600	1049100
34	Uttar Pradesh	14540130	430485	2305640	8871685
35	Uttarakhand	3715809	135984		5362971
36	West Bengal	8906651	729144	1969361	8787992
	G.Total	**224746227**	**14858736**	**45916573**	**132967321**

Source: Soil and Land Use Survey of India, Department of Agriculture & Coopration., Ministry of Agriculture

RRS: Rapid Reconnaissance Survey
DSS: Detailed Soil Survey
LDM : Land Degradation Mapping
SRM : Soil Resource Mapping
* Including Telangana

Table 5.2.2(a) :State wise coverage under soil resource mapping

(Upto March 2016)

State/ UTs	Sl.No.	District	Total Area (ha)
Andhra Pradesh			
	1	Anantpur	1915053
	2	Chittor	1516219
	3	Cuddapah	1540411
	4	East Godavari	1089595
	5	Krishna	874499
	6	Nellore	1307600
	7	Prakasham	1762600
	8	Srikakulam	583700
	9	Vijaianagaram	653900
	10	Visakhapatnam	1116100
	11	West Godavari	774908
Total			**13134585**
Assam			
	1	Barpeta	324500
	2	Bongaigaon	251000
	3	Cachar	378600
	4	Chirang	192300
	5	Darrang	348100
	6	Dhemaji	323700
	7	Dhubri	217600
	8	Dibrugarh	338100
	9	Goalpara	182400
	10	Golaghat	350200
	11	Hailakandi	132610
	12	Jorhat	285100
	13	Kamrup	434500
	14	Karimgunj	180900
	15	Kokrajhar	316544
	16	Lakhimpur	227700
	17	Morigaon	170400
	18	Nalbari	225750
	19	Naogaon	399300
	20	Sibsagar	263782
	21	Sonitpur	532400
	22	Tinsukia	379550
Total			**6455036**
Chandigarh			
	1	Chandigarh	11400
Total			**11400**

State/ UTs	Sl.No.	District	Total Area (ha)
Bihar			
	1	Araria	283000
	2	Aurangabad	330500
	3	Banka	305621
	4	Begusarai	191800
	5	Bhabhua	338100
	6	Bhagalpur	255822
	7	Bhojpur	347400
	8	Buxar	162400
	9	Darbhanga	227900
	10	East Champaran	396800
	11	Gaya	497600
	12	Gopalganj	203913
	13	Jamui	310700
	14	Jehanabad	156900
	15	Katihar	305700
	16	Khagaria	148600
	17	Kishanganj	188400
	18	Lakhi Sarai	135600
	19	Madhepura	178800
	20	Madhubani	350100
	21	Munger	134700
	22	Muzaffarpur	317200
	23	Nalanda	236700
	24	Nawada	249400
	25	Patna	320200
	26	Purnea	322900
	27	Rohtas(Sasaram)	383200
	28	Saharsa	168000
	29	Samastipur	290400
	30	Saran	264100
	31	Seohar	57200
	32	Sheikhpura	61200
	33	Sitamarhi	207100
	34	Siwan	221900
	35	Supaul	243200
	36	Vaishali(Hajipur)	203600
	37	West Champaran	523730
Total			**9520386**
Daman &Diu			
	1	Daman	6826
	2	Diu	3602
Total			**10428**

Contd..

State/ UTs	Sl.No.	District	Total Area (ha)	State/ UTs	Sl.No.	District	Total Area (ha)
Delhi				**Gujarat**			
	1	Central Delhi	2500		1	Ahmedabad	808681
	2	East Delhi	6400		2	Amreli	738117
	3	New Delhi	3500		3	Ananad	307588
	4	North Delhi	5900		4	Banaskantha	1030015
	5	North East Delhi	6000		5	Bhrauch	625824
	6	North West Delhi	44000		6	Bhavnagar	1115500
	7	South Delhi	25000		7	Dahod(split from Panchmahal)	440500
	8	South West Delhi	42100		8	Dangs	176200
	9	West Delhi	12900		9	Gandhinagar (formed from parts of Ahmedabad & Mehsana)	64900
Total			**148300**		10	Jamnagar	1366325
					11	Junagarh	884600
Goa					12	Kheda	382931
	1	North Goa	173600		13	Kuchchh	4565200
	2	South Goa	196600		14	Mehsana	854000
Total			**370200**		15	Narmada(created from Bharuch and Vadodara)	270583
					16	Navsari(split from Valsad)	221500
Haryana					17	Panchmahals	508300
	1	Fatehabad	253800		18	Patan(fromed from parts of Banaskantha & Mehsana)	553724
	2	Hissar	398300		19	Porbander(split from Junagarh)	232600
	3	Jhhajjar	270200		20	Rajkot	1080186
	4	Sirsa	427700		21	Sabar kantha	739000
Total			**1350000**		22	Surat	740994
					23	Surendranagar	999848
Himachal Pradesh					25	Vadodara	779400
	1	Bilaspur	116700		26	Valsad(split from Surat)	302900
	2	Chamba	692419	**Total**			**19789416**
	3	Hamirpur	109503				
	4	Kangra	564164	**Jammu & Kashmir**			
	5	Kullu	538346		1	Jammu	309700
	6	Mandi	386529		2	Srinagar	222800
	7	Shimla	501571	**Total**			**532500**
	8	Sirmaur	275893				
	9	Solan	188048	**Jharkhand**			
	10	Una	150939		1	Palamau	1201890
Total			**3524112**	**Total**			**1201890**

Contd..

State/ UTs	Sl. No.	District	Total Area (ha)	State/ UTs	Sl.No.	District	Total Area (ha)
Karnataka					29	Raisen	846600
	1	Chikmaglur	723391		30	Rajgarh	615300
	2	Tumkur	1064157		31	Ratlam	486100
	Total		**1787548**		32	Rewa	631400
					33	Sagar	1025200
Kerala					34	Satna	750200
	1	Ernakulam	307331		35	Sehore	657800
	2	Idukki	501900		36	Seoni	875800
	3	Kannur	296626		37	Shahdol	995200
	4	Kasargad	196133		38	Shajapur	619500
	5	Kollam	256000		39	Sheopur	660600
	6	Kottayam	220102		40	Shivpuri	1027700
	7	Kozhikode	234400		41	Sidhi	1039140
	8	Palakkad	447652		42	Tikamgarh	504800
	9	Thiruvananthapuram	219200		43	Ujjain	609100
	10	Thrissur	303200		44	Umaria	446642
	11	Wayanad	212939		45	Vidisha	737100
	Total		**3195483**	**Total**			**30964012**
Madhya Pradesh				**Manipur**			
	1	Balaghat	922900		1	East Imphal	109700
	2	Barwani	542200		2	West Imphal	86536
	3	Betul	1004300	**Total**			**196236**
	4	Bhind	445900				
	5	Bhopal	277200	**Meghalaya**			
	6	Chhatarpur	868700		1	East Garo Hills	260300
	7	Chhindwara	1181500		2	East Khasi Hills	282000
	8	Damoh	730600		3	Jayantia Hills	381900
	9	Datia	269100		4	Ri Bhoi	237600
	10	Dewas	702000		5	South Garo Hills	184900
	11	Dhar	815300		6	West Garo Hills	370700
	12	Dindori	747000		7	West Khasi Hills	524700
	13	Guna	1106400	**Total**			**2242100**
	14	Gwaliar	456000				
	15	Harda	333000	**Mizoram**			
	16	Hoshangabad	670700		1	Kolasib	138251
	17	Indore	389800		2	Lunglei	453830
	18	Jabalpur	521100	**Total**			**592081**
	19	Jhabua	677800				
	20	Kanti	495000	**Nagaland**			
	21	Mandla	693930		1	Dimapur	75800
	22	Mandsaur	553500		2	Kohima	328300
	23	Morena	498900		3	Mokokchung	161500
	24	Narshimhapur	513300		4	Mon	178600
	25	Neemuch	425600		5	Phek	202600
	26	Nimar East(Khandwa)	1077600		6	Tuensang	422800
	27	Nimar Wast(Khargaon)	803000		7	Wokha	162800
	28	Panna	713500		8	Zunheboto	125500
				Total			**1657900**

Contd..

State/ UTs	Sl. No.	District	Total Area (ha)
Sikkim			
	1	East Sikkim	95400
	2	North Sikkim	422600
	3	South Sikkim	75000
	4	West Sikkim	116600
Total			**709600**
Telangana			
	1	Adilabad	1647398
	2	Hyderabad	
	3	Karimnagar	1182300
	4	Khammam	1602900
	5	Mahbob Nagar	1839406
	6	Medak(Sangareddi)	970000
	7	Nalgonda	1425590
	8	Nizamabad	795600
	9	Ranga Reddy	754466
	10	Warangal	1284700
Total			**11502360**
Tripura			
	1	Dhalai	240200
	2	North Tripura	203900
	3	South Tripura	305700
	4	West Tripura	299300
Total			**1049100**
Uttar Pradesh			
	1	Agra	402700
	2	Ambedkar Nagar	233700
	3	Azamgarh	423400
	4	Baghpat	132100
	5	Barabanki	440200
	6	Bareilly	412000
	7	Basti	268800
	8	Bijnor	456100
	9	Fatehpur	415200
	10	Gautam Budha Naga	144200
	11	Ghaziabad	259000
	12	Gazipur	337700
	13	Gonda	400300
	14	Jaunpur	403800
	15	Jyotiba Phule Nagar	388351
	16	Kanpur Dehat	306514
	17	Kanpur Nagar	288439
	18	Kaushambi	212400
	19	Kushinagar	290600
	20	Lakhimpur Kheri	768000
	21	Lalitpur	504181
	22	Maharajganj	295200
	23	Meerut	259000
	24	Rai Bareilly	460900
	25	Saharanpur	368900
Total			**8871685**
Uttarakhand			
	1	Almora	313900
	2	Bageshwar	224600
	3	Chamoli	803000
	4	Champawat	176600
	5	Dehradun	308929
	6	Hardwar	236000
	7	Nainital	424100
	8	Pauri Garhwal	532900
	9	Pithoragarh	709000
	10	Rudraprayag	198400
	11	Tehri Garhwal	379742
	12	Udham Singh Nagar	254200
	13	Uttarkashi	801600
Total			**5362971**
West Bengal			
	1	Bankura	688200
	2	Barddhaman	702400
	3	Birbhum	454500
	4	Coochbehar	338700
	5	Darjeeling	314900
	6	East Medinipur	406142
	7	Hoogli	314900
	8	Howrah	146700
	9	Jalpaiguri	622700
	10	Malda	373300
	11	Murshidabad	531611
	12	Nadia	392700
	13	North 24 Parganas	409400
	14	North Dinajpur	318166
	15	Purulia	625900
	16	South 24 Parganas	996273
	17	South Dinajpur	221900
	18	West Midnapur	929600
Total			**8787992**
Total Districts	**291**	**Total Area**	**132967321**

Source: Soil and Land use survey of India, Ministry of Agriculture. Concluded

Table 5.2.2(b) : State wise information on rapid reconnaissance survey (up to March 2016)

(Area in lakh hectares)

Sr. No	State/UT	Surveyed Area	Priority Area		Total Priority Area	% Priority
			Very high	High		
1	Andhra Pradesh(including Telangana)	176.371	7.945	18.670	26.615	15.09
2	Arunachal Pradesh	47.912	17.619	10.004	27.624	57.66
3	Assam	28.787	1.526	2.048	3.574	12.42
4	Bihar	94.975	4.861	10.188	15.049	15.85
5	Chandigarh	0.104	0.041	0.000	0.041	39.16
6	Chhattisgarh	123.297	9.265	10.825	20.090	16.29
7	Dadara & Nagar Haveli	0.128	0.036	0.029	0.065	50.59
8	Daman -Diu	0.038	0.000	0.000	0.000	0.00
9	Delhi	1.060	0.087	0.079	0.166	15.66
10	Goa	7.641	0.210	0.747	0.957	12.52
11	Gujarat	102.723	5.942	7.806	13.748	13.38
12	Haryana	18.129	1.583	1.489	3.072	16.95
13	Himachal Pradesh	38.611	13.541	7.782	21.323	55.22
14	Jammu & Kashmir	10.918	4.961	1.090	6.051	55.42
15	Jharkhand	79.737	13.132	19.303	32.435	40.68
16	Karnataka	162.067	13.627	21.985	35.611	21.97
17	Kerala	32.977	2.158	8.685	10.843	32.88
18	Madhya Pradesh	296.889	37.985	48.364	86.349	29.08
19	Maharashtra	292.939	28.244	50.814	79.058	26.99
20	Manipur	9.666	3.310	2.811	6.122	63.33
21	Meghalaya	5.272	2.665	1.808	4.473	84.83
22	Mizoram	12.252	8.002	1.162	9.164	74.79
23	Nagaland	16.024	9.975	2.287	12.262	76.52
24	Odisha	99.852	14.501	17.617	32.118	32.17
25	Pondicherry	0.465	0.016	0.017	0.033	7.03
26	Punjab	10.325	0.169	0.353	0.522	5.06
27	Rajasthan	145.184	15.181	18.756	33.937	23.38
28	Sikkim	11.198	3.872	0.693	4.565	40.77
29	Tamil Nadu	128.300	6.708	12.526	19.234	14.99
30	Telangana	11.511	0.772	0.676	1.448	12.58
31	Tripura	10.485	0.366	2.081	2.447	23.34
32	Uttar Pradesh	145.401	10.989	13.707	24.695	16.98
33	Uttarakhand	37.158	7.372	9.952	17.324	46.62
34	West Bengal	89.067	2.692	5.985	8.677	9.74
	Total	**2247.462**	**249.352**	**310.340**	**559.692**	**24.90**

Source : Soil & Land Use Survey of India, Ministry of Agriculture

5.3 Land Degradation & Soil Erosion

5.3.1 Land is degraded when it suffers a loss of intrinsic qualities, decline in its capabilities or loss in its productive capacity. Land degradation may be due to natural or human causes or it may be due to combination of both. The State wise information of wetland and degraded land of the Districts is in table 5.3.1. and 5.3.2.

5.3.2 Land degradation is a global problem, largely related to agricultural use. The major causes include:

- Land clearance, such as deforestation
- Agricultural depletion of soil nutrients through poor farming practices
- Livestock including overgrazing
- Inappropriate Irrigation
- Urban sprawl and commercial development
- Land pollution including industrial waste
- Vehicle off-roading
- Quarrying of stone, sand, ore and minerals

5.3.3 Alkali, or alkaline, soils are clay soils with high pH (> 9), a poor soil structure and a low infiltration capacity. Often they have a hard calcareous layer at 0.5 to 1 meter depth. Alkali soils owe their unfavourable physico-chemical properties mainly to the dominating presence of sodium carbonate which causes the soil to *swell.* Alkaline soils are difficult to take into agricultural production.

5.3.4 Soil is the non-renewable natural resource which supports life on earth. It is estimated that one-sixth of the world's soils have already been degraded by water and wind erosion. This has two important consequences: the reduced ability of society to produce sufficient food due to loss of quality and depth of soils; and resulted in off-site pollution associated with erosion. These include siltation of dams, pollution of water-courses by agricultural chemicals and damage to property by soil-laden runoff. On-site issues of declining soil quality tend to be spatially dispersed occurring on many different soil types whereas off-site pollution issues tend to be locally concentrated.

5.3.5 Soil erosion by rain and river that takes place in hilly areas causes landslides and floods, while cutting trees for firewood, agricultural implements and timber, grazing by a large number of livestock, over and above, the carrying capacity of grass lands, traditional agricultural practices, construction of roads, indiscriminate (limestone) quarrying and other activities, have all led to the opening of hill-faces to heavy soil erosion. Wind erosion causes expansion of deserts, dust, storms, whirlwinds and destruction of crops, while moving sand covers the land and makes it sterile. Excessive soil erosion with consequent high rate of sedimentation in the reservoirs and decreased fertility has become serious environmental problems with disastrous economic consequences.

5.3.6 Soil erosion results in huge loss of nutrients in suspension or solution, which are removed away from one place to another, thus causing depletion or enrichment of nutrients. Besides the loss of nutrients from the topsoil, there is also degradation through the creation of gullies and ravines, which makes the land unsuitable for agricultural production. Subsidence of the land in some areas and landslides in the hilly tracts are problems affecting highways, habitations and irrigation dams.

Table 5.3.1: State Category wise total area under wastelands (sq.km) during 2008-09 vis-a-vis 2005-06 and change in Wasteland during the period.

State	No of Districts	Total Geographic Area (TGA)	Total Waste Land(WL)		Change	Total Reduction	Total Increase	% of WL to TGA		% Change over 2005-06
			2005-06	2008-09				2005-06	2008-09	
1	2	3	4	5	6	7	8	9	10	11
Andhra Pradesh	23	275068	38788.22	37296.62	-1491.60	1682.10	190.46	14.10	13.56	-0.54
Arunachal Pradesh	16	83743	5743.83	14895.24	9151.41	108.48	9259.89	6.86	17.79	10.93
Assam	23	78438	8778.02	8453.86	-324.16	862.56	538.04	11.19	10.78	-0.41
Bihar	37	94171	6841.09	9601.01	2759.92	1895.09	4654.41	7.26	10.20	2.93
Chattisgarh	16	135194	11817.82	11482.18	-335.64	379.06	43.15	8.74	8.49	-0.25
Delhi	1	1483	83.34	90.21	6.87	3.62	10.27	5.62	6.08	0.46
Goa	2	3702	496.27	489.08	-7.19	11.48	3.99	13.41	13.21	-0.19
Gujarat	25	196024	21350.38	20108.06	-1242.32	2858.99	1616.67	10.89	10.26	-0.63
Haryana	21	44212	2347.05	2145.98	-201.07	232.20	31.92	5.31	4.85	-0.45
Himachal Pradesh	12	55673	22470.05	22347.88	-122.17	197.25	75.57	40.36	40.14	-0.22
Jammu & Kashmir	14	101387	73754.38	75435.77	1681.39	1191.48	2872.78	72.75	74.40	1.66
Jharkhand	24	79706	11670.14	11017.38	-652.76	1183.50	531.16	14.64	13.82	-0.82
Karnataka	27	191791	14438.12	13030.62	-1407.50	1477.98	70.82	7.53	6.79	-0.73
Kerala	14	38863	2458.69	2445.62	-13.07	247.55	234.44	6.33	6.29	-0.03
Madhya Pradesh	48	308252	40042.98	40113.27	70.29	258.95	329.25	12.99	13.01	0.02
Maharashtra	35	307690	38262.81	37830.82	-431.99	469.93	38.22	12.44	12.30	-0.14
Manipur	9	22327	7027.47	5648.53	-1378.94	2391.10	1012.14	31.48	25.30	-6.18
Meghalaya	7	22429	3865.76	4127.43	261.67	93.86	355.13	17.24	18.40	1.17
Mizoram	8	21081	6021.14	4958.64	-1062.50	2669.27	1606.71	28.56	23.52	-5.04
Nagaland	7	16579	4815.18	5266.72	451.54	721.75	1172.60	29.04	31.77	2.72
Odisha	30	155707	16648.27	16425.76	-222.51	271.75	48.69	10.69	10.55	-0.14
Punjab	20	50362	1019.50	936.83	-82.67	112.70	30.56	2.02	1.86	-0.16
Rajasthan	32	342239	93689.47	84929.10	-8760.37	10264.60	1503.37	27.38	24.82	-2.56
Sikkim	4	7096	3280.88	3273.15	-7.73	11.83	4.29	46.24	46.13	-0.11
Tamil Nadu	30	130058	9125.56	8721.79	-403.77	426.78	22.74	7.02	6.71	-0.31
Tripura	4	10486	1315.17	964.64	-350.53	486.15	135.07	12.54	9.20	-3.34
Uttarakhand	13	53483	12790.06	12859.53	69.47	440.35	509.86	23.91	24.04	0.13
Uttar Pradesh	70	240928	10988.59	9881.24	-1107.35	1269.71	163.08	4.56	4.10	-0.46
West Bengal	19	88752	1994.41	1929.20	-65.21	92.98	28.46	2.25	2.17	-0.07
Union Territory	8	9490	337.30	315.00	-22.30	27.33	4.68	3.55	3.32	-0.23
Total	**599**	**3166414**	**472261.95**	**467021.16**	**-5240.79**	**32340.38**	**27098.42**	**14.91**	**14.75**	**-0.17**

Source: Wastelands Atlas of India 2011, Department of Land Resource, Ministry of Rural Development.

Table 5.3.2 : State wise information on degraded land in the districts

Upto March 2016 (hectare)

Sl. No.	State/UT	District		Total Area	Total Degraded Land area	% Degraded Land Area
1	2	3		4	5	6
1	Andhra Pradesh	1	Chittor	1492644	127725	8.56
		2	Kurnool	1761393	309412	17.57
		3	Nellore	1307600	169808	12.99
2	Bihar	1	Banka	278768	29294	10.51
		2	Bhagalpur	255822	32589	12.74
		3	Gaya	473659	7727	1.63
		4	Munger	634594	144617	22.79
		5	Siwan	221900	22611	10.19
3	Goa	1	North Goa	175592	24634	14.03
		2	South Goa	194608	19639	10.09
4	Gujarat	1	Bharuch	776430	192841	24.84
		2	Bhavnagar	1115500	271337	24.32
		3	Surat	776161	85469	11.01
5	Himachal Pradesh	1	Chamba	671500	74238	11.06
		2	Kullu	566604	259127	45.73
6	Jharkhand	1	East Singhbhum	337155	27783	8.24
		2	Palamau	802291	50363	6.28
		3	Sarailela- Kharsawan	272340	37050	13.60
		4	West Singhbhoom	529021	58539	11.07
7	Karnataka	1	Bagalkot	658877	135145	20.51
		2	Bijapur	1053471	256010	24.30
		3	Chickmagalur	722072	16038	2.22
		4	Gulbarga	1610208	313347	19.46
		5	Tumkur	1055090	58808	5.57
8	Kerala	1	Palghat	448000	16204	3.62
9	Madhya Pradesh	1	Balaghat	924500	112941	12.22
		2	Chattarpur	863120	191511	22.19
		3	Gwalior	456449	144079	31.57
		4	Jhabua	646912	322601	49.87
		5	Morena	1168336	373553	31.97
		6	Ratlam	486007	160244	32.97
		7	Sidhi	1039194	228736	22.01
		8	Ujjain	609874	129700	21.27
10	Maharashtra	1	Bhandara	934716	49933	5.34
		2	Nasik	1527764	647462	42.38
		3	Wardha	630900	69308	10.99
11	Manipur	1	East Impal	57800	10238	17.71
		2	West Impal	51900	15098	29.09
12	Meghalaya	1	East Garohills	260300	34201	13.14
		2	Jaintia Hills	381900	178666	46.78
		3	South Garohills	185700	8003	4.31
		4	West Garohills	370700	42516	11.47

Contd…

Table 5.3.2 : State wise information on degraded land of the districts

Sl. No.	State/UT	District		Total Area	Total Degraded	% Degraded Area
1	2	3		4	5	6
13	Mizoram	1	Aizawl	357631	109184	30.53
		2	Champhai	318583	184795	58.01
		3	Kolasib	138251	16865	12.20
		4	Lawngtlai	199119	95965	48.19
		5	Lunglei	453800	59913	13.20
		6	Mamit	302575	50986	16.85
		7	Saiha	196581	29416	14.96
		8	Serchhip	142160	70702	49.73
14	Nagaland	1	Kohima, Phek, Wokha, Zunheboto, Tuensang,Mokokchung, Mon	1657900	441339	26.62
15	Rajasthan	1	Ajmer	842388	398913	47.36
		2	Jhunjhunu	591681	81478	13.77
		3	Nagaur	1764504	361120	20.47
		4	Rajsamand	455093	136908	30.08
16	Sikkim	1	East	95400	5922	6.21
		2	West	116600	17274	14.81
		3	North	422600	94963	22.47
		4	South	75000	5323	7.10
17	Tamilnadu	1	Coimbatore	746128	19566	2.62
		2	Dharmapuri	962247	194502	20.21
		3	Erode	825997	5579	0.68
		4	Thirunelveli	682308	36240	5.31
		5	Tuticorin	459054	78213	17.04
18	Tripura	1	West	303300	21385	7.05
		2	South	314000	33396	10.64
		3	North	210070	60732	28.91
		4	Dhalai	221230	47323	21.39
19	Uttar Pradesh	1	Agra	400369	92650	23.14
		2	Bijnor	454057	37732	8.31
		3	Lalitpur	504149	95450	18.93
		4	Mathura	376432	22975	6.10
		5	Sitapur	570633	88717	15.55
20	West Bengal	1	North 24 Pargana	378090	64062	16.94
		2	Puruliya	625100	198619	31.77
		3	South 24 Paragna	966171	263635	27.29
GRAND TOTAL		**82 Districts**		**45916573**	**8853262**	**19.28**

Source: Soil and Land Use Survey of India, Ministry of Agriculture

Concluded

5.4 Mining and Quarrying

5.4.1 The activity of mining and quarrying covers underground and surface mines, quarries and wells and includes extraction of minerals and also all the supplemental activities such as dressing and benefaction of ores, crushing, screening, washing, cleaning, grading, milling floatation, melting floatation and other preparations carried out at the mine site which are needed to render the material marketable. The state-wise distribution of mining leases is given in the Table 5.4.1.

Table 5.4.1 : Mining Leases as on 31-03-2015[@] (By Principal States)

Sl. No.	State	No. of Mining Leases Granted/Executed	% to Total Leases	Area (in '000 ha)	% to Total Area
1	Andhra Pradesh	419	11	25	7
2	Chhattisgarh	188	5	23	7
3	Goa	90	2	7	2
4	Gujarat	456	12	22	7
5	Jharkhand	166	4	24	7
6	Karnataka	398	10	45	13
7	Madhya Pradesh	613	16	32	9
8	Maharashtra	172	5	13	4
9	Odisha	397	10	69	20
10	Rajasthan	167	4	47	14
11	TamilNadu	543	14	9	3
12	Telangana	110	3	11	3
13	Others	149	4	13	4
1	**All States**	**3868**	**100**	**340**	**100**

Source: Indian Minerals Industry at a Glance 2014-15,Indian Bureau of Mines

[@]Excluding fuel,atomic,&minor minerals and also the minerals declared as 'Minor' vide Gazette Notification Part ii Section 3-Sub- sction (ii) dated 10 February,2015.

5.4.2 The mining activities in the country are governed by the Mineral Conservation Development Rules (MCDR), 1988. Every license holder of mining lease shall take all possible precautions for protection of environment and control of pollution while conducting prospecting, mining beneficiation or metallurgical operations in the area. Specific provisions for proper removal and utilization of top soil, storage of over burden and waste rocks, reclamation and rehabilitation of lands, precautions against air pollution, noise and ground vibrations, restoration of flora, discharge of toxic liquid, control of surface subsidence have been provided under the MCDR. The Indian Bureau of Mines collects the statistics on all these aspects under the above rules.

The State wise mines reported (2005- 2014) in India is presented below in table 5.4.2.

Table 5.4.2 (a) : Number of reporting Mines* in India Statewise[Excluding atomic and minerals, Petroleum (crude) Natural Gas & Minor Minerals]

Sl. No.	State	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12#	2012-13#	2013-14#(P)
1	2	3	4	5	6	7	8	9	10	11
1	Andhra Pradesh	409	415	418	469	456	456	621	774	660
2	Arunachal Pradesh				1	1	1	1	1	1
3	Assam	9	9	12	12	11	11	10	9	6
4	Bihar	9	8	6	5	6	10	6	6	5
5	Chhattisgarh	148	144	148	162	152	167	192	196	203
6	Goa	76	72	78	77	75	79	74	72	69
7	Gujarat	431	457	457	440	446	429	441	487	464
8	Haryana								1	1
9	Himachal Pradesh	27	26	26	26	26	24	25	20	21
10	Jammu & Kashmir	1	0	0	11	11	10	10	8	7
11	Jharkhand	7	11	11	300	299	297	299	293	233
12	Karnataka	297	293	294	241	233	251	207	219	187
13	Kerala	236	231	226	32	30	30	43	55	49
14	Madhya Pradesh	5	8	10	329	287	317	417	421	364
15	Maharashtra	333	336	331	158	158	161	158	151	168
16	Meghalaya	37	33	30	8	9	10	13	14	14
17	Odisha	150	154	163	239	220	192	183	192	179
18	Rajasthan	235	233	226	291	289	308	418	508	556
19	Tamil Nadu	235	217	243	178	175	192	305	368	355
20	Uttar Pradesh	173	177	171	26	25	24	25	22	19
21	Uttarakhand	23	26	26	32	34	40	37	34	17
22	West Bengal	36	37	32	113	112	109	124	127	121
Total		**2877**	**2887**	**2908**	**3150**	**3055**	**3119**	**3609**	**3978**	**3699**

Source : Indian Bureau of Mines

P: Provisional # : Excluding atomic minerals and minor minerals.

* Reporting mine: A mine reporting production or reporting 'Nil' production during a year but engaged in developmental work such as overburden removal;, underground driving, winzing, sinking work; exploration by pitting, trenching or drilling as evident from the MCDR returns.

Table 5.4.2 (b) : Scenario of Mineral Rich States

Sl. No.	Name of States	No. of reporting mines during 2013-14	No. of reporting mines during 2014-15	Leading minerals produced in the States
1	2	3	3	4
1	Andhra Pradesh	661.00	470.00	coal#,natural gas(ut.),limestone, petroleum(crude),barytes,manganese ore,dolomite,iron ore,garnet(abrasive),laterite
2	Chhattisgarh	202.00	215.00	coal,iron ore,limestone,dolomite and bauxite
3	Goa	69.00	71.00	bauxite
4	Gujarat	464.00	410.00	petroleum(crude),natural gas(ut.),lignite,limestone and bauxite
5	Jharkhand	257.00	224.00	coal,iron ore,bauxite,limestone,copper conc. and dolomite
6	Karnataka	187.00	183.00	limestone,iron ore,dolomite,gold ore,manganese ore and dolomite
7	Madhya Pradesh	364.00	376.00	coal,limestone,manganese ore,copper conc., iron ore,diamond and bauxite
8	Maharashtra	163.00	162.00	coal,manganese ore,iron ore,limestone,bauxite and silica sand
9	Odisha	180.00	172.00	iron ore,coal,chromite,bauxite,manganese ore and limestone
10	Rajasthan	557.00	541.00	petroleum(crude),limestone,lead & zinc conc.,natural gas(ut.),silver and phosphorite
11	Tamil Nadu	354.00	292.00	lignite,natural gas (ut.),limestone,petroleum(crude) and magnesite
12	Telangana	Not Available	154.00	coal,limestone,dolomite,laterite

Source : Ministry of Mines,Annual Report 2014-15 & 2015-16

#Not Available for 2014-15

5.4.3 The detail of underground mines in India is exhibited in table 5.4.3 below:

Table 5.4.3: Number of underground mines#
(By Principal Minerals)

Mineral	2011-12			2012-13			2013-14			2014-15		
	Total	A' Category	B' Category	Total	A' Category	B' Category	Total	A' Category	B' Category	Total	A' Category	B' Category
1	2	3	4	5	6	7	8	9	10	11	12	13
Apatite	1	-	1	-	1	1	1	-	1	1	-	1
Barytes	2	-	2	-	-		6	-	6	3	-	3
Chromite	5	5	-	5		5	6	6	-	6	6	-
Copper Ore	3	3	-	3		3	4	4	-	4	4	-
Gold	4	3	1	3	1	4	4	3	1	5	4	1
Lead & Zinc Ore	6	6	-	5		5	8	8	-	8	8	-
Manganese Ore	23	2	21	8	5	13	13	8	5	13	8	5
Mica	21	2	19	2	23	25	21	2	19	17	2	15
Steatite	-	-	-	1	18	19	17	2	15	9	1	8

Source : Indian Bureau of Mines (IBM), Nagpur
Category 'A' : Mechanised Mines, > 150 labour in all and > 75 labour in workings below Category 'B' : Other than Category 'A'

: Excluding fuel, atomic & minerals.

5.4.4 The number of Mines in various States and production of minerals are presented in tables 5.4.4 & 5.4.5 .

5.4.5 The details of machinery and explosives used in Mining Industry is exhibited in tables 5.4.6 & 5.4.7 .

5.4.6 The details of production of coal and lignite, consumption of minerals in various industry are elaborated in tables 5.4.8 to 5.4.12 .

5.4.7 The condition of reserves and resources for various minerals in the Country is presented in table 5.4.13 .

5.4.8 Environmental issues associated with mining can include erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. In some cases, additional forest logging is done in the vicinity of mines to increase the available room for the storage of the created debris and soil. Contamination resulting from leakage of chemicals can also affect the health of the local population if not properly controlled. Mining companies in most countries are required to follow stringent environmental and rehabilitation codes in order to minimize environmental impact and avoid impacts on human health. These codes and regulations all require the common steps of Environmental impact assessment, development of Environmental management plans, Mine closure planning (which must be done before the start of mining operations), and Environmental monitoring during operation and after closure. However, in some areas, particularly in the developing world, regulation may not be well enforced by governments. The details of Afforestation in Metalliferrous Mines from 1989-90 to 2011-12 (By Principal

Table 5.4.4 : Number of reporting mines By Mineral Groups (2000-01 to 2014-15)				
Year	Total*	Coal & Lignite	Metalic Minerals	Non-Metallic Minerals
1	2	3	4	5
2000-01	3191	596	565	2030
2001-02	3193	570	574	2049
2002-03	3146	562	591	1993
2003-04	3131	562	612	1957
2004-05	3215	571	625	2019
2005-06	2999	556	636	1807
2006-07	3005	570	639	1796
2007-08	3025	570	693	1762
2008-09	3150	574	719	1857
2009-10	3055	573	701	1781
2010-11	3118	573	719	1826
2011-12	3609	573	682	2354
2012-13	3978	575	708	2695
2013-14	3979	552	711	2716
2014-15 (P)	3529	558	637	2334

Source : Indian Bureau of Mines (IBM), Nagpur

* : Excluding petroleum (crude), atomic and minor minerals.

P : Provisional

Reporting mine: A mine reporting production or reporting 'Nil' production during a year but engaged in developmental work such as overburden removal;, underground driving, winzing, sinking work;exploration by pitting, trenching or drilling as evident from the MCDR returns.

Table 5.4.5: Production of minerals*
(Excluding Atomic and Minor Minerals)

Sl. No.	Minerals	Unit	2010-11	2011-12	2011-12	2012-13	2013-14	2014-15(P)
1	2	3	9	10	11	12	13	14
	Fuel Minerals							
1	Coal	Tonnes	532694	539950	539950	556402	565765	610208
2	Lignite	Tonnes	37733	42332	42332	46453	44271	48292
3	Natural Gas (Ut.)	M.C.M.	52222	47559	47559	40679	35407	32583
4	Petroleum (Crude)	Tonnes	37712	38090	38090	37862	37788	37464
	Metallic Minerals							
5	Bauxite	Tonne	12640785	12877394	13599566	16611610	22319148	22226062
6	Chromite	Tonne	4262207	3764120	2923435	2833895	2878320	2163942
7	Copper Ore	Tonne	3615038	3478189	3479189	3635751	3777772	3586028
8	Copper Conc.	Tonne	136856	130458	130456	123654	139307	107541
9	Gold Ore	Tonne	727020	492192	491562	502831	420429	448671
10	Gold (Primary)	Kg.	2239	2192	2194	1588	1564	1440
11	Gold (by product)	Kg.	0	0	0	0	0	0
12	Iron Ore (Total)	Tonnes	207998	167289	168582	136618	152183	128909
13	Lead & Zinc Ore	Tonne	7489693	8041881	8041881	8633411	9281807	9346349
14	Lead Conc.	Tonne	145043	161157	161854	184486	194426	197668
15	Zinc Conc.	Tonne	1420105	1412291	1414009	1492781	1490662	1501586
16	Manganese Ore	Tonne	2881080	2349300	2411871	2342169	2626291	2345361
17	Silver	Kg.	148288	207142	207144	374046	349774	327647
18	Tin Conc.	Kg.	61355	48971	48765	47774	34862	24689
	Non-Metallic Minerals							
19	Agate#	Tonne	19	476	476	493	100	0
20	Apatite	Tonne	3846	3053	3053	572	1300	930
21	Phosphorite	Tonne	2097490	2326876	2259726	1941158	1453580	1579561
21	Asbestos	Tonne	268	280	276	389	172	0
22	Ball Clay#	Tonne	958454	1594634	1646516	1750559	2130995	1910060
23	Barytes#	Tonne	2333805	1722804	1776980	1789431	1170522	910963
24	Calcite#	Tonne	39370	51499	54081	74488	92122	91783
25	Chalk#	Tonne	174914	176010	178736	175516	142696	94467
26	Clay (Others)#	Tonne	590702	744561	1417684	2680726	2506662	2248184
27	Corundum#	Kg.	-	-	37000	5000	0	0
28	Diamond	Carat	19774	18489	18490	31988	37517	35724
29	Diaspore#	Tonne	26905	24124	23818	16222	14599	12207
30	Dolomite#	Tonne	5064875	5416817	5968554	7233958	7310599	6209476
31	Dunite#	Tonne	18591	39223	38774	88274	64917	75050
32	Felspar#	Tonne	472041	660371	835526	1459008	1512982	1343366
33	Fireclay#	Tonne	571421	759746	983155	999925	920809	712792
34	Felsite#	Tonne	1670	1018	1117	1266	551	324
35	Fluorite (Graded)	Tonne	59954	4856	5010	3092	2487	2947
36	Flint Stone	Tonne			708	0.633	459	294
37	Fluorite (Conc.)	Tonne	4394	-	-	-	-	-
38	Garnet (Abrasive)	Tonne	2126337	1824648	1717904	768248	483559	78924
39	Garnet (Gem)	Kg.	-	-	-	-	0	0

Cont..

Sl.	Minerals	Unit	2010-11	2011-12	2011-12	2012-13	2013-	2014-15(P)
1	2	3	9	10	11	12	13	14
40	Graphite (R.O.M.)	Tonne	115697	148974	153339	134735	146390	116512
41	Gypsum#	Tonne	4918170	3189229	3978806	3556723	3115363	2477849
42	Jasper#	Tonne	-	-				
43	Kaolin#	Tonne	2727946	2734349	3076795	4258697	4853420	3861380
44	Kyanite	Tonne	5954	4064	4064	1048	3679	6260
45	Laterite#	Tonne	1220304	1665820	2815275	4121192	3475368	4650597
46	Lime Kankar#	Tonne	383817	311218	311219	192426	140088	111382
47	Limeshell	Tonne	30410	33226	33225	24044	18750	16150
48	Limestone	Tonnes	246336	256669	262882	285030	280863	292810
49	Magnesite	Tonne	235762	217662	224104	224315	196940	275678
50	Marl	Tonne	4399379	4143975	4140577	4337009	3254486	2179489
51	Mica (Crude)#	Tonne	1333	1807	1899	1256	1660	636
52	Mica (Waste & Scrap)**#	Tonne	7311	13690	14186	16255	19752	11852
53	Moulding Sand	Tonne			30	3118	29963	6383
54	Ochre	Tonne	1218261	1352812	1576265	1833783	1580675	2203708
55	Perlite	Tonne	-	-	-	-	0	0
56	Pyrophyllite#	Tonne	240082	239811	255891	247968	224677	147431
57	Pyroxenite#	Tonne	253205	87310	86031	58562	2985	0
58	Quartz#	Tonne	497546	520146	782575	1384155	1488743	1381406
59	Quartzite#	Tonne	118177	181065	272141	501399	584235	583095
60	Salt (Rock)	Tonne	1200	-	-	-	0	0
61	Sand (Others)#	Tonne	2057119	2625329	2625111	2638424	2552918	2100563
62	Selenite	Tonne	6736	12852	13047	7577	531	207
63	Shale#	Tonne	3081622	3338919	3439775	3067718	3006945	2792904
64	Silica Sand#	Tonne	3380968	4334925	4867667	4303883	3724241	3047485
65	Sillimanite	Tonne	48784	58043	59206	43736	67265	66025
66	Slate#	Tonne	-	-	-	278	351	218
67	Steatite	Tonne	6728	-	998438	971778	887925	774281
68	Sulphur***	Tonne	236998	381146	381146	449004	390325	429258
69	Talc/steatite/soapstone	Tonne	902686	958746	-	-	-	-
70	Vermiculite	Tonne	19234	9746	10194	7947	10176	15327
71	Wollastonite	Tonne	183381	184445	184445	145667	192712	186519

Source : Annual Report 2014-15 Indian Bureau of Mines

Concluded.

- not available

- not available

*** Obtained as by-product from fertilizer plants and oil refineries.

* Excluding the minerals declared as prescribed substances under the Atomic Energy

#:Declared as minor mineral vide notification dated 10.02.2015

** Includes mine waste and waste obtained while dressing of crude mica at the mine site.

Table 5.4.6 :Mining machinery in metalliferrous open mechanised cast mines											
Sl. No.	Machinery	2010-11		2011-12		2012-13		2013-14		2014-15	
		In Use	In Reserve	In Use	In Reserve	In Use	In Reserve	In Use	In Reserve	In Use	In Reserve
1	2	3	4	5	6	7	8	9	10	11	12
1	Hauler/Dumper	6482	360	6423	339	5921	422	5921	422	5170	337
2	Drills/Blast Holes	791	84	839	89	758	111	758	111	632	85
3	Air Compressor	686	62	656	110	711	98	711	98	565	44
4	Front end loader	889	31	668	29	465	50	620	41	526	26
5	Dipper Shovels (Hydrl)	563	52	539	61	500	55	465	50	353	25
6	Bulldozer	512	22	349	19	441	25	441	25	312	21
7	Back Hoe	1066	77	906	47	1031	70	1031	70	925	47
8	Crusher	198	3	392	11	465	20	465	20	397	14
9	Crane	414	14	217	3	181	4	181	4	120	3
10	Dipper Shovels (Mechl)	598	59	48	4	35	5	35	5	4	-
11	Motor Grader	109	2	101	4	110	4	110	4	74	5
12	Locomotives	23	-	23	-	16	2	16	2	11	-
13	Surface Miners	11	-	24	-	30	-	30	-	33	-

Source: Indian Minerals Industry at a Glance 2014-15,Indian Bureau of Mines

Table 5.4.7: Consumption of explosives for mining, 2013-14 #							
(Excluding Fuel, Atomic & Minor Minerals)							
Sl. No.	Mineral	Gun Powder (in Tonnes)	High Explosives (in Tonnes)	Detonators (in thousand)		Fuses (Meters) (in thousands)	
				Ordinary*	Electric	Safety	Cordtex
1	2	3	4	5	6	7	8
1	Bauxite	-	2087	164	39	250	1657
2	Chromite	-	502	2	122	3	225
3	Copper Ore	-	4050	12	667	3	1044
5	Iron Ore	++	11268	224	82	34	1911
6	Lead & Zinc Ore	-	23339	127	726	0	1072
7	Manganese Ore	-	1115	29	766	42	528
8	Magnesite	-	-	51	87	80	176
9	Dolomite	++	597	257	317	241	652
10	Limestone	12	40866	1099	1620	691	5578
11	Steatite	-	553	181	12	443	526
12	Gold	-	415	60	266	0	191
13	Barytes	-	480	12	35	10	25
14	Mica	-	-	46	72	60	0
15	Wollastonite	-	-	6	51	0	63
16	Others	++	530	73	86	82	50
Total#		**12**	**85802**	**2343**	**4948**	**1939**	**13698**

Source : Indian Bureau of Mines

* Includes other detonators ++ Negligible # : Excluding fuel, atomic and minor minerals

Table 5.4.8 : Production of coal 2000-01 to 2014-15				
Year	Quantity (Lakh tonnes)	Value (Rs. Crores)	No of Mines*	Labour * Employed (Av. Daily)**
1	2	3	4	5
2000-01	3137	20352	591	449021
2001-02	3278	21648	564	428855
2002-03	3413	24187	556	413467
2003-04	3612	25440	554	405719
2004-05	3826	30434	563	393513
2005-06	4070	33675	547	384644
2006-07	4308	34837	561	371490
2007-08	4571	38465	559	357467
2008-09	4928	45537	561	356848
2009-10	5320	51318	560	360705
2010-11	5327	62021	559	355721
2011-12	5400	70172	559	352930
2012-13	5564	74719	559	345302
2013-14	5658	82535	536	338896
2014-15 (P)	6092	89287	539	343548

Source : Indian Bureau of Mines (IBM), Nagpur

* : Excluding Meghalaya ** : Data relates to calender year

Table 5.4.9 : Production of lignite 2000-01 to 2014-15				
Year	Quantity (Lakh tonnes)	Value (Rs. Crores)	No. of Mines	Labours Employed (Av. Daily)
1	2	3	4	5
2000-01	242	1418	5	-
2001-02	248	1695	6	-
2002-03	260	1743	6	9127
2003-04	280	2038	8	11048
2004-05	305	2201	8	11698
2005-06	301	2153	9	14246
2006-07	313	2626	9	14246
2007-08	340	2961	11	14246
2008-09	324	3688	13	12566
2009-10	341	3776	13	13245
2010-11	377	4331	14	14406
2011-12	423	5338	14	13107
2012-13	465	5511	16	13212
2013-14	443	5968	16	13976
2014-15(P)	483	8163	19	12356

Source : Indian Bureau of Mines (IBM), Nagpur P - Provisional

Table 5.4.10 : Consumption of minerals in Iron & steel industry (2000-01 to 2014-15)									
Year	Iron Ore*^	Coal*#	Limestone*	Dolomite **	Manganese Ore **	Ferro-Allyos**	Bauxite**	Fire Clay**	Flourite**
1	2	3	4	5	6	7	8	9	10
2000-01	313	222	48	2850	351	212	14	NA	NA
2001-02	322	240	52	2760	255	223	20	NA	NA
2002-03	338	224	50	3142	212	228	16	NA	NA
2003-04	374	252	54	2988	101	265	1	NA	NA
2004-05	378	252	53	3644	169	259	1	NA	NA
2005-06	402	252	59	3740	123	395	1	NA	NA
2006-07	484	217.7	69.6	4330	139	418	1	20	3
2007-08	513	179.7	73.2	4580	108	449	1	21	2
2008-09	516.6	177.7	62.3	4790	148	538	1	35	3
2009-10	564.2	185.7	72.5	4360	135	574	1	35	1
2010-11(R.)	629.5	186.3	72.5	5290+	151	571	1	29	3
2011-12 (R.)	990	160.5	93.2	5840+	254	630	1	11	2
2012-13 (R)	1019.6	150.7$	114.1	5355+	255	416	1	11	2
2013-14 (R)	1068.4	150.7$	119.6	5544+	262	406	1	11	2
2014-15(P)	1120.3	150.7$	120	5807+	271	415	NA	NA	NA

Source : Indian Bureau of Mines (IBM), Nagpur

$ Provisional coal statistics,2013-14, Ministry of Coal Controller, Kolkata

+ The figures for iron & steel and pelletisation (iron & steel) added. ^ Iron & steel industry including sponge iron.

* Lakh Tonnes ** : Thousand Tonnes R - Revised P - Provisional

Relates to dispatches of Coal, since consumption data is not available.

Table 5.4.11 Consumption of minerals in cement industry (2002-03 to 2014-15)

('000 tonnes)

Year	Limestone*+	Coal*#	Gypsum*	Quartz **$$	Bauxite **	Iron Ore **	Kaolin**	Fireclay **
1	2	3	4	5	6	7	8	9
2002-03	1137	144	38	271	345	828	177	207
2003-04	1185	146	41	304	423	832	203	270
2004-05	1264	162	43	290	504	985	207	273
2005-06	1320	147	49	289	516	950	238	262
2006-07	1570	147	57	293	693	1066	243	262
2007-08	1680	152.7	59.5	293	615	1022	270	247
2008-09	1720	131.2	65.6	298	1144	1074	339	245
2009-10	2030	131.2	69.8	279	1043	1294	642	245
2010-11(R.)	2320	141.8	82.1	332	1082	1494	665	286
2011-12 (R.)	2400	128.8	86.2	356	1041	1548	665	276
2012-13 (R.)	2533	135.5$	92.3	382	535	1586	665	253
2013-14 (R)	2527	135.5^	91.8	334	561	1455	663	294
2014-15 (P)	2510	135.5^	89.4	384	591	1397	662	281

Source : Indian Bureau of Mines (IBM), Nagpur

* Lakh tonnes ** Thousand Tonnes ^ Estimate R - Revised; P- Provisional

\+ Limestone and other calcareous material $$ Includes Quartz, Quartzite and Silica Sand

$ Provisional coal statistics,2013-14, Ministry of Coal Controller, Kolkata

Relates to dispatches of Coal, since consumption data is not available.

Table 5.4.12 Consumption of minerals in refractory industry (2002-03 to 2014-15)

('000 tonnes)

Year	Dolomite	Fireclay	Magnesite*	Quartz & Quartzite	Bauxite & Diaspore	Chromite *	Kyanite &Sillimanite	Kaolin
1	2	3	4	5	6	7	8	9
2002-03	391	160	144	48	194	22	17	17
2003-04	372	162	154	48	193	13	17	18
2004-05	372	178	220	48	220	21	20	27
2005-06	373	188	215	61	295	21	24	24
2006-07	373	179	239	59	295	23	28	23
2007-08	63	182	239	53	304	23	20	28
2008-09	63	182	312	54	318	24	17	28
2009-10	63	163	229	65	128	24	18	33
2010-11(R)	213	171	163	43	118	45	15	34
2011-12 (R)	213	182	112	46	280	25	15	35
2012-13 (R)	375	181	91	69	313	24	21	33
2013-14 (R)	321	176	58	68	291	24	22	34
2014-15(P)	350	172	58	65	287	23	23	28

Source : Indian Bureau of Mines (IBM), Nagpur

* Includes consumption of iron & steel industry. R - Revised P - Provisional

Table 5.4.13: Mineral reserves and resources

Sl.No.	Mineral/ Grades	Unit		As on 1.4.2010		
				Reserves (A)	Remaining Resources (B)	Total (A+B)
1	2	3	4	5	6	7
1	Andalusite	Th. Tonnes		0.0	18450.0	18450.0
2	Antimony#	Tonnes	Ore	0	10588	10588
		Tonnes	Metal	0	174	174
3	Apatite#	Th. Tonnes		31	22630	22661
4	Asbestos	Th. Tonnes		2510.8	19655.8	22166.6
5	Ball Clay	Th. Tonnes		16778	66616	83394
6	Barytes	Th. Tonnes		31584	41150	72734
7	Bauxite#	Th. Tonnes		830195	2908856	3739051
8	Bentonite	Th. Tonnes		25060	543307	568367
9	Borex	Tonnes		0	74204	74204
10	Calcite	Th. Tonnes		2664	18281	20945
11	Chalk	Th. Tonnes		4332	585	4917
12	Chromite#	Th. Tonnes		107221	214530	321751
13	Cobalt (Ore)#	Mill.Tonnes		0	44.91	44.91
14	Copper#	Th. Tonnes	Ore	237573	1273445	1511018
		Th. Tonnes	Metal	2996.97	9221.56	12218.53
15	Corundum#	Tonnes		597	267218	267815
16	Diamond#	Th. Carats		985	30876	31861
17	Diaspore	Th. Tonnes		2860	3125	5985
18	Diatomite	Th.Tonnes		0	2885	2885
19	Dolomite#	Th.Tonnes		783905	7300667	8084572
20	Dunite	Th.Tonnes		17137	168232	185369
21	Feldsper	Th.Tonnes		44503	87832	132335
22	Fire Clay	Th.Tonnes		30104	683415	713519
23	Fluorite#	Th.Tonnes		4574	13614	18188
24	Fuller's Earth	Th.Tonnes		58	256594	256652
25	Garnet	Th.Tonnes		19325	37638	56963
	Gold#	Th.Tonnes	Ore (Primary)	14616	480188	494804
26		Tonnes	Metal (Primary)	71.91	568.48	640.39
		Th.Tonnes	Ore (Placer)		26121	26121
		Tonnes	Metal (Placer)		5.86	5.86
27	Granite (Dimension Stone)	Th. cu.m.		263692	45966608	46230300
28	Graphite#	Th.Tonnes		8469	180205	188674
29	Gypsum	Th.Tonnes		39096	1247402	1286498
30	(Heamatite)#	Th.Tonnes		6608287	13967420	20575707
31	Iron Ore (Magnetite)#	Th.Tonnes		34592	10712763	10747355
32	Kaolin	Th.Tonnes		177158	2528049	2705207
33	Kyanite	Th.Tonnes		1575	101671	103246

(Contd…)

Table 5.4.13: Mineral reserves and resources

Sl.No.	Mineral/ Grades	Unit		As on 1.4.2010		
				Reserves (A)	Remaining Resources (B)	Total (A+B)
34	Laterite#	Th.Tonnes		58151	477309	535460
35	Lead & Zinc #					
		Th.Tonnes	Ore	102795	606248	709043
		Th.Tonnes	Lead Metal	2114.91	9888.89	12003.8
		Th.Tonnes	Zinc Metal	10893.1	24963	35856.1
		Th.Tonnes	Lead & Zinc Metal	0	140.82	140.82
36	Limestone	Th.Tonnes		14926392	170008720	184935112
37	Magnesite#	Th.Tonnes		20773	307339	328112
38	Manganese Ore#	Th.Tonnes		204510	379666	584176
39	Marble	Th.Tonnes		276495	1654968	1931463
40	Marl	Th.Tonnes		139976	11705	151681
41	Mica	Th.Tonnes		190741	341496	532237
42	Molybdenum#	Th.Tonnes	Ore	0	19372	19372
		Tonnes	Contained MOS_2	0	12668.37	12668.37
43	Nickel Ore#	Mill. Tonnes		0	188.71	188.71
44	Ochre	Th.Tonnes		54942	89319	144261
45	Perlite	Th.Tonnes		428	1978	2406
46	Pt. Grp of Metal	Tonnes	Metal	0	15.7	15.7
47	Potash	Mill. Tonnes		0	21816	21816
48	Pyri tes	Th.Tonnes		0	1674401	1674401
49	Phosphorite/Rock Phosphate#	Th.Tonnes		65392	249120	314512
50	Pyrophyllite	Th.Tonnes		23275	32808	56083
51	Quartz & Silica and Sand	Th.Tonnes		429223	3069808	3499031
52	Quartzite	Th.Tonnes		86599	1164649	1251248
53	Ruby	Kilogram		236	5112	5348
54	Rock Salt	Th.Tonnes		16026	0	16026
55	Sapphire	Kilogram		0	450	450
56	Shale	Th.Tonnes		15331	580	15911
57	Sillimanite	Th.Tonnes		4085	62902	66987
58	Silver#	Th.Tonnes	Ore	118281	401289	519570
		Tonnes	Metal	7907.97	21880.38	29788.35
59	Slate	Th.Tonnes		0	2369	2369
60	Sulpher	Th.Tonnes		0	210	210
61	Talc-Steatite - Soapstone	Th.Tonnes		90026	178996	269022
62	Tin#	Th.Tonnes	Ore	7	83719	83726
		Tonnes	Metal	1181.19	101093.65	102274.84
63	Titanium Minerals	Th.Tonnes		22030	371966	393996
64	Tungsten#	Th.Tonnes	Ore	0	87387	87387
		Tonnes	Contained WO3	0	142094.35	142094.35
65	Vanadium#	Th.Tonnes	Ore		24634	24634
		Tonnes	Contained V2O5		64594	64594
66	Vermiculite	Th.Tonnes		1704	803	2507
67	Wollastonite	Th.Tonnes		2487	14083	16570
68	Zircon	Th.Tonnes		1347	1787	3134

Concluded.

Source : Annual Report-2014-15, Indian Bureau of Mines (IBM), Nagpur
Figures rounded off. # Reserves/resources as on 01-04-2013

Table 5.4.14 : Afforestation in Metalliferous Mines during 2014 -15 (By Principal Minerals)

Sl. No.	Minerals	Mines Covered	Area Covered (in Hects.)	Trees Planted (Nos.)	Trees Survived (Nos.)	Survival	
						(%)	('000 trees per hectare)
1	2	3	4	5	6	7	8
1	Bauxite	78	65	166084	127070	76.51	1.95
2	Chromite	4	5	10630	8588	80.79	1.72
3	Copper	6	15	20600	17240	83.69	1.15
4	Dolomite	4	14	11100	9650	86.94	0.69
5	Iron Ore	166	145	386799	296109	76.55	2.04
6	Iron & Manganese	21	16	123868	107021	86.40	6.69
7	Lead & Zinc	2	10	12300	11800	95.93	1.18
8	Limestone	497	1481	1699396	1408963	82.91	0.95
9	Manganese Ore	28	45	41600	36640	88.08	0.81
10	Magnesite	5	1	770	534	69.35	0.53
11	Others	71	96	75580	59584	78.84	0.62
Total		**882**	**1893**	**2548727**	**2083199**	**81.73**	**1.10**

Source: Indian Minerals Industry at a Glance 2014-15,Indian Bureau of Mines

5.5 Natural disasters in India

5.5.1 Many of the natural disasters occurring in India are related to the climate of the country. They cause massive losses of life and property. Droughts, flash floods, cyclones, avalanches, landslides brought on by torrential rains, and snowstorms pose great threats. Other dangers include frequent summer dust storms, which usually track from north to south; they cause extensive property damage in North India and deposit large amounts of dust from arid regions. Hail is also common in parts of India, causing severe damage to standing crops such as rice and wheat. Table 5.5.1 gives the details of frequently occurring natural disasters in India. The details of the natural disasters occurred in India as depicted in Table 5.5.2.indicates the frequency and impact of major natural disasters.

Table 5.5.1 : Frequently occurring natural disasters in India

Sl. No.	Type	Location/ Area
1	2	3
1	Cyclones	Entire 5700 km long coastline of Southern, Peninsular India covering 9 States viz Gujarat, Maharashtra,Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Orissa and West Bengal and Union Territory of Pondicherry besides Islands of Lakshadweep and Andaman and Nicobar
2	Floods	8 major river valleys spread over 40 million hectares of area in the entire country
3	Drought	About 68% of total sown area and 16% of total area of the country spread in 14 States of Andhra Pradesh, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal & Himachal Pradesh covering a total of 116 districts and 746 blocks
4	Earthquake	56% of the total area of the country susceptible to seismic disturbances
5	Landslide	Entire Sub-Himalayan region and Western Ghats
6	Avalanche	Many parts of the Himalaya
7	Fires	States of Bihar, West Bengal, Orissa and North Eastern States

Source : India- State of the Environment, 2001, Ministry of Environment & Forests

5.5.2 The two thirds of India lies in the Seismic zones of moderate to severe intensity. The Himalayan Range, the Indo-gangetic plains and the Kutch and Kathaiwar region of Western India are geologically the most unstable parts, and are most prone to earthquakes. The Himalayan frontal arc flanked by the chaman fault in the west constitutes one of the most seismically active intra-continental regions in the world. In a span of 53 years, four earthquakes, exceeding magnitude 8 on the Richter scale, occurred in this region. These are the Assam earthquakes of 1897 and 1950, the Kangra earthquake of 1905 and the Bihar-Nepal earthquake of 1934. Besides the Himalayan regions, the Union Territories of Andaman and Nicobar Islands are also quite vulnerable to earthquakes. Peninsular India comprises stable continental crust regions, which are considered stable since they are away from tectonic activity of the boundaries. These regions are considered seismically the least active but the Latur earthquake in Maharashtra on September 30, 1993 of magnitude 6.3 in the Richter scale showed that this region, too, is unstable and earthquake prone. Table 5.5.3 presents the major earthquakes in India.

5.5.3 Landslides are common in the Lower Himalayas. The young age of the region's hills result in labile rock formations, which are susceptible to slippages. Rising population and development pressures, particularly from logging and tourism, cause deforestation. The result is denuded hillsides which exacerbate the severity of landslides; since tree cover impedes the downhill flow of water. Parts of the Western Ghats also suffer from low-intensity landslides. Avalanches occurrences are common in Kashmir, Himachal Pradesh, and Sikkim.

5.5.4 Floods are the most common natural disaster in India. The heavy southwest monsoon rains cause the Brahmaputra and other rivers to distend their banks, often flooding surrounding areas. Though they provide rice paddy farmers with a largely dependable source of natural irrigation and fertilisation, the floods can kill thousands and displace millions. Excess, erratic, or untimely monsoon rainfall may also wash away or otherwise ruin crops. Almost all of India is flood-prone, and extreme precipitation events, such as flash floods and torrential rains, have become increasingly common in central India over the past several decades, coinciding with rising temperatures. Mean annual precipitation totals have remained steady due to the declining frequency of weather systems that generate moderate amounts of rain. Table 5.5.4 presents a record of damages due to floods in India.

5.5.5 The State wise details of damage to human lives and property due to heavy rains/ floods during 2011 in India is in table 5.5.5 and the details of extent of damage in various States due to disasters like cyclonic storms/heavy rains/landslide etc for various years can be found in table 5.5.6 .

5.5.6 Drought is a perennial and recurring feature in many parts of India. Drought leads to large-scale migration in search of alternative livelihoods, loss of human life due to stress, suicide, starvation or unhygienic conditions, and increased social conflict. To address the problems of drought prone areas, Drought Prone Area Development Programme (DPAP) was launched in 1973-74. It was launched to tackle problems like depletion of vegetative cover, increase in soil erosion and fall in ground water levels. The states where DPAP is under implementation along with no. of blocks in given in Table 5.5.7.

Table 5.5.2: India's major natural disasters since 1990

Sl. No.	Year	Type	Affected Population Location/Area	Fatalities
1	1990	Cyclone	Andhra Pradesh	967 people died, 435,000 acres of land affected
2	1993	Earthquake	Latur, Marathwada region of Maharashtra	7,928 people died 30,000 injured
3	1996	Cyclone	Andhra Pradesh	1,000 people died, 5,80,000 housed destroyed, Rs. 20.26 billion estimated damage
4	1999	Cyclone	Orissa	Over 10,000 deaths
5	2001	Earthquake	Rapar, Bhuj, Bhachau, Anjar, Ahmedabad and Surat in Gujarat State	13,805 deaths 6.3 million people affected
6	2004	Tsunami	Coastline of Tamil Nadu, Kerala, Andhra Pradesh, Pondicherry and Andaman and Nicobar Islands of India	10,749 deaths 5,640 persons missing 2.79 million people affected 11,827 hectares of crops damaged 300,000 fisher folk lost their livelihood
7	2005	Kashmir	Mostly Pakistan, Partially Kashmir	1400 deaths in Kashmir (86,000 deaths in total)
8	2005	Floods	Maharashtra State	1094 deaths ,167 injured 54 missing
9	2008	Cyclone Nisha	Tamil Nadu	204 deaths
10	2008	Kosi Floods	North Bihar	527 deaths, 19,323 livestock perished, 2,23,000 houses damaged, 3.3 million persons affected
11	2009	Floods	Andhra Pradesh, Karnataka	300 people died
12	2009	Drought	252 Districts in 10 States	-----
13	2010	Cloudburst	Leh, Ladakh in J&K	257 people died
14	2011	Earthquake	North Eastern India with epicenter near Nepal Border and Sikkim	97 people died (75 in Sikkim)
15	2011	Floods	19 Districts of Odisha	45

cont…/

Table 5.5.2: India's major natural disasters since 1990				
Sl. No.	**Year**	**Type**	**Affected Population Location/Area**	**Fatalities**
16	2011	Earthquake	Sikkim, West Bengal, Bihar	60
17	2011	Cyclone Thane	Tamil Nadu, Puducherry	47
18	2012	Floods	Assam	---
19	2012	Floods	Uttarkashi, Rudraprayag and Bageshwar districts of Uttarakhand	52
20	2012	Cyclone Nilam	Tamil Nadu	65
21	2013	Cyclone Mahasen	Tamil Nadu	8
22	2013	Floods/Landslides	Uttarakhand and Himachal Pradesh	4,094
23	2013	Cyclone Phailin	Odisha and Andhra Pradesh	23
24	2013	Floods	Andhra Pradesh	53
25	2013	Floods	Odisha	21
26	2014	Cyclone Hud Hud	Andhra Pradesh & Odisha	
27	2014	Floods	Jammu & Kashmir	

concluded.

Source : Disaster Data and Statistics,National Disaster Management Authority
Ministry of Home Affairs

Table 5.5.3 : Major earthquakes in India						
Sl. No.	Date	Lattitude (Degree N)	Longitude (Degree E)	Magnitude	Region	Remarks
1	2	3	4	5	6	7
1	16.06.1819	24.00	70.00	8.0	Kutch	About 2000 people killed
2	12.06.1897	25.00	92.00	8.7	Assam	One of the greatest earthquake of historical time
						Shillong city was razed to the ground 1542 killed.
3	04.04.1905	32.30	76.25	8.0	Kangra	20000 lives lost
4	15.01.1934	26.60	86.80	8.3	India-Nepal Border	Most severe in Indian history,
						More than 10000 killed
6	26.06.1941	12.40	92.50	8.1	Andaman Islands	Flooding in port Blair
7	15.08.1950	28.46	96.66	8.5	Assam	532 people killed
8	06.08.1988	25.14	95.12	5.8	Burma-India Border	3 killed 11 injured
9	20.08.1988	26.78	86.61	6.5	Nepal-India Border	1000 people killed, 1000 injured
						Extensive damage in Northern Bihar
10	19.10.1991	30.75	78.86	6.6	West UP Hills(Uttarkashi)	768 people killed
11	30.09.1993	18.07	76.00	6.3	Latur, Osmanabad	7601 people killed
12	22.05.1997	23.08	80.06	6.0	Jabalpur	38 People killed
13	29.03.1999	30.41	79.42	6.8	Uttar Pradesh	there 1000 dead
14	26.01.2001	23.40	70.28	7.9	Gujarat	Over 20000 people killed, 150000 injured
15	08.10.2005	34.60	37.00	7.6	Pakistan & Kashmir	Over 87,000 in Pakistan & Kashmir dead

contd…./-

Table 5.5.3 : Major earthquakes in India

Sl. No.	Date	Lattitude (Degree N)	Longitude (Degree E)	Magnitude	Region	Remarks
1	2	3	4	5	6	7
16	10.08.2009	14.10	92.80	7.7	Andaman Islands	26 dead
17	18.09.2011	27.72	88.06	6.9	Gangtok,Sikkim	118 dead
18	05.03.2012	28.60	77.40	5.2	New Delhi	1 dead
19	25.04.2012	9.90	94.00	6.2	Andaman & Nicobar Islands	zero death
20	21.03.2014	7.60	94.40	6.7	Andaman & Nicobar Islands	zero death
21	25.04.2015	28.14	84.70	7.8	Northern India,N-E India	8900 plus dead
22	25.04.2015	28.19	84.86	6.6	Northern India	Aftershock
23	26.04.2015	27.79	85.97	6.7	Northern India,N-E India	Aftershock
24	12.05.2015	27.79	85.97	6.7	Northern India,N-E India	218 dead
25	28.06.2015	26.50	90.10	5.6	Dibrugarh,Assam	zero death
26	26.10.2015	36.14	71.50	7.7	Northern India,Pakistan,Afgha	280 in Pakistan,115 in Afghanistan and 4 in India dead
27	03.01.2016	24.80	93.60	6.7	N-E India	11 dead,200 injured in Manipur & Assam

Concluded

Source : Ministry of Environment & Forests and Climate Change

Table 5.5.4 : Flood damage/heavy rains in India during 1953 to 2015

Sl. No.	Year	Area Affected	Population Affected	Damage to Crops		Damage to House		Cattle Lost Nos.	Human Lives Lost	Damage to Public Utilities	Total Damages Crops Houses & Public Utilities
				Area	Value	Nos.	Value				
		(M.Ha)	(Million)	(M.Ha)	(Rs. Crore)	('000)	(Rs. Crore)	('000)	(No.)	(Rs. Crore)	(Rs. Crore)
1	2	3	4	5	6	7	8	9	10	11	12
1	**1953**	2.29	24.28	0.93	42.08	265	7.42	47	37	2.90	52.40
2	**1954**	7.49	12.92	2.61	40.52	200	6.56	23	279	10.15	57.23
3	**1955**	9.44	25.27	5.31	77.82	1667	20.95	72	865	3.98	102.73
4	**1956**	9.24	14.57	1.11	44.44	726	8.05	16	462	1.14	53.63
5	**1957**	4.86	6.76	0.45	14.12	318	4.98	7	352	4.27	23.37
6	**1958**	6.26	10.98	1.40	38.28	382	3.90	18	389	1.79	43.97
7	**1959**	5.77	14.52	1.54	56.76	649	9.42	73	619	20.02	86.20
8	**1960**	7.53	8.35	21.27	42.55	610	14.31	14	510	6.31	63.17
9	**1961**	6.56	9.26	1.97	24.04	533	0.89	16	1374	6.44	31.37
10	**1962**	6.12	15.46	3.39	83.18	514	10.66	38	348	1.05	94.89
11	**1963**	3.49	10.93	2.05	30.17	421	3.70	5	432	2.74	36.61
12	**1964**	4.90	13.78	2.49	56.87	256	4.59	5	690	5.15	66.61
13	**1965**	1.46	3.61	0.27	5.87	113	0.20	7	79	1.07	7.14
14	**1966**	4.74	14.40	2.16	80.15	217	2.54	9	180	5.74	88.43
15	**1967**	7.12	20.46	3.27	133.31	568	14.26	6	355	7.86	155.43
16	**1968**	7.15	21.17	2.62	144.61	683	41.11	130	3497	25.37	211.10
17	**1969**	6.20	33.22	2.91	281.90	1269	54.42	270	1408	68.11	404.44
18	**1970**	8.46	31.83	4.91	162.78	1434	48.61	19	1076	76.44	287.83
19	**1971**	13.25	59.74	6.24	423.13	2428	80.24	13	994	129.11	632.48
20	**1972**	4.10	26.69	2.45	98.56	897	12.46	58	544	47.17	158.19
21	**1973**	11.79	64.08	3.73	428.03	870	52.48	261	1349	88.49	569.00
22	**1974**	6.70	29.45	3.33	411.64	747	72.43	17	387	84.94	569.02
23	**1975**	6.17	31.36	3.85	271.49	804	34.10	17	686	166.05	471.64
24	**1976**	11.91	54.46	6.04	595.03	1746	92.16	80	1373	201.50	888.69
25	**1977**	11.46	49.43	6.84	720.09	1662	152.29	556	11316	328.95	1201.85
26	**1978**	17.50	70.45	9.96	911.09	3508	167.57	239	3396	376.10	1454.76
27	**1979**	3.99	19.52	2.17	169.97	1329	20.61	618	3637	233.63	614.20
28	**1980**	11.46	54.12	5.55	366.37	2533	170.85	59	1913	303.28	840.50
29	**1981**	6.12	32.49	3.27	524.56	913	159.63	82	1376	512.31	1196.50
30	**1982**	8.87	56.01	5.00	589.40	2397	383.87	247	1573	671.61	1644.88
31	**1983**	9.02	61.03	3.29	1285.85	2394	332.33	153	2378	873.43	2491.61
32	**1984**	10.71	54.55	5.19	906.09	1764	181.31	141	1661	818.16	1905.56

Contd..

Table 5.5.4 : Flood damage/heavy rains in India during 1953 to 2015

Sl. No.	Year	Area Affected	Population Affected	Damage to Crops		Damage to House		Cattle Lost Nos.	Human Lives Lost	Damage to Public Utilities	Total Damages Crops Houses & Public Utilities
				Area	Value	Nos.	Value				
		(M.Ha)	(Million)	(M.Ha)	(Rs. Crore)	('000)	(Rs. Crore)	('000)	(No.)	(Rs. Crore)	(Rs. Crore)
1	2	3	4	5	6	7	8	9	10	11	12
33	**1985**	8.38	59.59	4.65	1425.37	2450	583.86	43	1804	2050.04	4059.27
34	**1986**	8.81	55.50	4.58	1231.58	2049	534.41	60	1200	1985.54	3748.53
35	**1987**	8.89	48.34	4.94	1154.64	2919	464.49	129	1835	950.59	2569.72
36	**1988**	16.29	59.55	10.15	2510.90	2277	741.60	151	4252	1377.80	4630.30
37	**1989**	8.06	34.15	3.01	956.74	782	149.82	75	1718	1298.77	2405.33
38	**1990**	9.30	40.26	3.18	695.61	1020	213.73	134	1855	455.27	1708.92
39	**1991**	6.36	33.89	2.70	579.02	1134	180.42	41	1187	728.89	1488.33
40	**1992**	2.64	19.26	1.75	1027.58	687	308.28	79	1533	2010.67	3344.53
41	**1993**	11.44	30.41	3.21	1308.63	1926	528.32	211	2864	1445.53	3282.49
42	**1994**	4.81	27.55	3.96	888.62	915	165.21	52	2078	740.76	1794.59
43	**1995**	5.24	35.93	3.24	1714.79	2002	1307.89	62	1814	679.63	3702.31
44	**1996**	8.05	44.73	3.83	1124.49	727	176.59	73	1803	861.39	3005.74
45	**1997**	4.57	29.66	2.26	692.74	505	152.50	28	1402	1985.93	2831.18
46	**1998**	10.85	47.44	7.50	2594.17	1933	1108.78	107	2889	5157.77	8860.72
47	**1999**	7.77	27.99	1.75	1850.87	1613	1299.06	91	745	462.83	3612.76
48	**2000**	5.38	45.01	3.58	4246.62	2629	680.94	123	2606	3936.98	8864.54
49	**2001**	6.18	26.46	3.96	688.48	716	816.47	33	1444	5604.46	7109.42
50	**2002**	7.09	26.32	2.19	913.09	762	599.37	22	1001	1062.08	2574.54
51	**2003**	6.12	43.20	4.27	7307.23	775	756.48	15	2166	3262.15	11325.87
52	**2004**	5.31	43.73	2.89	778.69	1664	879.60	134	1813	1656.09	3529.71
53	**2005**	12.56	22.93	12.30	2370.92	716	380.53	120	1455	4688.22	7660.49
54	**2006**	1.10	25.22	1.82	2850.67	1497	3636.85	267	1431	13303.93	21546.29
55	**2007**	7.14	41.40	8.79	3121.53	3280	2113.11	89	3389	8049.04	13425.34
56	**2008**	3.43	29.91	3.19	3401.56	1567	1141.89	102	2876	5046.48	9595.34
57	**2009**	3.84	29.54	3.59	4232.61	1236	10809.80	63	1513	17509.35	32554.77
58	**2010**	2.62	18.30	4.99	5887.38	294	875.95	40	1582	12757.25	19520.59
59	**2011**	1.90	15.97	2.72	1393.85	1153	410.48	36	1761	6053.57	7857.89
60	**2012**	2.14	14.69	1.95	1534.11	175	240.57	32	933	9169.97	10944.65
61	**2013***	3.64	21.15	3.64	3214.99	662	526.12	157	2137	3938.12	11094.96
62	**2014***	10.24	9.25	5.09	1439.15	169	459.22	17	1402	4740.34	6638.27
63	**2015***	0.26	22.70	2.42	12693.08	870	7998.93	26	963	8343.79	29099.93
	Total	**442.53**	**1981.17**	**236.67**	**84890.97**	**75918**	**42598.16**	**5930**	**102986**	**136395.50**	**268551.11**
	Average	7.02	31.45	3.76	1347.48	1205.05	676.16	94.12	1634.70	2165.01	4262.72
	Maximum (Year)	17.5 (1978)	70.45 (1978)	12.299 (2005)	12693.084 (2003)	3507.542 (1978)	10809.80 (2009)	618 (1979)	11316 (1977)	17509.35 (2009)	32551.76 (2009)

Source: Central Water Commission (FFM Directorate)

*Tentative

Concluded.

Table 5.5.5 : State wise details of damage due to flood/heavy rains during 2015* in India

Name of the State/Uts.	Area Affected	Population Affected	Damage to Crops		Damage to House		Cattle Lost	Human Lives Lost	Damage to Public Utilities	Total Damages to Crops, Houses & Public Utilities
			Area	Value	Nos.	Value	(Nos)			
	(M.Ha)	(Million)	(M.Ha)	(Rs. Crore)	('000)	(Rs. Crore)	('000)	(No.)	(Rs. Crore)	(Rs. Crore)
2	3	4	5	6	7	8	9	10	11	12
Andhra Pradesh	0.000	0.000	0.000	0.000	103	0.000	420	28	0.000	0.000
Arunachal Pradesh	0.014	0.177	0.014	15.294	1702	16.946	848	29	1730.570	1765.123
Assam	0.000	0.018	0.002	0.000	16	0.000	0	0	0.000	0.000
Bihar	0.000	0.279	0.000	0.000	518	0.694	1	27	62.000	62.694
Chhattisgarh	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Goa	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Gujarat	0.000	4.000	0.000	0.000	0	0.000	0	98	0.000	0.000
Haryana	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Himachal Pradesh	0.006	6.865	0.000	121.380	3264	6.690	686	133	2.550	130.620
J & K	0.000	0.000	0.000	0.000	0	0.000	0	3	0.000	0.000
Jharkhand	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Karnataka	0.000	0.000	0.174	776.480	10427	12.020	430	128	75.490	863.990
Kerala	0.000	0.017	0.006	0.000	6705	0.000	4	74	6.507	109.170
Madhya Pradesh	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Maharashtra	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Manipur	0.000	0.427	0.045	35.050	11607	43.000	29	16	396.640	474.690
Meghalaya	0.000	0.000	0.000	0.000	50	0.000	0	1	0.000	0.000
Mizoram	0.189	0.000	0.189	0.386	4	0.200	0	0	0.050	0.636
Nagaland	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Odisha	0.000	0.012	0.046	0.000	573	0.000	0	3	0.000	0.000
Punjab	0.045	0.032	0.045	62.430	640	3.000	22	11	3.900	69.330
Rajasthan	0.000	0.001	0.000	0.000	0	0.000	0	40	0.000	0.000
Sikkim	0.000	0.000	0.600	0.000	0	0.000	303	0	0.000	0.000
Tamil Nadu	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Tripura	0.001	0.014	0.001	247.908	3255	20.735	21	1	42.120	269.373
Uttar Pradesh	0.000	0.010	0.000	0.000	6	0.000	0	0	0.000	0.530
Uttarakhand	0.000	0.000	0.000	0.000	411	0.000	181	33	0.000	0.000
West Bengal	0.000	10.840	1.300	11433.680	830245	7895.630	22774	338	6023.960	25353.270
Andaman & Nicobar	0.000	0.002	0.000	0.477	149	0.010	0	0	0.000	0.503
Chandigarh	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Dadra & Nagar Haveli	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Daman & Diu	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	
Delhi	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Lakshadweep	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Puducherry	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
Total	**0.255**	**22.694**	**2.422**	**12693.085**	**869675**	**7998.925**	**25719**	**963**	**8343.787**	**29099.929**

Source: Central Water Commission (FFM Directorate) * Tentative Nil: 0.000

Table 5.5.6: Year-wise damage caused due to floods, cyclonic storms, landslides etc. in India

Year	Live Lost human (in No)	Cattle Lost (in No)	Houses damaged (in No)	Cropped areas affected (in Lakh hectares)
2001-02	834	21269	346878	18.72
2002-03	898	3729	462700	21.00
2003-04	1992	25393	682209	31.98
2004-05	1995	12389	1603300	32.53
2005-06	2698	110997	2120012	35.52
2006-07	2402	455619	1934680	70.87
2007-08	3764	119218	3527041	85.13
2008-09	3405	53833	1646905	35.56
2009-10	1677	128452	1359726	47.13
2010-11	2310	48778	1338619	46.25
2011-12	1600	9126	876168	18.87
2012-13	984	24345	671734	15.34
2013-14	5844	102950	1209533	63.74
2014-15	1696	92180	725390	26.86
2015-16#	1192	50075	1230791	32.00

Source: Ministry of Home Affairs (MHA) # As on 24.11.2015

Table 5.5.7: List of districts covered under drought prone area programme (DPAP)				
Sl.No.	**State/District**		**No. of Blocks**	**Area of Blocks (in hectare)**
1	**Andhra Pradesh**			
	1	Adilabad	9	11793
	2	Chittoor	8	7761
	3	Cuddapah	7	8225
	4	Khammam	2	1228
	5	Kurnool	13	17366
	6	Mahabubnagar	16	18178
	7	Modak	5	4323
	8	Nalgonda	9	8178
	9	Prakasam	14	15165
	10	Ranareddy	7	5535
	11	Srikakulam	4	1466
		Total	94	99218
2	**Bihar**			
	1	Kaimur (Bhabhua	5	2237
	2	Jamul	7	3062
	3	Madhubani	4	772
	4	Nawadah	9	2276
	5	Rohtas	2	639
	6	Sitamarhi	3	547
		Total	30	9533
3	**Chhattisgarh**			
	1	Bastar	6	3857
	2	Bilaspur	3	1709
	3	Bijapur	3	6010
	4	Dantewada	3	
	5	Durg	2	1146
	6	Janjgir	1	440
	7	Kavardha	2	1386
	8	Korba	5	4309
	9	Rajnandgaon	4	2944
		Total	29	21801
4	**Gujarat**			
	1	Ahmedabad	6	4429
	2	Amreli	11	7393
	3	Bharuch	4	3129
	4	Bhavnagar	6	4896
	5	Dahod	7	3811
	6	Junagarh	6	3162
	7	Narmada	4	2800
	8	Navsari (Valsad)	1	593
	9	Panchmahals	10	4639
	10	Porbandar	2	1729
	11	Sabarkantha	1	368
	12	The Dangs	1	1723
	13	Vadodara	5	3244
	14	Valsad	3	2022
		Total	67	43938

Contd…

Sl.No.	State/District		No. of Blocks	Area of Blocks (in hectare)
5	**Himachal Pradesh**			
	1	Bilaspur	3	1120
	2	Solan	2	685
	3	Una	5	1514
		Total	10	3319
6	**Jammu & Kashmir**			
	1	Doda	6	11656
	2	Ramban	4	
	3	Kishtwar	5	
	4	Udhampur	3	3049
	5	Reasi	4	
		Total	22	14705
7	**Jharkhand**			
	1	Bokaro	2	755
	2	Chatra	4	2493
	3	Deoghar	7	2436
	4	Dhanbad	8	2000
	5	Dumka	16	3693
	6	Garhwa	14	3630
	7	Godda	7	2019
	8	Hazaribagh	6	430
	9	Ramgarh	4	
	10	Jamtara	4	0
	11	Kodarma	4	0
	12	Latehar	7	0
	13	Pakur	6	0
	14	Palamau	11	0
	14	Sahebganj	6	0
		Total	100	34843
8	**Karnataka**			
	1	Bangalore	4	5843
	2	Ramnagara	4	
	3	Belgaum	7	9450
	4	Bidar	4	4491
	5	Chamarajanagar	1	1406
	6	Chickmangalur	6	6416
	7	Chitradurga	5	6681
	8	Davangere	1	953
	9	Dharwad	4	3016
	10	Gadag	4	4210
	11	Gulbarga	9	14603
	12	Hassan	4	4002
	13	Haveri	6	4063
	14	Kolar	5	6370
	15	Chikkaballapura	4	2630
	16	Mysore	3	
	17	Tumkur	10	10198
		Total	81	84332

Contd…

Sl.No.	State/District		No. of Blocks	Area of Blocks (in hectare)
9	**Madhya Pradesh**			
	1	Badwani	6	3184
	2	Betul	10	7080
	3	Bhind	1	406
	4	Chindwada	8	7474
	5	Damoh	3	2204
	6	Dewas	3	3009
	7	Dhar	8	4981
	8	Guna	6	7196
	9	Ashok Nagar		
	10	Jabalpur	1	863
	11	Jhabua	12	6791
	12	Alirajpur	5	3886
	13	Khandwa		
	14	Khargone	5	3246
	15	Panna	3	2727
	16	Raisen	3	2325
	17	Rajgarh	2	1873
	18	Ratlam	1	681
	19	Rewa	4	2124
	20	Seoni	5	5424
	21	Shahdol	4	5225
	22	Annuppur		
	23	Shahjapur	2	1639
	24	Shivpuri	3	2780
	25	Sidhi	4	10350
	26	Singroli	4	
	27	Umaria	2	3633
		Total	105	89101
10	**Maharashtra**			
	1	Ahmednagar	10	14109
	2	Akola	7	5363
	3	Washim	6	5177
	4	Amravati	9	6407
	5	Aurangabad	6	8108
	6	Beed	6	9008
	7	Buldhana	9	6877
	8	Chandrapur	3	4206
	9	Dhule	3	5735
	10	Nandurbar	4	4886
	11	Gadchiroli	3	7686
	12	Jalgaon	7	6504
	13	Jalna	2	2826
	14	Latur	4	5676
	15	Nagpur	1	829
	16	Nanded	4	4703
	17	Nasik	13	15658
	18	Osmanabad	3	3197
	19	Parbhani	2	3288
	20	Hingoli	2	3308
	21	Pune	12	33355
	22	Sangli	7	7164
	23	Satara	4	5035
	24	Sholapur	10	13730
	25	Yeotmal	12	11638
		Total	149	194473

Contd…

Sl.No.	State/District		No. of Blocks	Area of Blocks (in hectare)
11	**Orissa**			
	1	Bargarh	6	2648
	2	Bolangir	8	3446
	3	Boudh	2	2516
	4	Dhenkanal	2	1167
	5	Kalahandi	10	5741
	6	Naupada	5	2685
	7	Phulbani (Kandhamal)	12	7376
	8	Sonepur	2	599
		Total	47	26178
12	**Rajasthan**			
	1	Ajmer	3	2660
	2	Banswara	8	5037
	3	Baran	2	3587
	4	Bharatpur	1	501
	5	Dungarpur	5	3793
	6	Jhalawar	3	3536
	7	Karouli	1	1393
	8	Kota	2	1964
	9	Swai Madhopur	1	1375
	10	Tonk	3	3176
	11	Udaipur	3	4947
		Total	32	31969
13	**Tamil Nadu**			
	1	Coimbatore	5	1530
	2	Dharmapuri	14	5751
	3	Krishnagiri		
	4	Dindigul	3	1846
	5	Karur	2	976
	6	Perambalur	2	2122
	7	Ariyalur	4	
	8	Pudukottai	4	1334
	9	Ramanathapuram	7	2988
	10	Salem	5	1087
	11	Namakkal	3	592
	12	Sivaganga	7	2616
	13	Thiruvannamalai	1	255
	14	Thothukudi	8	3662
	15	Tiruchirapalli	1	475
	16	Tirunelveli	1	326
	17	Vellore	6	1349
	18	Virudhunagar	7	2507
		Total	80	29416
14	**Uttar Pradesh**			
	1	Allahabad	1	587
	2	Bharaich	14	5405
	3	Sravasthi		
	4	Balrampur (Gonda)	4	2090

Contd…

Sl.No.	State/District		No. of Blocks	Area of Blocks (in hectare)
	5	Banda	6	3546
	6	Chitrakoot	5	3647
	7	Hamirpur	3	2216
	8	Jalaun	3	*2140*
	9	Jhansi	5	3281
	10	Lakhimpur Kheri	2	392
	11	Lalitpur	2	1793
	12	Mahoba	2	*1835*
	13	Mirzapur	2	1385
	14	Sitapur	3	1108
	15	Sonebhadra	8	6273
		Total	60	35698
15	**Uttarakhand**			
	1	Almora &		
	2	Bageswar	8	3114
	3	Chamoli	4	5850
	4	Garhwal (Pauri)	10	4070
	5	Pithoragarh &		
	6	Champavath	5	1709
	7	Tehri Garhwal	3	1053
		Total	30	15796
16	**West Bengal**			
	1	Bankura	7	2185
	2	Birbhum	2	397
	3	Midnapur	7	2707
	4	Purulia	20	6305
		Total	36	11594
		Grand total	**972**	**745914**

Source : Department of Land Resources, Ministry of Rural Development Concluded.