

STATUS REPORT ON SARDAR SAROVAR PROJECT

(March, 2017)

1. Background

The Narmada Water Disputes Tribunal (NWDT) in its final order in December 1979 has given detailed directions regarding Apportionment of the Utilizable Quantum of Narmada Waters, Sharing of Power, Costs, Benefits and setting up a machinery for implementing the decisions of the Tribunal. The Central Government has accordingly framed a scheme, called Narmada Water Scheme, which *inter-alia* consists of the following three Authorities/Committees

1. Narmada Control Authority (NCA)
2. Sardar Sarovar Construction Advisory Committee (SSCAC)
3. Review Committee of NCA (RCNCA)

The Secretary to Govt. of India, Ministry of Water Resources is the Chairman of NCA and SSCAC with representatives from Party States of Gujarat, Madhya Pradesh, Maharashtra, Rajasthan and various Central Govt. Ministries/ Organizations as Members.

Union Minister for Water Resources, Govt. of India is the Chairman of Review Committee for NCA (RCNCA) with Chief Minister of party states of Gujarat, Madhya Pradesh, Maharashtra, Rajasthan and Union Minister for Environment as Members.

Narmada Control Authority (NCA)

Narmada Control Authority (NCA) is an inter-State administrative authority, established for the purpose of implementation of the decision and directions of the Narmada Water Disputes Tribunal.

The Authority coordinates construction programme of the Sardar Sarovar Unit-II (Canals) with a view to obtain expeditiously optimum benefits during and after the completion of the construction of the projects, keeping in view the availability of funds. Earlier the Authority also co-ordinated the construction programme of the Narmada Sagar (now, Indira Sagar) Project. The Authority also co-ordinates in power generation scheduling and sharing of power of SSPP, Reservoir Regulation of Narmada Basin, Monitoring of R&R of SSP and Environmental Safe Guard Measures of SSP & ISP etc.

Sardar Sarovar Construction Advisory Committee (SSCAC)

Sardar Sarovar Construction Advisory Committee (SSCAC) performs the advisory function over the construction programme of the Sardar Sarovar Project.

Review committee of Narmada Control Authority (RCNCA)

The RCNCA may review any decision of the NCA and also may grant stay of any order of the NCA pending final decisions on review.

2. Sardar Sarovar Project:

The Sardar Sarovar Project is an inter-State multi-purpose project on the river Narmada in Gujarat. It is a joint venture between the States of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan. Although the Project was originally envisaged in the year 1946, due to the dispute regarding sharing of waters of the Narmada among the co-basin States, its implementation could not be initiated. Under the Inter-state Water Disputes Act, 1956, Narmada Water Dispute Tribunal (NWDT) was,

therefore, set up in 1969 to adjudicate on the dispute relating to sharing of water of the inter state river Narmada and its valley. The NWDT, considering the development of the water resources of the basin as a whole, gave its award in 1979 allocating share of Water of Narmada based on 75% dependability and Power of Sardar Sarovar Project as under:

STATE	Share of Narmada Water (in 75% dependable year)		Share of Power from SSP (1450 MW)
	Million Acre Feet	Percentage	Percentage
Madhya Pradesh	18.25	65.18	57
Gujarat	9.00	32.14	16
Rajasthan	0.50	1.79	---
Maharashtra	0.25	0.89	27
Total	28.00	100.00	100

After further deliberations on all aspects, including environmental and forests, the Project was approved by the Government of India after clearance from Environment & Forests angle in 1987. Salient features of the Project are at **Annexure-I**.

3. PROGRESS IN CONSTRUCTION OF THE PROJECT

3.1 Progress of work on various components of Sardar Sarovar Project up to **March, 2017** is as follows:

PROGRESS OF CONSTRUCTION OF SARDAR SAROVAR PROJECT UPTO January, 2017								
Sl	Particulars	Unit	Total Revised Qty	Progress Up to March 2016	Progress During 2016-17	Progress Up to Jan., 2017	% of Progress	Status
1.0	MAIN DAM							
a	Excavation	LCM	64.00	63.61	0.00	63.61	99.39%	
b	Concreting	LCM	68.20	67.433	0.054	67.49	98.96%	
c	Hydro Mechanical Works							
i	Embedded Parts	MT	2700.00	2332.09	367.91	2700.00	100.00%	
ii	Installation Parts	Nos	30.00	14.00	16.00	30.00	100.00%	
2	HYDRO POWER							
2.1	RIVER BED POWER HOUSE (Civil Works)							Completed
	Work Completed ; Total open excavation - 17.033 LCM, Underground excavation - 6.88 LCM						Completed	
2.2	GARUDESHWAR WEIR							
a	Excavation	LCM	16.150	6.670	1.186	7.856	48.64%	
b	Concreting	LCM	7.63	0.18	1.37	1.551	20.33%	
c	Steel	MT	4220.0	0.00	656.69	656.689	15.56%	
2.3	CANAL BED POWER HOUSE (Civil Works)							Completed
	Work Completed - Total Concrete 1.29 LCM							
2.4	VADGAM SADDLE DAM - Work Completed : Total Concrete -2.10 LCM							Completed
3	CANAL SYSTEM							
3.1	I.B.P.T. Works (Work Completed : Total EW-7.66 LCM, Concrete- 1.61 LCM)							Completed
3.2	NARMADA MAIN CANAL							
I	NMC Phase-I Ch 0.0 to 144.50 Km		Work Completed : Total EW-789.79 LCM, Lining-151.129 LSM and Concrete- 21.32 LCM					Completed

IIA	NMC Phase-IIA Ch 144.50 to 263.156 Km	Works completed : Total EW=753.97 LCM, Lining=130.0 LSM, Concrete = 5.283 LCM ; 7 Major Structure : EW 37.29 LCM, Lining =1.35 LSM, Concreting 9.49 LCM					Completed
IIB	NMC Phase-IIB Ch 263.156 to 357.193Km	Works Completed : Total EW-246.496 LCM, Lining- 74.227 LSM, Concrete- 4.10 LCM : 3 Major Structure : EW 7.98 LCM, Lining =0.35 LSM, Concreting 4.10 LCM					Completed
IIC	NMC Phase-IIC 357.193 to 458.318 Km	Works Completed : Total EW-257.13 LCM, Lining- 51.91LSM, Concrete- 2.96 LCM : 3 Major Structure : EW 25.05 LCM, Lining =0.59 LSM, Concreting 5.08 LCM					Completed
	NMC Ch 0.00 to Ch 458.318 Km	Completed Total : EW = 2117.706 LCM, Lining =409.556 LSM, Concreting = 52.333 LCM					Completed
3.3	Branch Canal (Including Sub-Branch)						
	Other than Kachch Branch Canal						
I	NMC Phase-I Ch 0.0 to 144.50 Km	Total EW-377.07 LCM, Lining- 90.57 LSM, Concrete - 4.67LCM					Completed
IIA	NMC Ch 144.50 to 263.156 Km	Total EW-90.75 LCM, Lining- 29.97 LSM, Concreting -1.69 LCM excluding Narsingpura Branch Canal (Sub Brach of SBC)					Completed
II B	NMC Ch 263.156 to 357.193 Km	Total EW-104.34, LCM, Lining- 40.67 LSM, Concreting -1.57 LCM					Completed
	Saurashtra Branch Canal	Including Narsingpura Branch Canal (Sub Branch of SBC)					
a	Earthwork	LCM	1034.80	1007.36	5.29	1012.65	97.86%
b	Lining	LSM	235.54	220.8	1.69	222.49	94.46%
c	Concreting	LCM	24.78	24.41	0.52	24.93	100.61%
II C	NMC Ch 357.193 to 458.318 Km (Other than EPC)	Total EW=60.42 LCM, Lining=16.91 LSM, Concr. 0.52 LCM					Completed
II D	Kachch Branch Canal (Other than EPC)						
a	Earthwork	LCM	459.42	351.76	68.09	419.85	91.39%
b	Lining	LSM	79.03	66.32	5.75	72.07	91.19%
c	Concreting	LCM	9.58	7.58	1.54	9.12	95.20%
3.4	Works of Branch Canals, Distributaries & Minors carried out on EPC basis (5 packages)						
a	Earthwork	LCM	384.75	307.93	54.82	362.75	94.28%
b	Lining	LSM	75.91	61.78	11.93	73.71	97.10
c	Concreting	LCM	8.08	7.06	0.59	7.65	94.68%
3.5	Distribution System						
I	NMC Ch 0.0 to 144.50 Km						
	Distributaries & Minors						
a	Earthwork	LCM	651.00	616.74	0.47	617.21	94.81%
b	Lining	LSM	183.14	166.71	0.06	166.77	91.06%
c	Concreting	LCM	10.51	10.35	0.01	10.36	98.57%
	Sub-Minors						
a	Conventional type	Total EW=145.75 LCM, Lining=98.94 LSM, Concreting 3.12 LCM,					Completed
b	UGPL	Km	3057.64	429.4	611.05	1040.45	34.03%
II A	NMC Ch. 144.50 to 263.156 (Including SBC & its Sub Branches)						
	Distributaries & Minors (Excluding Sub-Minor)						

a	Earthwork	LCM	739.96	583.17	53.77	636.94	86.08%
b	Lining	LSM	235.86	170.53	18.57	189.10	80.17%
c	Concreting	LCM	15.82	13.35	1.37	14.72	93.05%
d	Masonry	Thcm	119.48	119.48	0.00	119.48	100.00%
Sub-Minors							
a	Conventional type	Total EW=54.75 LCM, Lining=26.25 LSM, Concreting 0.11 LCM, Masonry=18.49 Thcm					
b	UGPL	Km	16499.18	1372.04	3323.53	4695.57	28.46%
II B	NMC Ch. 263.156 to 357.193 Km						
	Distributaries & Minors						
a	Earthwork	LCM	386.97	330.73	14.40	345.13	89.19%
b	Lining	LSM	109.33	97.53	3.82	101.35	92.70%
c	Concreting	LCM	4.63	3.75	0.96	4.71	101.73%
d	Masonry	Thcm	177.42	170.18	11.84	182.02	102.59%
	Sub-Minors (UGPL)	Km	9005.19	2395.88	3189.98	5585.86	62.03%
II C	NMC Ch. 357.193 to 458.318 Km (Including KBC & its Sub-Branches)						
	Distributaries & Minors						
a	Earthwork	LCM	136.07	121.04	0.00	121.04	88.95%
b	Lining	LSM	38.28	36.89	0.46	37.35	97.57%
c	Concreting	LCM	2.66	2.47	0.00	2.47	92.86%
	Sub-Minors (UGPL)	Km	5957	2989.69	1229.61	4219.30	70.83%
4	Command area Development						
	Irrigation Potential (up to Minor)	L.Ha	17.92	12.97	1.16	14.13	78.88%
	CCA Development up to Sub Minor	L.Ha	18.45	6.024	3.85	9.88	53.54%
5	Road works on NMC & Branch Canal						
	Narmada Main Canal						
	SDBM on SR Side (Length)	Total length : 451 Km					Completed
	WBM on IP (Length)	Total length : 451 Km					Completed
	Branch Canal						
	SDBM on SR Side (Length)	Km	968.81	497.93	114.23	612.16	63.19%
	WBM on IP (Length)	Km	989.91	761.06	66.05	827.11	83.55%
	SDBM on IP (Length)	Km	103.91	0.0	101.88	101.88	98.05%
6	Area Irrigated and Drinking water supply during the Irrigation Year 2016-17 (i.e From July 2016 to June 2017)						
	Component	Unit	Qty up to Previous month	Progress during the month	Total Qty during the year		
1	Area Irrigated	Ha.	511942	54759	566701		
2	Drinking water Supply	MCM	1594.10	149.9891	1744.09		

7 STATUS OF CANAL NETWORKS (LENGTH WISE)									
S.No.	Particulars	Unit	Total Revised Qty	Progress up to March 2016	Progress during 2016-17	Up to March, 2017	% Progress		
a	Main Canal	Km	458.32	458.32	0.00	458.32	100.00%	Completed	
b	Branch Canal (with Sub-Branch)								
	(i) Other than SBC & KBC	Km	1352.97	1349.58	2.17	1351.74	99.91%		
	(ii) Saurashtra Branch Canal	Km	104.46	104.46	0.00	104.46	100.00%	Completed	
	(iii) Sub-Branch Canal of SBC	Km	761.00	757.32	3.19	760.507	99.94%	Completed	
	(iv) Kachchh Branch Canal	Km	357.19	252.71	32.75	285.457	79.92%		
	(v) Sub-Branch Canal of KBC	Km	154.98	51.28	10.92	62.20	40.13%		
	TOTAL		2730.59	2515.35	49.01	2564.36	93.91%		
c	Distribution System								
	Distributaries	Km	4569.41	3920.915	196.13	4117.043	90.10%		
	Minors	Km	15669.94	11487.10	830.32	12317.411	78.61%		
	Sub-Minors								
	(i) Conventional	Km	10216.92	10216.92	0.00	10216.92	100.00%	Completed	
	(ii) UGPL	Km	38103.02	7187.00	8354.18	15541.17	40.79%		
	Total (c)		68559.29	32811.93	9380.62	42192.55	61.54%		
	Total (a) + (b) + (C)		71748.19	35785.60	9429.63	45215.23	63.02%		
PROGRESS OF CONSTRUCTION OF NARMADA CANAL PROJECT IN RAJASTHAN									
SL	Description	Unit	Total Revised Qty	Progress up to March 2016	Progress up to March, 2017	% Progress			
A	Narmada Canal (0 to 74 Km)	Works Completed Total EW-6279.32 TCM, Lining-2011.74 TSM & Structure-64							
B	Distributaries(Flow & Lift) i/c Sub Disty., Minors & Sub Minors.								
a	Total Length	Km	1793.062	1779.212	1799.582	99.97%			
b	Earthwork	TCM	47084.86	46364.186	46979.686	99.78%			
c	Lining	TSM	7589.233	7483.01	7586.011	99.96%			
d	Structure	No	2580	2399	2538	98.37%			
e	Diggies	No	2236	2131	2225	99.51%			
C	Expenditure Approved estimate (A) 46753.44 (1989-90 price level) (B) 248148.90 (2008-09 price level)	(Rs. in Lakh)	Expenditure up to March 2015	Expenditure up to March 2016	Expenditure up to March, 2017				
			225009.50	234279.80	246822.82				
<p>LCM= Lac Cubic Meter , LSM= Lac Square Meter, ThCM= Thousand Cubic Meter, EW= Earthwork , LHa= Lac Hectare, MCM= Million Cubic Meter , S.R.= Service Road, I.P.= Inspection Path. COMPLETED= The works are completed but some packages are not finalised, hence the quantity may vary after finalisation of the works.</p>									

3.2 Progress on Raising the Height of Sardar Sarovar Dam

Taking into account the recommendations of the Environment Sub-group and R&R Sub-group of NCA, the Narmada Control Authority in its 76th Meeting held on 08.03.2006 decided that “*The Sardar Sarovar Narmada Nigam Limited (SSNNL) is permitted to raise the height of the spillway of Sardar Sarovar dam to EL 121.92 m as per the approved design. The project authorities should comply with the conditions laid down by the two Sub-groups of NCA and complete the above construction by the end of June, 2006. The project authorities should ensure that the non-overflow blocks are raised to safe elevations or suitable measures are taken so as to avoid over topping of these blocks. Particular care is to be taken by all the party States in preparing the contingency plans to provide timely safeguards in case of any untoward incident and to ensure that there is no submergence before rehabilitation.*”

In pursuance of this decision, the SSNNL has completed the raising of Sardar Sarovar Dam spillway blocks up to 121.92 m by the end of December-2006. Further, NCA in its 86th meeting (emergency) held on 12th June 2014 decided that

“The Sardar Sarovar Narmada Nigam Limited is permitted to carry out Phase-I proposal comprising construction of piers, overhead bridge and installation of gates in open or raised position at SSP as per the approved design. The project authorities should comply with the conditions as laid down by the two Sub-groups of NCA. Particular care may be taken in preparing plan to provide timely safeguard in case of untoward / unforeseen incident,”

A statement showing the levels of different dam blocks attained as on 31st January, 2017 is enclosed at **Annexure-II**.

3.3 Narmada Main Canal

Works on Narmada Main Canal (NMC) from Head Regulator to Gujarat Rajasthan border (Ch. 0 to 458.318 km) is almost completed. Narmada Water has reached Rajasthan on 18.3.08 by completing one monolith of major canal syphon works and bye-pass arrangement at khari canal syphon. Works of 74.0 Km. Narmada Main Canal in Rajasthan is also completed.

Partial irrigation benefits are being achieved by releasing Narmada water from the Sardar Sarovar Dam since it has been raised up to EL 121.92 m. Govt. of Gujarat has created a irrigation potential of 11.57 Lha and Rajasthan has also created an irrigation potential of 2.051 Lha initially to utilize Narmada Waters.

3.4 River Bed Power House (RBPH) of SSP

All the 6 Units of RBPH have been commissioned successfully during February, 2005 to June, 2006 and all Units are in operational condition.

3.5 Canal Head Power House (CHPH)

All the five Units of CHPH have been commissioned successfully during August 2004 to December 2004 and all Units are in operational condition.

4. Partial Benefits: Available at 121.92 metre height of Sardar Sarovar Dam

a) Irrigation

Year	Potential created (Ha) (April-March)		Actual irrigation done In Ha (July to June)
	During the year In Ha	Cummulative In Ha	
1	2	3	4
Upto 2002-03	141096	141096	28336
2003-04	59628	200724	32197
2004-05	77946	278670	41168
2005-06	33587	312257	57526
2006-07	81840	394097	61941
2007-08	66135	460232	69379
2008-09	20885	481117	83061
2009-10	14000	495117	121150
2010-11	28892	524009	167757
2011-12	21267	545276	193683
2012-13	128237	673513	209057
2013-14	274782	948295	187904.47
2014-15	116843	1065138	192130.76upto June, 2015)
2015-16	91974	1157112	508738
2016-17			566701(March, 2017)

a) **Drinking water supply :**

Total 13697.7484 MCM water has been supplied for drinking water supply in Gujarat during the period from January-2001 to March, 2017 while 1744.09 MCM water has been supplied for drinking purposes during the water year (July-2016 to June-2017) up to **March, 2017**

c) **Hydro Power: Energy Generation from SSP (In Million Units)**

Year	CHPH	RBPH	Total
2004-05	173.515	89.742	263.257
2005-06	189.858	1761.924	1951.782
2006-07	228.073	3372.009	3600.082
2007-08	316.874	4118.818	4435.692
2008-09	337.040	1980.633	2317.673
2009-10	520.889	1980.438	2501.327
2010-11	327.48	3261.192	3588.740
2011-12	508.550	3850.746	4359.296
2012-13	651.927	3046.312	3698.239
2013-14	660.520	5216.804	5877.324
2014-15	611.791	2297.76	2909.551

2015-16	614.181	1450.128	2064.309
2016-17 (up to March, 2017)	876.325	2332.232	3208.557
TOTAL	6025.484	34758.516	40784.000

5 FINANCIAL PROGRESS: (As reported by SSNNL) is at Annexure-III

5.1 RELEASE OF FUNDS UNDER ACCELERATED IRRIGATION BENEFITS PROGRAMME TO NARMADA MAIN CANAL (GUJARAT)

Keeping in view the need to augment the allocation of funds for accelerating the construction of Narmada Main Canal and distributaries for early development of irrigation facilities in the command area of the project, the Government of India had decided to include Sardar Sarovar Project under Accelerated Irrigation Benefits Programme (AIBP). Under this programme Government of India has released Central Loan Assistance (CLA)/grant of Rs. 8664.224 crore, to SSNL during the period from 1996-97 to the end of March, 2015 (Rs. in crore)

l.No.	Financial Year	CLA / Grant released by GOI
1	1996-1997	071.25
2	1997-1998	177.00
3	1998-1999	410.00
4	1999-2000	267.00
5	2000-2001	400.00
6	2001-2002	574.00*
7	2002-2003	997.00**
8	2003-2004	649.50***
9	2004-2005	530.50@
10	2005-2006	339.60
11	2006-2007	121.89
12	2007-2008	585.72
13	2008-2009	251.90
14	2009-2010	000.00
15	2010-2011	361.420
16	2011-2012	000.00
17	2012-2013	1285.93
18	2013-2014	607.57
19	2014-2015	1033.944
20	2015-2016	128.003
21	2016-2017	-
TOTAL		8792.223

(*) Including Rs.94.00 crore under Fast Track Programme.

(**) Including Rs.94.00 crore under Fast Track Programme.

(***) Including Rs. 92.50 crore under Fast Rack Programme.

(@) Including Rs.92.50 crore under FTP of which Rs.27.75 crore is grant.

5.2 Release of funds under Accelerated Irrigation Benefits Programme to Narmada Canal

(Rajasthan).

Keeping in view the need for early completion of Narmada Canal in Rajasthan, the Govt. of India has included Narmada Canal project of Rajasthan under Accelerated Irrigation Benefit Programme (AIBP). Under this programme, Govt. of India has released an amount of Rs. 1117.454 crore up to March, 2016.

6. RESETTLEMENT AND REHABILITATION PROGRAMME OF SSP

At the Full Reservoir Level (FRL) of 138.68 m. out of 230 affected villages, 19 villages lie in Gujarat and 33 villages lie in Maharashtra while remaining 178 villages lie in M.P. Further, out of 230 affected villages, only 4 villages are getting fully submerged, which include Rohana Village (uninhabited) in Madhya Pradesh and Gadher, Vadgam and Mokhadi villages in Gujarat. In M.P., out of 178 villages, less than 10% land of the village is likely to be submerged in 82 villages. In another 21 villages only houses will be submerged temporarily requiring them to be relocated at higher levels. Altogether there are 32679 PAFs in these 230 affected villages,

S.N	Particulars	Unit	Gujarat	M.P.	Maharashtra	Total
1.	Villages	No.	19	178	33	230
2.	Project Affected Families (PAFs) (Including major sons)	No.	4761	23614	4304	32679
3.	Land					
	i) Culturable	Ha.	1877	7883	1519	11279
	ii) Forest Land	Ha.	4166	2731	6488	13385
	iii) Other Land	Ha.	1069	10208	1592	12869
	Total Land	Ha.	7112	20822	9599	37533

In all 37533 ha. of land (out of which 12,869 ha. is in the river bed or wasteland, only 11,279 ha. is agricultural land, the rest being the forest land) may be submerged. State wise breakup of above details are as under:

In all 32679 families including major sons are likely to be affected by the project at FRL. Status of R&R at various elevations of SSP is enclosed at Annex:-IV

Progress made on Resettlement & Rehabilitation of Project Affected Families at Full height of the Dam (FRL) ie.138.68m up to 31st March,2017 as below:

Dam height	State	No. of Villages affected	Total PAFs	Total PAFs resettled			Total PAFs resettled	Balance PAFs likely to be resettled
				Gujarat	Maharashtra	M.P.		
121.92m	Gujarat	19	4761	4761	0	0	4761	0
	Maharashtra	33	4304	768	3492	0	4260	44
	M.P.	178	23614 \$	5551	0	18063*	23614	*
Total		230	32679	11080	3492	10863	32635	44

\$ As per revised Back Water Level

* Special Rehabilitation Package (SRP) details (as on 31.3.2017)

- The Hon'ble Supreme Court in its landmark Judgment dt. 08.02.2017 in Writ Petition No. 328 of 2002 extended compensation to 681 PAFS of Madhya Pradesh (MP) Rs. 60 Lakh for two hectares of land who have not received any compensation and Rs. 15 lakh per family to 1358 PAFs of MP who were paid both installment of Special Rehabilitation Package (SRP) earlier after deducting earlier paid installment.
- Government of Madhya Pradesh through its Grievance Redressal Authorities (GRSs) is planned to complete payments of of compensation of Rs 15 Lakh to 943 PAFs (After scrutiny figure of 1358 reduced to 943) and Rs 60 Lakh to 681 PAFs in compliance to the direction of Hon'ble Supreme Court dated 08.02.2017 in IAs in WP 328 of 2002.

7. STATUS OF IMPLEMENTATION OF ENVIRONMENTAL SAFEGUARD MEASURES.

On the basis of information received from the party States, the status of implementation of Environment Safeguard Measures and compliance to the conditions of environmental clearance are as under:

(I) CATCHMENT AREA TREATMENT

(Figure in Ha)

Sl. No.	Description	Madhya Pradesh	Gujarat	Maharashtra	Total
1	Catchment below ISP	2248600	30230	163611	2442441
2	Very High and High degraded area as identified by AISSLUI	433740	30230	100993	564963
3	Phase I area: Directly draining Very High and High degraded area	115622	29730	24298	169650
4	Phase I area: Target (after deducting untreatable area on account of being rocky/steep slope, etc.**	110997	29157	23295	163449
5	Phase I area: Achievement	110997	29157	23295*	163449
6	Phase I area: Achievement in %	100%	100%	100%	100%
7	Phase II area*: Freely draining Very High and High degraded area	318118	500	77568	396186

8	Phase II area*: Target (after deducting untreatable area on account of being rocky/steep slope, etc.)**	262165	500	43125	305790
9	Phase II area: Achievement	237753	500	40175	278428
10	Phase II area: Achievement in %	90.69%	100%	93.15%	91.10%

Note: ** Balance area is untreatable.

- The balance CAT work related to Phase-II are 24412 ha in MP and 2950 ha in Maharashtra and the same is planned to be completed by June, 2017.

(II) COMPENSATORY PLANTATION:

a. In lieu of 13386 ha forest area diverted for submergence

Sl. No.	State		Target (ha)	Achievement (ha)	Achievement (%)
1	Gujarat	Degraded Forest Area	9300	9300	100%
		Non Forest Area	4650	4650	100%
		Total	13950	13950	100%
2	Madhya Pradesh	Degraded Forest Area	6538	6538	100%
		Non Forest Area	2199	2199	100%
		Total	8737	8737	100%
3	Maharashtra	Degraded Forest Area	12977	12977	100%
		Non Forest Area	6489	6402*	98.6%
		Total	19466	19379	99.5%
GRAND TOTAL			42153	42066	99.7%

* Non forest land is being indentified to substitute areas found unfit for plantations

* In Maharashtra 87 ha non forest area is required to be bought under Compensatory Afforestation. Maharashtra has planned Compensatory Afforestation in 174 ha of degraded forest and the work is in progress.

b. Compensatory Afforestation in lieu of 4200 ha forest area diverted for rehabilitation in Maharashtra

Target = 4200 ha
Achievement = 4197.5 ha (Remaining area unfit for plantation)
Achievement (%) = 99.9%

c. Efficacy of Plantations: Regarding rate of survival of the plantations, the information available in this office is presented below.

Activities	Gujarat	Maharashtra	Madhya Pradesh
			SSP
Survival percentage/ year of reporting	50% non forest areas below 50 % in degraded forest land (2004).	80% of non forest and degraded forest areas with 42% success (2007)	26% in non forest area and 45% in Forest area (2008)

d. Progress in notification as forest area up to March, 2017

States	Area to be declared (ha)	Area under declaration	% Achievement
Gujarat (Under Section-4)	4650	4650	100%
Gujarat (Under Section-20)	4650	1640.35	35.28%
Madhya Pradesh	2059.81	2059.81	100%
Maharashtra	10602	10505	99.08%

(III) COMMAND AREA DEVELOPMENT PLAN

	Gujarat	Rajasthan
Studies	Completed	Completed
Biodiversity	Completed	Completed
Health	Completed	Completed and some new study in progress.
Preparation of Action plan	Phase-I & Phase II completed and is under implementation.	Command Area Development plan under implementation..

(IV) DOWN STREAM ENVIRONMENT (Gujarat State)

	Compensatory flows	Downstream Management plan
Studies	Completed	progressing
Action plan	Monitoring by SSRC of NCA	Awaited
Implementation	600 Cusec being maintained through Godbole gate/ other methods	Mangrove plantations undertaken

(d) FLORA, FAUNA AND CARRYING CAPACITY

Terrestrial Environment (Land life) :

Key Issues/Target	Achievements		
	Gujarat	Maharashtra	Madhya Pradesh
Survey of flora – fauna assessment of carrying capacity	Reprt of M.S. University (1992), Vadodara on submergence and other impact areas in Gujarat	Report (1994.) of Deptt. of Environmental Sciences, University of Pune for SSP areas in Maharashtra.	Report (1993) by SFRI Jabalpur for SSP areas in Madhya Pradesh & WLI in 2008.
Preparation and execution of plans as per recommendation of EIA Studies.	Identified plant species are being preserved at MS University Botanical garden. Besides biodiversity conservation plan in sanctuary areas is also in progress.	Buffer zone plantations covering 2500 Ha is completed	Social forestry plan had been taken up to enhance fuel and fodder availability. Sixty island to be formed at FRL of SSP Reservoir are to be left undisturbed.
Rehabilitation plan for the identified wildlife impacted by submergence.	The area of Shoolpaneshwar sanctuary located close to the dam was extended from 102 Sq. Km to 602 Sq. Km during 1989 to provide shelter to Wildlife.	The Toranmal Forest has been declared as ‘Conservation Reserve’ by Govt. of Maharashtra.	A committee constituted by Government of Madhya Pradesh found that the proposed Kathiawara Sanctuary is located more than 30 kms from Sardar Sarovar Project (SSP) reservoir and there is no forested corridor linking it, and hence its declaration will not serve the purpose of rehabilitation of wildlife displaced by SSP reservoir. Committee directed State Forest Research Institute (SFRI), Jabalpur to prepare DPR for development of environment and wild life habitat in 5616 hectare of forest area known as Mathwad range adjacent to SSP reservoir. In view of this, declaration of Kathiawara as Sanctuary or Conservation Reserve was not found practical for the rehabilitation of wildlife displaced due to SSP. The works related to improvements of habitat and wildlife management in 5616 ha. forest area had already been started in consultation with the SFRI..

➤ **Aquatic Environment Up stream of SSP (Water life):**

In Madhya Pradesh the State Fishermen Welfare and Fisheries Development Department has prepared fishery development plan for fisheries development and conservation in the reservoir in the territory of Madhya Pradesh.

In Maharashtra fisheries development is already under implementation in the territory of Maharashtra as per Action Plan.

In Gujarat fishery development plan has been prepared and the same is under implementation in the dykes and reservoir in the territory of Gujarat.

In Gujarat the Terms of Reference (ToR) has already been finalized with the Central Inland Fisheries Research Institute (CIFRI) - a specialized Agency to evolve an Integrated Reservoir Management Plan (IRMP) for the management of Ecology and Environment in the reservoir. The Maharashtra and Madhya Pradesh are in the process to engage CIFRI for this purpose.

(V) SEISMICITY AND RIM STABILITY

Studies of Reservoir Induced Seismicity (RIS) and Rim Stability have been carried out by the Geological Survey of India (GIS), Central Water and Power Research Station (CWPRS), University of Roorkee and their recommendation are followed in design and construction as follows:

- ▶ Seismic data around the periphery is being studied by the expert team of Indian Seismological Research Institute for evaluation.
- ▶ Adoption of horizontal seismic design coefficient of 0.12 g on the recommendation of the Dam Review Panel.
- ▶ Installation of stress monitors in the main body of the dam.
- ▶ Increase of the depth of the foundation to 18 m below the lowest point of riverbed.

Nine seismic monitoring stations along the periphery of the reservoir, 4 on either side and 1 at the downstream of Sardar Sarovar reservoir have been set up. Data from these monitoring stations are being regularly collected and put up before the Dam Safety Review Panel of Sardar Sarovar Project. Institute of Seismic Research (ISR) Gandhinagar has been entrusted the task of analysis of data from monitoring stations.

(VI) HEALTH ASPECTS

The State Governments are implementing the health safeguard measures as per their Action Plan.

(VII) ARCHAEOLOGY AND ANTHROPOLOGY

There is no temples/monuments of National importance under the impact of submergence in the Sardar Sarovar Project (SSP)

There is no temple/monuments or mounds under the impact of submergence in Maharashtra. In Gujarat, relocation of 02 temples coming under the impact of submergence had already been made. In Madhya Pradesh out of 23 monuments/temples coming under the impact of submergence, 20 monuments/temples had already been relocated at appropriate places and the relocation of 03 temples namely; Neel Kanteshwar, Pashupateshwar at village Chikhaldia and Deoprating Mahadeo at village Bodhwada in district Dhar withheld due to resistance of local people as they are still residing in the area and now these 03 temples will be shifted along with Project Affected Families (PAFs) *pari passu* with the impoundment of water in the reservoir. The excavation of 13 mounds has been completed and one museum at Kasrawad has also been established.

SALIENT FEATURES OF SARDAR SAROVAR PROJECT

1. **Location**

State	Gujarat	
District	Narmada	
River	Narmada	
Location	120 km upstream of Bharuch city	

2. **Reservoir**

Full Reservoir Level (FRL)	138.68 m (455 ft.)	
Maximum Water Level (MWL)	140.21 m (460 ft.)	
Minimum Draw Down Level (MDDL)	110.64 m (363 ft.)	
Length of reservoir	214 km	
Maximum width of Reservoir	16.1 km	
Average width of Reservoir	1.77 km	
Gross Storage Capacity	0.95 Million ha m (7.70 MAF)	
Live Storage capacity	0.58 Million ha m (4.73 MAF)	
Dead Storage capacity	0.37 Million ha m (2.97 MAF)	

3. **Dam**

Type	Concrete gravity	
Length of Main Dam	1210 m	
Top R.L. of Dam	146.50 m	
Maximum height above deepest foundation level	163 m	

Spillway

Type	Ogee	
Crest Level	121.92 m (400 ft.)	

Spillway gates

Type	Radial	
No. & size	23 nos. 18.3 m x 16.76 m for service spillway 7 no. 18.30 m x 18.30 m for auxiliary spillway	
Spillway capacity	84949.25 cumecs (30 lakh cusecs)	

4. **Power installation**

	<u>River Bed Power House</u>	<u>Canal Head Power House</u>
No.of Units	6	5
Capacity of each unit	200 MW	50 MW
Installed capacity	1200 MW	250 MW
Type of turbines	Francis (reversible)	Vertical Kaplan (conventional)
Type of Power house	Underground	Surface

5. **Canal System**

Length of Main Canal up to Rajasthan border.	458.318 km	
Discharge capacity at head	1132.66 cumecs (40,000 cusec)	
Full supply level at head	91.45 m (300 ft.)	
Bed width at head	73.1 m	
Full supply depth at head	7.6 m	

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6.	Direct Benefits Irrigation	Gujarat Rajasthan	17.92 lakh ha. 02.46 lakh ha. ----- 20.38 lakh ha. -----	<i>(As per NMC Status Report Sept., 2016)</i>
	Power (installed capacity)	(i) River Bed Power House (ii) Canal Head Power House	1200 MW 250 MW ----- 1450 MW -----	
	Drinking Water	(i) (ii)	Population of 350.25 lakh in 8,215 villages and 135 Urban centers in Gujarat including the whole of Saurashtra and Kutch region fully covered for Drinking water purposes. In Rajasthan besides Irrigation, drinking water facility will also extended to 45.88 lakh people in 1336 villages and 3 towns situated around the irrigation canal.	
7.	Estimated Cost As approved by the Planning Commission at 2008-09 price level.		Rs.39240.45 crore	
8.	Expenditure incurred Up to March, 2017		Rs. 55645.03Crore	

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**Level of different dam blocks attained on
Sardar Sarovar Dam up to March, 2017**

Block No.	Level in Meter	Span Completed	Block No.	Level in meter	Span Completed
1	146.50		33	144.50	S 19(33-32)
2	146.50		34	144.50	S 18(34-33)
3	146.50		35	144.50	S 17(35-34)
4	146.50		36	144.50	S 16(36-35)
5	146.50		37	144.50	S 15(37-36)
6	146.50		38	144.50	S 14(38-37)
7	146.50		39	144.50	S 13(39-38)
8	146.50		40	144.50	S 12(40-39)
9	146.50		41	144.50	S 11(41-40)
10	146.50		42	144.50	S 10(42-41)
11	146.50		43	144.50	S 9(43-42)
12	146.50		44	144.50	S 8(44-43)
13	146.50		45	144.50	S 7(45-44)
14	146.50		46	144.50	S 6(46-45)
15	146.50		47	144.50	S 5(47-46)
16	146.50		48	144.50	S 4(48-47)
17	146.50		49	144.50	S 3(49-48/)
18	146.50		50	144.50	S 2(50-49)
19	146.50		51(SPL)	146.50	S 1(51-50)
20	146.50		51(NOF)	146.50	
21(NOF)	146.50		52	146.50	
21 (SPL)	144.50		53	146.50	
22	144.50	S 30(22-21)	54	146.50	
23	144.50	S 29(23-22)	55	146.50	
24	144.50	S 28(24-23)	56	146.50	
25	144.50	S 27(25-24)	57	146.50	
26	144.50	S 26(26-25)	58	146.50	
27	144.50	S 25(26-25)	59	146.50	
28	144.40	S 24(26-25)	60	146.50	
29	144.50	S 23(26-25)	61	146.50	
30	144.50	S 22(26-25)	62	146.50	
31	144.50	S 21(26-25)	63	146.50	
32	144.50	S 20(32-31)	64	146.50	

- ❖ All 30 Nos. of bridge span completed at final height (EL 146.50m) on 25.01. 2016
- ❖ All 30 Nos. of pier caps raised from EL 144.50m to EL 148.80 m. (Final height).
- ❖ Out of 30 Nos. of parapet wall span completed.

ANNEXURE - III**SARDAR SAROVAR PROJECT EXPENDITURE & SHARE COST**(As on 31st March, 2017)

(Rs. in Crore)

I.	EXPENDITURE		Expenditure before allocation of Group-V (As per monthly expenditure statement)	Expenditure after allocation of Group-V
	Unit-I	Dam & Appurtenant works	6223.41	8838.86
	Unit –II	Main Canal	6806.55	10707.31
	Unit –III	Hydro Power	3354.98	5885.40
	Unit-IV	Branches & Distributaries	26194.72	33097.82
		Sub Total of Unit I to IV	42579.66	58529.39
	Group-V	Common Expenditure	15964.56	14.83
	Group-VI	Non Shareable	(-)2899.19	(-)2899.19
	TOTAL		55645.03	55645.03

II. SHARES OF BENEFICIARY STATE				
	Share of Gujarat			45212.39
	Share of 3 States			10417.39
	(a)	Madhya Pradesh	6181.10	
	(b)	Maharashtra	2927.92	
	(c)	Rajasthan	1308.37	
	Kept unallocated		-	13.18
	TOTAL		10417.39	55645.03

III. DETAILS OF SHARE COST PAID AND BALANCE DUE					
			M.P.	Maharashtra	Rajasthan
	1.	Share of Expenditure	6181.10	2927.92	1308.37
	2.	Amount Received	2195.19	1601.95	730.11
	3.	Balance share (1-2)	3985.91	1325.97	578.26
	4.	Disputed Shares:			
		i. Interest	2031.31	962.20	430.36
		ii. Dykes & link channel	12.32	5.84	6.69
		iii. R&R	811.65	384.47	58.66
	5.	Total Disputed (I+II+III)	2855.28	1352.51	495.71
	6.	Balance undisputed share to be released (3-5)	1130.63	-26.54	82.55

Source: Statement received from the Sardar Sarovar Narmada Nigam Limited (SSNNL),

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