

नर्मदा नियंत्रण प्राधिकरण

STATUS REPORT ON SARDAR SAROVAR PROJECT

(APRIL-2008)

1. BACKGROUND

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 between the co-basin States, it 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 and Power of Sardar Sarovar Project as under:

STATE	Share of Narmada Water		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.

2. PROGRESS IN CONSTRUCTION OF THE PROJECT

2.1 Physical Progress

2.1.1 Progress of work on various components of Sardar Sarovar Project up to April 2008 is as follows:

Sl. No	Component	Excavation %	(%age completions)	
			Concreting %	
1.	Main Dam	99.34	96.43	
2.	River Bed Power House	All the 6 Units each of 200 MW commissioned.		
3.	Canal Head Power House	All the 5 Units each of 50 MW commissioned.		
4.	Vadgam Saddle Dam	Work completed		
5.	Irrigation Bye-pass Tunnel works.	99.09	100.00	
6.	Canals Phase-I (Ch. 0 to 144.50 km)	Earthwork %	Lining %	Structural concrete%
a)	Narmada Main Canal	Work completed		
b)	Branch Canals	Work completed		
b)	Distribution System	93.25 *	92.40 *	92.71 *

7.	Canals Phase-II (A) (Ch. 144.50 to 263.165 km)	Work completed		
	a) Narmada Main Canal			
	b) Seven major structures			
	c) Branch Canal			
	d) Distribution system	78.75	70.97	38.17
8.	Saurashtra Branch Canal and its branches	77.92 *	68.34 *	54.74 *
9.	Canal Phase-II (B) (Ch.263.165 km to 357.196 km)	Work completed		
	a) Main Canal			
	b) Major Structures	3 completed, 2 in progress		
	c) Branch Canals	82.80	83.33	80.77
	d) Distribution system	73.47 *	55.21 *	52.30 *
10.	Canal Phase-II(C) (Ch.357.196 km to 458.318 km)			
	a) Main Canal	94.85 *	96.14	85.76
	b) Major structure	61.16*	33.28 *	57.54 *
	c) Branch Canals	55.20	48.56	54.55
	d) Kutchchh Branch Canals.	67.80	40.55 *	33.64

* Estimated quantity revised by SSNNL.

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. A statement showing the levels of different dam blocks attained as on 30th April, 2008 is enclosed at Annexure-II.

2.1.2 Narmada Main Canal

The Main Canal up to 357.196 km (Out of a total length of 458.318 km up to Gujarat - Rajasthan border) is completed. Stipulated date of completion of works in Km 357.196 to Km 458.318 and two major structures falling within Km 263.165 to Km 357.196 is December 2008. Narmada Water has reached Rajasthan on 18.3.08 by completing one monoliths of major canal syphon works and bye-pass arrangement at khari canal syphon.

Partial irrigation benefits are being realized by releasing Narmada water from the Sardar Sarovar Dam since it has been raised up to EL 121.92 m. Govt. of Gujarat has developed 2.52 lakh ha. of command area in Phase-I and 0.46 lakh ha. in Phase-II of Narmada Main Canal for deriving partial benefits.

The drinking water supply has also started to many villages and urban centers including the areas in Saurashtra and some parts of Kutch region.

2.1.3 Release of funds under Accelerated Irrigation Benefit Programme to NMC (Gujarat).

Keeping in view the need to augment the allocation of funds for accelerating the construction of Narmada Main Canal & distributaries for early development of irrigation facilities in the command area of the project, the Govt. of India had decided to include Sardar Sarovar Project under Accelerated Irrigation Benefit Programme. The Govt. of India has released the Central Loan Assistance (CLA)/grant of Rs.4700.16crore out of which Rs.162.42crore was released as grant during the financial year 2007-08.

2.1.4 River Bed Power House (RBPH) of SSP

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

2.1.5 Canal Head Power House (CHPH)

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

2.1.6 Energy Generation from SSP (In Million Units)

Sr No.	Year	CHPH	RBPH	Total
1	2004-05	173.516	89.743	263.258
2	2005-06	189.858	1761.914	1951.772
3	2006-07	228.073	3372.000	3600.070
4	2007-08	316.860	4188.800	4435.660
5	2008-09 (April 08)	15.890	110.440	126.330

2.2 FINANCIAL PROGRESS (As reported by SSNNL)

(Rs. in Crore)

Units / Groups	Estimated Cost		Cumulative expenditure up to April -2008 (After allocation of common expenditure)
	Price level 1986-87 (Approved by Planning Commission)	Price level 2005-06 (Submitted by GOG for approval)	
(Unit-I) : Dam & Appurtenant works	1019.45	5621.89	5803.15
(Unit-II) : Main Canal	1588.54	6558.46	6987.89
(Unit-III) : Hydro Power	979.95	3076.79	3490.64
(Group-IV) : Branches & Distribution system	2818.10	19788.61	10216.16
(Group-V) : Common Expenditure	--	--	(-) 5.01
(Group-VI) : Non-sharable Expenditure	--	--	(-) 444.39
Total	6406.04	35045.75	26048.44

3. OUTSTANDING DUES ON THE SHARE COST TO BE PAID TO GOVERNMENT OF GUJARAT BY THE THREE PARTY STATES

Up to the end of April -2008 an expenditure of Rs.26048.44crore has been incurred on the Sardar Sarovar Project. Of this the share cost of Gujarat amounts to Rs.19531.94 crore, that of Madhya Pradesh amounts to Rs. 3845.32 crore, that of Maharashtra amounts to Rs.1821.50crore and that of Rajasthan amounts to Rs.854.69 crore. There is dispute regarding sharing of expenditure on the interest component, cost of Resettlement and Rehabilitation of Projects Affected Persons and cost of construction of Dykes and Link Channel.

The total outstanding undisputed share cost to be paid to the Government of Gujarat as on 30th April-2008 by Madhya Pradesh is Rs.76.72crore, by Maharashtra is Rs.176.22crore and by Rajasthan is Rs.(-) 68.08crore. The details of the share cost position is given at **Annexure-III**.

4. EFFECT OF SUBMERGENCE

(a) LAND

At the Full Reservoir Level (FRL) of 138.68 m. out of 244 affected villages only 4 villages (3 in Gujarat, and 1 in MP) are likely to come under full submergence. In M.P., out of 192 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.

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. Detailed breakup is as under:

S.No	Particulars	Unit	Gujarat	M.P.	Maharashtra	Total
1.	Villages	No.	19	192	33	244
2.	Families (Including major sons)	No.	4740	39369	4195	48304
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

(b) RESETTLEMENT AND REHABILITATION PROGRAMME OF SSP

In all 48,304 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 **Annexure-IV**.

Progress made on Resettlement & Rehabilitation of Project Affected Families up to 30th April-2008 is as below:

STATE	Total Project Affected Families	Total PAFs Resettled	Balance Families to be resettled
GUJARAT	4740\$	4737	3
MAHARASHTRA	807*	807	0
a) In Gujarat	3388*	3014	374
b) In Maharashtra			
Total (i)	4195	3821	374
MADHYA PRADESH			
a) In Gujarat	7227*	5657\$\$	1570\$\$
b) In Madhya Pradesh	32142*	32142**	0
Total (ii)	39369	37799	1570
TOTAL (i)+(ii)	48304	46357	1947

- (§) *In Gujarat 3 newly declared PAFs have been included.*
- (§§) *The figures are tentative and allocation of PAFs for R&R in Gujarat is yet to be ascertained.*
- (*) *This number may change after taking option of PAFs for R&R and declaration of genuine PAFs by GRA / State Government.*
- (**) *The figures are based on the ATRs/progress report submitted by GOMP in NCA.*

NOTE:

- (i) *The progress during the month in Gujarat/Maharashtra/Madhya Pradesh is Nil.*

PROGRESS IN CONSTRUCTION OF THE PROJECT

Progress of works on various components of Sardar Sarovar Project up to **April, 2008** is as follows:

(%age completions)						
Sl. No	Component	Excavation %	Concreting %	Drilling %		
1.	Main Dam	99.34	96.43	--		
2.	River Bed Power House	All the 6 Units each of 200 MW commissioned.				
3.	Canal Head Power House	All the 5 Units each of 50 MW commissioned.				
4.	Vadgam Saddle Dam	Work completed				
5.	Irrigation Bye-pass Tunnel works.	99.09	100.00	--		
6.	Canals Phase-I (Ch. 0 to 144.50 km)	Earthwork %	Lining %	Structural concrete%		
	(a) Narmada Main Canal	Work completed				
	(b) Branch Canals	Work completed				
	(c) Distribution System	93.25 *	92.40 *	92.71 *		
7.	Canals Phase-II (A) (Ch. 144.50 to 263.165 km)	Work completed				
	(a) Narmada Main Canal					
	(b) Branch Canal					
	(c) Distribution system	78.75	70.97	38.17		
8.	Saurashtra Branch Canal and its branches	77.92 *	68.34 *	54.74 *		
9.	Canal Phase-II (B) (Ch. 263.165 km to 357.196 km)	Work completed				
	(a) Main Canal					
	(b) Major Structures				3 completed, 2 in progress	
	(c) Branch Canals				82.80 *	83.33
	(d) Distribution system	73.47 *	55.21 *	52.30 *		
10.	Canal Phase-II(C) (Ch. 357.196 km to 458.318 km)					
	(a) Main Canal	94.85 *	96.14	85.76 *		
	(b) Major structure	61.16 *	33.28 *	57.54 *		
	(c) Branch Canals	55.20	48.56	54.55		
	(d) Kutchchh Branch Canals.	67.80	40.55 *	33.64		

* Estimated quantity revised by SSNNL.

SARDAR SAROVAR PROJECT EXPENDITURE & SHARE COST

(As on 30th April-2008)

(Rs. in Crore)

I.	EXPENDITURE		Expenditure before	Expenditure after
			allocation of Group-V (As per monthly expenditure statement)	allocation of Group-V
	Unit-I	Dam & Appurtenant works	4438.06	5803.15
	Unit -II	Main Canal	4973.67	6987.89
	Unit -III	Hydro Power	2163.01	3490.64
	Unit-IV	Branches & Distributaries	6650.01	10216.16
	Group-V	Common Expenditure	8268.08	(-) 5.01
	Group-VI	Non Shareable	(-) 444.39	(-) 444.39
	TOTAL		26048.44	26048.44

II. SHARES OF BENEFICIARY STATE				
	Share of Gujarat			19531.94
	Share of 3 States			6521.51
	(a)	Madhya Pradesh	3845.32	
	(b)	Maharashtra	1821.50	
	(c)	Rajasthan	854.69	
	Kept unallocated		-	(-) 5.01
	TOTAL		6521.51	26048.44

III. DETAILS OF SHARE COST PAID AND BALANCE DUE					
			M.P.	Maharashtra	Rajasthan
1.	Share of Expenditure		3845.32	1821.50	854.69
2.	Amount Received		2075.71	843.39	646.95
3.	Balance share (1-2)		1769.61	978.11	207.74
4.	Disputed Shares:				
	i.	Interest	1057.89	501.10	224.00
	ii.	Dykes & link channel	12.32	5.84	6.69
	iii.	R&R	622.68	294.95	45.00
5.	Total Disputed (i+ii+iii)		1692.89	801.89	275.82
6.	Balance undisputed share to be released (3-5)		76.72	176.22	(-) 68.08

Source: Statement received from the Sardar Sarovar Narmada Nigam Limited (SSNNL), vide their fax dated 16.06.2008.

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**Level of different dam blocks attained on
Sardar Sarovar Dam up to April, 2088**

Block No.	Level in Metre	Block No.	Level in metre
1	146.50	33	121.92
2	146.50	34	121.92
3	146.50	35	121.92
4	146.50	36	121.92
5	146.50	37	121.92
6	146.50	38	121.92
7	146.50	39	121.92
8	146.50	40	121.92
9	146.50	41	121.92
10	146.50	42	121.92
11	146.50	43	121.92
12	125.00	44	121.92
13	125.00	45	121.92
14	134.00	46	121.92
15	134.00	47	121.92
16	134.00	48	121.92
17	134.00	49	121.92
18	134.00	50	121.92
19	132.00	51(SPL)	121.92
20	132.00	51(NOF)	146.50
21(NOF)	130.00	52	146.50
21 (SPL)	121.92	53	146.50
22	121.92	54	146.50
23	121.92	55	146.50
24	121.92	56	146.50
25	121.92	57	146.50
26	121.92	58	146.50
27	121.92	59	146.50
28	121.92	60	146.50
29	121.92	61	146.50
30	121.92	62	146.50
31	121.92	63	146.50
32	121.92	64	

protection work done in NOF Block No.12 from EL 125.0 m to EL 134.50 m.
 NOF block No.13 is truncated section at down stream from EL 121.0 m and beyond EL 125.0 m
 protection work done up to EL 134.50 m
 protection work done NOF Block No. 14 to 18 from EL 134.0 m to EL 134.50 m.
 protection work done NOF Block No. 19 & 20 from EL 132.0 m to EL 134.50 m.
 protection work done NOF Block No. 21 from EL 130.0 m to EL 134.50 m.

नर्मदा नियंत्रण प्राधिकरण

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	

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 km
Discharge capacity at head	1132.66 cumecs (40,000 cusec)
Full supply level at head	9145 m (300 ft.)
Bed width at head	73.1 m
Full supply depth at head	7.6 m

6. Direct Benefits
Irrigation
- | | | |
|-----------|----------------|--|
| Gujarat | 17.92 lakh ha. | <i>(As per NMC Status Report
March-2006)</i> |
| Rajasthan | 02.46 lakh ha. | |
| | <hr/> | |
| | 20.38 lakh ha. | |
| | <hr/> | |
- Power (installed capacity)
- | | |
|-----------------------------|---------|
| (i) River Bed Power House | 1200 MW |
| (ii) Canal Head Power House | 250 MW |
| | <hr/> |
| | 1450 MW |
| | <hr/> |
- Drinking Water
- 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.
7. **Estimated Cost**
As approved by the Planning Commission at 1986-87 price level. Rs.6406.04 crore
8. **Expenditure incurred**
Up to April -2008 Rs. **26048.44**crore
9. **Partial Benefits**
- Available at minimum reservoir water level of 110.64 m:
- (i) Power through CHPH 45 to 90 MW depending upon availability of water / head.
- (ii) Irrigation – 50,000 ha. approximately in Gujarat.
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