WELCOME

NARMADA CANAL PROJECT IN RAJASTHAN

NARMADA CANAL PROJECT A UNIQUE PROJECT OF IRRIGATION

- Beauty of project :
- First project of India having irrigation, mandatory by pressure (sprinkler) irrigation system.
- First project of Rajasthan where CAD&WM works are being executed pari-passu with construction of canal networks to utilize potential created with its creation.
- Originally proposed CCA 1.35 lac Ha. was increased to 2.46 lac ha. with same quantity of water by adopting Sprinkler system in whole project

Success story of the Project

- Initially project was conceived to provide irrigation facility in 1.35 lac ha. area of 89 villages of Jalore (74) & Barmer (15) districts with cost 467.53 Cr. (1989-90 price level)by conventional(flood) irrigation method
- It was observed with the experience IGNP stage-I Project that conventional irrigation method with higher water allowance will cause
 - 1 Increase in water table in short span
 - 2 Drainage & Salinity issues

Success story of the Project

- To over come above problems, following measures were taken :
- 1 Reduction in water allowance.
- 2 Mandatory use of sprinkler / drip irrigation technology.
- 3 Anti saline crop has been proposed.
- 4 Judicious use of Bio drainage in command area (tree plantation along canal system in 1570 Rkm)
- 5 Conjunctive use of ground water with surface water
- 6 Participation of farmers in irrigation and water management by formation of 2236 WUAs
- 7 Extensive irrigation has been proposed

Success story of the Project

- Adoption of sprinkler irrigation system in place of conventional irrigation method resulted in following benefits :
- The CCA has been increased from 1.35 lac hectare to 2.46 lac hectare i.e.78% increased.
- No. of villages benefitted for irrigation increased from 89 to 233
- Drinking water facility in 1541 villages and 3 towns has been provided, which was not proposed earlier
- Increase in food production has been assessed 534 cr. to 1480 cr. i.e. 946 cr. (277%) based on year 2013-14
- Kharif crop has been introduced in modified project.

Information regarding Potential Created and Potential Utilized

S.No	Year	Command area of project	Irrigable Command Area	Irrigation potential created in Ha.	Irrigation potential Utilized in Ha.	Remarks
1	2006-07	246000 ha	151000 ha	32628.00 ha	18476.04 ha	Before introduction of canal water
2	2007-08	246000 ha	151000 ha	88093.00 Ha.		Water released for Rajasthan on 28.03.2008
3	2008-09	246000 ha	151000 ha	133093.00 Ha.	10000.00 Ha.	
4	2009-10	246000 ha	151000 ha	175093.00 Ha.	15000.00 Ha.	
5	2010-11	246000 ha	151000 ha	205093.00 Ha.	30000.00 Ha.	
6	2011-12	246000 ha	151000 ha	216093.00 Ha.	80000.00 Ha.	
7	2012-13	246000 ha	151000 ha	227093.00 Ha	100000.00 Ha.	
8	2013-14	246000 ha	151000 ha	238093.00 Ha.	154000.00 Ha.	
9	2014-15	246000 ha	151000 ha	239593.00 Ha.	214505.00 Ha.	
10	2015-16	246000 ha	151000 ha	240193.00 Ha.	235000.00 Ha.	







Legend

COMMAND BOUNDRY
NARMADA CANAL/DY
OTHERS
RABI CROP LAND
FALLOW LAND

SRSAC, JODHPUR

2013	AREA (ha)
RABI CROP	124573.74
FALLOW LAND	140723.44
GCA	312482.91





Detail of the project:

CCA	2.46 lac ha.
Villages covered for Irrigation	233 No
Villages benefited for drinking water	1541 No
Towns benefited for drinking water	3 No
Length of main canal	74 Km
Length of distributaries	385 Km
Length of minors & sub minors	1334 Km
Power requirement	38.5MW
Lift distributaries	5.0 MW
Drinking water supply	6.5 MW
Sprinkler system	27.0 MW
Gross agriculture production per annum	90727 tones

Cost of various component

Analysis of rates for CCA of 100 ha

(A)	Civil work	Rs. in lac
	Cost of Diggie	6.18
	Cost of Sump	1.70
	Cost of Pump House & Boundry Wall	7.08
	Total of Civil Work	14.96
(B)	Mechanical work	
	Cost of 2 Nos. of Motor horizontal centrifugal pumping sets of discharge 12 LPS to 16 LPS including installation & commencement.	3.00
(C)	Supplying, laying, jointing, testing and commissioning of HDPE pipe network.	13.538
	Cost of 100 Ha.	31.498 lac
	Cost per Ha	Rs. 31,498
(D)	Erection of 11 KV S/C line on 33 KV insulation for 1 km.(4.95
(E)	Security Deposit for electrification	0.55

Index Map of Narmada Valley



Rajasthan



Index Map of Command area in Rajasthan



Diggi for storage of water (Appx. Cap. 2.5 lac liters) & Pump Room



 Plan showing Network of HDPE Pipes under the ground & position of outlets





OUTLET ON PE PIPE (DURING IRRIGATION PERIOD)

Outlet for cultivator



Sprinkler irrigation System



Sprinkler irrigation System



Use of drip irrigation in project



Officers of CWC & NITI Aayog visiting NC Project



Officers of CWC & NITI Aayog visiting NCP



Use of water filter in drip irrigation



Drip Irrigation system in field



Other Success story/case study of pilot project NGP Stage-II

A case Study of Tejpura Minor of Kolayat lift canal has been conducted, where sprinkler irrigation has been started under Pilot Project which shows that :-

CCA of Tejpura minor -1857.27 hectare Irrigation potential @ 60% designed intensity -1114.39 hectare Improvement in irrigation intensity-

	Year 2007-08 (before sprinkler irrigation)	Year 2013-14 (after sprinkler irrigation)
Water supplied	170.73 mcft	127.18 mcft
Actual Irrigation	207.17 hectare	732.11 hectare
Delta applied	2.33 m	0.49 m

- Analysis of data shows that though water provided in the year 2013-14 was 26% less than that provided in the year 2007-08, even then the increase in area of cultivation was nearly 250%.
- In 2007-08 an intensity of mere 11.15% could be achieved which was boosted up to nearly 40% in the year 2013-134 after introduction of sprinkler irrigation.
- In the starting of sprinkler irrigation in IGNP lift schemes such results are reflection of the success of sprinkler project.

Comparison of **Conventional Irrigation** with **Pressure Irrigation** (Envisaged in Narmada Canal Project)

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Rem arks
(A)	Infrastructure Cost	1541.36 Cr. (2005 price level) and revised cost 2481.49 Cr. at (2009 price level)	467.58 Cr.(1989- 90 price level) original cost and revised cost would be 1134 cr. on 2015 price level.	Cost increased 1347 cr. more in addition	
1	CCA	2.46 lac Ha with 61% intensity of irrigation.	1.35 lac Ha. With 54% intensity of irrigation	1.11 lac Ha. CCA increased	
2	Nos. of Villages benefited by irrigation	233	89	144 more villages additionally benefited	

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Rema rks
3	Villages benefitted for drinking water	1541 villages & 3 Towns (874 villages , 3 Towns of Jalore & 667 villages of Barmer district)	124	By saving of water 1417 villages and 3 towns are additionally benefited for drinking water	
4	Length of main canal	74 km.	74 km.	No Change	
5	Length of distributaries	385 km.	1403 km.	Length decreased by 1018 km.	

	well			INOS.	
8	Provision of mono block	4472 Nos. (two mono block at each pump room)	Not Proposed	+4472 Nos.	
9	Laying of HDPE Pipe line	HDPE is laid in entire CCA i.e. 2.46 lac ha.	Not Proposed	+2.46 lakh ha.	
10	Formation of WUA (For formers participation in irrigation and water management)	2236 Nos. (at each diggi level)	Not proposed	+2236 Nos.	

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decreas e (+/-)	Rema rks
(B)	Cropping	Area in ha.	Area in ha.		
1	Main crops in Ha				
	Kharif :-				
	(i) Groundnut	14035	Not proposed		
	(ii) Castor	18580	Not proposed		
	(iii) Vegetable Tomato etc.	4917	Not proposed		
	(iv) Fruits (Date Palm, Gooseberry, Pomegranate etc.)	2764	Not proposed		
	(v) Green Fodder – Bajra	7373	Not proposed		
	Total	47669			
	Rabi :-				
	(i) Wheat	12293	32400		
	(ii) Mustard	32956			

S.N.	Component	Pressure Irrigation area in ha.	Gravity Irrigation Area in ha.	Net Increase /decrease (+/-)	Remarks
	(iii) Cumin	23076	17550		
	(iv) Gram	15102	6750		
	(v) Isabgol	11089	Not Proposed		
	(vi) Vegetable – Pea etc.	3659	Not Proposed		
	(vii) Fruits (Date Palm, Gooseberry, Pomegranate etc.)	2779	Not Proposed		
	(viii) Fodder – Oats	2458	1350		
	(ix) Barley	-	2640		
	Total	103403	74190		
	Grand Total	151072	74190		

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remark s
2	Water demand/Use of crops in mm. :				
	Kharif :-				
	(i) Groundnut	405 mm	Not Proposed	+405 mm	
	(ii) Castor	513 mm	Not Proposed	+513 mm	
	(iii) Fruits (Date Palm, Gooseberry, Pomegranate etc.)	400 mm	Not Proposed	+400 mm	
	(iv) Green Fodder – Bajra	221 mm	Not Proposed	+221 mm	
	Rabi :-				
	(i) Wheat	308 mm	450 mm	-142 mm	
	(ii) Mustard	208 mm	350 mm	-142 mm	

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remark s
	(iii) Cumin	276 mm	300 mm	-24 mm	
	(iv) Gram	203 mm	300 mm	-97 mm	
	(v) Isabgol	259 mm	-	+259 mm	
	(vi) Vegetable – Pea etc.	314 mm	-	+314 mm	
	(vii) Fruits (Date Palm, Gooseberry, Pomegranate etc.)		-		
	(viii) Fodder – Oats	300 mm	300 mm	-	
	(ix) Barley	-	400 mm	-400 mm	

S. N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remark s
C	Water Allowance				
	(i) Water allowance	Flow without lift 2.51 Cs/1000 acre	7.40 cs/1000 acre	+5.20 cs/1000 acre has been saved by reducing water allowance	
		Flow with Lift 2.04 Cs/1000 acre			
		Ned Area (Deltic area) 1.31 cs/1000 acre			

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remark s
D	Productivity (Crops) Tonnes/Ha. : Kharif :-				
	(i) Groundnut	1.5 T/ha.	Not Proposed	+1.5 T/ha.	
	(ii) Castor	1.8 T/ha.	Not Proposed	+1.8 T/ha.	
	(iii) Vegetable Tomato etc.	30 T/ha.	Not Proposed	+30 T/ha.	
	(iv) Fruits (Date Palm, Gooseberry, Pomegranate etc.)	-	Not Proposed	-	
	(v) Bajra/Guar Fodder	50 T/ha.	Not Proposed	+50 T/ha.	
	Rabi :-				
	(i) Wheat	3.5 T/ha.	3.0 T/ha	+0.5 T/ha.	
	(ii) Mustard	1.5 T/ha.	1.2 T/ha	+0.3 T/ha.	

S.N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remark s
	(iii) Cumin	1.0 T/ha.	0.6 T/ha.	+0.4 T/ha.	
	(iv) Gram	1.4 T/ha.	1.2 T/ha.	+0.2 T/ha.	
	(v) Isabgol	1.0 T/ha.	-	+1.0 T/ha.	
	(vi) Vegetable – Pea etc.	10 T/ha.	-	+10 T/ha.	
	(vii) Fruits (Date Palm, Gooseberry, Pomegranate etc.)	15 T/ha.	-	+15 T/ha.	
	(viii) Fodder – Oats	45 T/ha.	35 T/ha.	+10 T/ha.	

S. N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remarks
E	Quantity of water used	2.2 cs /1000 acre	7.40 cs/1000 acre	5.20 cs/1000 acre	
F	Intensity of Irrigation	 1.Area submerged in monsoon (Ned Area) 40% 2.Area under gravity canal 70% 3. Area under Lift canals 60% 	55% (only Rabi)		25% Rabi + 15% Kharif 50% Rabi + 20% Kharif 40% Rabi + 20% Kharif Kharif was introduced in modified project i.e. project on pressure irrigation.
G	Design area Kharif: Rabi:	47669 ha 103403 ha	- 74000 ha	Enhancem ent in 129566 ha	

S. N.	Component	Pressure Irrigation	Gravity Irrigation	Net Increase /decrease (+/-)	Remarks
Η	Area benefitted (Ha)	2.46 lakh ha.	1.35 lakh ha.	+1.11 lakh ha. (82.2%)	Increase in service area due to adoption of pressure irrigation in project.
Ι	Gross production (Tonnes)	314306 Tonnes	228555 Tonnes	+85751 Tonnes (37.5%)	In the year 2013-14 Rabi crop was cultivated in 153563 ha. as reported by Remote Sensing Application Centre, Jodhpur and Kharif crop was sown in 50000 ha.
J	Value of Food produced on market value for the year 2014	1480 cr.	534 cr.	+946 cr. or 277%	In 2013-14 due to pressure irrigation food production has been increased by 946 cr. In which benefit of drinking water are not included.
К	B.C. Ratio	1.6:1	1:1		

Road map of completion of Narmada Canal Project

Narmada Canal Project has been designed to utilize 0.05 MAF of narmada water. Initially the project was approved by Planning Commission for Rs.467.53 Crore (1989-90 Price level) vide letter dated January, 1996 with targeted completion of project up to March 2003. The revised cost of the project amounting to Rs. 1541.36 cr. (at Price level 2005) was sanctioned by Planning Commission on 08.08.2007 with targeted date of completion up to March, 2014.

Again cost of project was further re-revised at 2009 price level and sanction of Rs.2481.49 Cr. Was accorded by Planning Commission on 09.07.2010 with the direction to complete the project up to March, 2013. Further time of completion was again extended up to March, 2015 by Planning Commission on 29.07.2013. The proposal for time extension up to March, 2017 is under consideration with MoWR, New Delhi.

Total Cost of project is 2481.49 cr. Out of which 2334.68 has been incurred up to Jan, 2016. Tentative expenditure up to March, 2016 will be 2376.15 cr. Due to increase in share cost to be pain to the Government of Gujarat and price escalation the project will need Rs.218.70 cr. more for completion. It is proposed to complete the project in next financial year i.e. 2016-17.

The C.C.A. of Project is 2.46 Lac Ha out of which 234400 Lac Ha has been developed so far and 242400 ha will be developed up to March,, 2016. Remaining 3600 ha will be developed in next financial year. In this project intensity of irrigation is 61%. In the year 2014-15 Rabi crop estimation was carried out by Remote Sensing Application Centre, Jodhpur and Rabi crop was produced in 156286 ha therefore this is no gap between Irrigation Potential Created and Irrigation Potential Utilize.

In order to control the water utilization and to ensure optimized regulation of water the application of irrigation water by drip or sprinkles has been made mandatory in the Project Command. The water from Canals will be drawn into diggies (Shallow tanks). To provide pressure irrigation in Command Area it has been divided into 2236 chaks and each chak has its own diggi which receives water from canal and water in diggi is lifted through mono block pumps installed in pump rooms constructed in each diggi. Water so lifted is carried through buried H.D.P.E. Pipes and cultivators will draw their share of water by installing their sprinkle set at outlets provided.

In this project activity of CAD and WM is being implemented paripassu with the construction of canal network and other civil works. To have farmers participation in Irrigation Management WUAs are being Constituted at each diggi. So far 2078 WUAs has been formed and 2188 will be constituted upto March, 2016 and remaining 48 will be formed in the next year.

Road map for completion of the project is annexed at annexure 1 and 2.

<u>NARMADA CANAL PROJECT, SANCHORE</u> <u>PHYSICAL & FINANCIAL PROGRAMME & ACHIEVEMENT OF DISTRIBUTORY</u> <u>SYSTEM OF NCP FOR YEAR 2015-16</u>

Annexure 1

S. No.	Activity	Unit	Total	Achieve ment up to 03/15	Balanc e as on 1.04.15	Achieve ment up to 01/2016 During year	Total Achieve ment up to 01/2016	Balanc e	4th Quarter January 16 to March 16	Total During year	Balance for 2016- 17
1	Canal Lining 1793Km this includes 128.45 Km unlined canbal which are complete	Km.	1,793.00	1,779.00	14.00	6.91	1,785.91	7.09	4.09	1790.00	3
2	Diggies	No.	2,236	2,131	105	31	2,162	74	30.00	2192.00	44
3	Installation of Pumping unit	No.	2,236	1,794	442	148	1,942	294	157.00	2099.00	137
4	Laying HDPE pipe	Hac.	2,46,000	2,30,500	15,500	3,900	2,34,400	11,600	8,000.00	242400.00	3,600
5	Formation of WUA	No.	2,236	1,965	271	113	2,078	158	110.00	2188.00	48
6	Financial	Rs in Crore	2,481.49	2,276.15	205.34	58.53	2,334.68	146.81	41.47	2376.15	105

NARMADA CANAL PROJECT, SANCHORE

PHYSICAL & FINANCIAL PROGRAMME & ACHIEVEMENT OF DISTRIBUTORY SYSTEM OF NCP FOR YEAR 2016-17

			-								Annexure 2
						Quarter wise break up					Additional
					Balan						demand of
S.				Likely	ce as					Total	funds which
No.	Activity	Unit	Total	Achievemen	on	1st April 2016	2nd July 2016	3rd oct. 2016 to	4th Jan. 2017 to	During	is not
1.00				t up to 03/16	01.04.	to June 2016	tp Sept.	Dec. 2016	March 2017	year	available in
					16						sanctioned
	Canal Linin a 1702Kas										DPR
	this includes 128 45										
1	Km unlined canbal	Km.	1,793.0	1790.00	3.00	3 00				3.00	
	which are complete		0		5.00	5.00					
	Diggies	No.		2192.00						44.00	
2			2,236		44	27.00	17.00				
	Installation of	No.	2.226	2099.00	125	<u></u>	77.00			137.00	
3	Pumping unit		2,230		15/	60.00	77.00				
1	Laying HDPE pipe	Hac.	2,46,00	242400.00	2 600	1 000 00	1 000 00	600.00		2600.00	
4			0		5,000	1,000.00	1,000.00	600.00			
5	Formation of WUA	No.	2 236	2188.00	18	18.00				48.00	
3			2,230		40	48.00					
6	BT Road	Km.	29.50	-	29.50	10.00	10.00	9.50		29.50	
						10.00	10.00	3.50			
		Dain									
7	Financial	Crore	2,481.4	2376.15	105 34	40.00	40.00	25 34	_	105.34	235
'			9		103.34	10.00	10.00				200

THANKS