

Chapter-IV

Project Deliverables

This chapter deals with the achievements in respect of envisaged deliverables as a result of implementation/execution of Saryu Nahar Pariyojana.

Audit Objective: *Whether contemplated culturable command area was created and utilised?*

Brief snapshot of the Chapter:

- Under the Saryu Nahar Pariyojana, an irrigation potential of 14.04 lakh hectare was to be created in 11.29 lakh hectare cultivable area in Kharif and Rabi seasons by constructing 894 canals under the project. However, the Department did not provide canal-wise status of construction due to which overall status of construction of canals and creation of CCA under the project could not be ascertained in Audit.
- The project was commissioned in December 2021. However, about 228.47 Km distributary and minor canals out of target of 5,377.44 Km were not constructed as of March 2022. Further, in the 17 test checked divisions, 29 out of 432 canals were either not constructed or constructed in patches.
- The work of command area development was also lagging behind and against the creation of CCA of 11.29 lakh hectare in the project, the work of command area development was done in only 20 per cent area.
- Outlets and Sumps to deliver water from canals to fields were also not completed.

4.1 Introduction

Saryu Nahar Pariyojana (SNP) envisages creation of irrigation facility in 11.29 lakh hectare area of nine eastern districts of Uttar Pradesh by 2019-20¹. A canal network comprising of main canals (257.367 Km), branch canals (776.606 Km) and distributary and minor canals (5,377.44 Km) were to be created to deliver irrigation water to the fields to obtain irrigation potential² of 14.04 lakh hectare (Kharif: 9.23 lakh hectare and Rabi: 4.81 lakh hectare). The project also targeted change in the existing

¹ As per Detailed Project Report 2017.

² Gross irrigation in Kharif and Rabi seasons.

cropping pattern with a view to introduce crops requiring lesser water for irrigation. Apart from this, increase in the production was targeted by increasing the productivity of the crops.

4.2 Completion and commissioning of project

Audit observed that works of Phase I and Phase II were not completed by the target date of 2003-04 and continued till March 2022. Audit observed that even by the date of cost revision of project in 2017, 540.03 Km canal was incomplete. Many canals had gaps leading to non-establishment of hydraulic connectivity between the canals. Due to this, about 3.10 lakh hectare created CCA was lying dry and the objective of utilising the constructed canals under Phase I and Phase II was only partially achieved till 2017. Similarly, works of Phase III continued till March 2022, though these were to be completed originally by 2014³.

The project was commissioned in December 2021. However, as per the details provided by CEs, SNP, about 228.47 Km distributary and minor canals out of target of 5,377.44 Km were not constructed as of March 2022. Audit examination of records of the test checked divisions disclosed that construction of many of the canals were either not taken up or had gaps as of November 2023. Apart from above, outlets and sumps on the canals were also incomplete. Achievements *vis-a-vis* targets of the works of SNP as per information provided by CEs, SNP are given in **Table 4.1**.

About 228.47 Km distributary and minor canals were not constructed as of March 2022

Table 4.1: Targets and achievement of completion of works

Component	Target	Achievement (As of March 2022)
(1)	(2)	(3)
Main canals (Km)	257.367	257.367
Branch canals (Km)	776.606	776.606
Distributary and minor canals (Km)	5,377.440	5148.970
Pump canals (Number)	04	04
Drains (Km)	3996.660	3858.210
Outlets (Number)	17639	16585
Sumps (Number)	942	Nil

(Source: Information provided by the CEs, SNP)

In reply, the State Government stated (November 2023) that some of the canals under Phase I and Phase II could not be constructed in their full length due to various reasons related to purchase of land. Due to this, hydraulic connectivity could not be fully established in these canals. The State Government added that at present, the work of canal construction had been completed and water was being released in the canals.

³ Revised date of completion: December 2019.

The reply of the State Government was not tenable because in the test checked divisions, Audit found that construction of many of the canals, outlets and sumps were incomplete as of March 2022, as discussed in the succeeding paragraphs:

4.3 Construction of canals

As per information provided by the Department, 894 canals⁴ were to be constructed to create CCA of 11.29 lakh hectare under the project. The Department did not provide canal-wise status of construction of these 894 canals due to which overall status of construction of canals and creation of CCA under the project could not be ascertained in Audit.

Audit, however, observed from the examination of records of 17 test checked divisions that 29 out of 432 canals were either not constructed or constructed in patches, as discussed in the succeeding paragraphs.

4.3.1 Incomplete construction of canals of Phase I and Phase II

Audit observed that in five test checked divisions⁵, eight canals were either not constructed or constructed in patches as detailed in **Table 4.2**.

Table 4.2: Incomplete canals of Phase I and II

S/N	Name of canal	Offtake point	Total length (Km)/ CCA (hectare)	Details of non-construction of canal			
				No. of gaps	Chainage of first gap (Km)	Unusable length ⁶ of canal (per cent)	Unusable CCA ⁷ (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Payar Kohana Mr.	Jagdishpur Dy.	$\frac{6.20}{720}$	3	1.87	4.323	470
2	Netuwa Mr.	Tinich Dy.	$\frac{3.15}{679}$	2	1.98	1.17	398
3	Kaurhe Mr.	Meghawa Dy.	$\frac{3.50}{350}$	4	0.950	3.41	255
4	Itwa branch	Utraula pump canal	$\frac{25.30}{33229}$	NA	18.30	7.00	9194
5	Maina Dy.	Itwa branch	$\frac{18.36}{7173}$	01	11.35	7.01	2739
6	Kishunpur Mr.	Nagar Dy.	$\frac{4.65}{720}$	NA	2.5	2.15	333
7	Veerpur Mr.	Nagar Dy.	$\frac{4.81}{557}$	NA	1.08	3.73	432
8	Mahadevri Mr.	Haraia Dy.	$\frac{6.02}{873}$	NA	5.71	0.31	45
Total			$\frac{71.99}{44,301}$			29.103 (40)	13866 (31)

Note: Dy.- Distributary canals and Mr.- Minor canals

(Source: Information provided by the divisions) (NA – Not available)

⁴ Including Main canals, Branch canals, Distributary canals and Minor canals.

⁵ Five out of 17 selected divisions were involved in the construction of canals under Phase I and II.

⁶ Length of canals remaining after the first gap.

⁷ CCA worked out proportionately in cases of serial number 4 to 8 due to not provided to Audit by the divisions.

As evident from Table-4.2, in the five test checked divisions of the project, 71.990 Km canals involving CCA of 44,301 hectare were partly completed due to gaps rendering 29.103 Km of canal length unusable.

4.3.2 Canals not constructed/partially constructed in Phase III

Audit test checked records of construction of canals under Phase III in 12 test checked divisions and observed that out of 96 canals proposed to be constructed under Rapti Main Canal (RMC), Campierganj Branch Canal (CBC) and their distribution system, 18 canals involving CCA of 0.24 lakh hectare were not constructed as of March 2022 as detailed in **Table 4.3**.

Table 4.3: Details of canals not constructed

(CCA in hectare)			
S/N	Name of canal	Parent canal	CCA
(1)	(2)	(3)	(4)
1	Semri minor canal	Pakdihwa minor canal	1,867
2	Jogia minor canal	Baikunthpur distributary canal	665
3	Rampur minor canal	Campierganj branch canal	3,214
4	Dharwar minor canal	Rampur distributary canal	958
5	Sonbarsa minor canal	Brijmanganj distributary canal	990
6	Laxmipur distributary canal	Campierganj branch canal	6,394
7	Chainpur distributary canal	Laxmipur distributary canal	580
8	Mahuri minor canal	Laxmipur distributary canal	1,119
9	Kakrahi minor canal	Laxmipur distributary canal	957
10	Surapar minor canal	Laxmipur distributary canal	465
11	Shivnathpur minor canal	Laxmipur distributary canal	732
12	Pokharbhinda minor canal	Laxmipur distributary canal	917
13	Haraiya minor canal	Dharampur distributary canal	1,514
14	Ramnagar minor canal	Dharampur distributary canal	880
15	Chautarwa minor canal	Dharampur distributary canal	746
16	Mohammadpur minor canal	Dharampur distributary canal	655
17	Gopalpur minor canal	Dharampur distributary canal	641
18	Indrapur minor canal	Dharampur distributary canal	1,176
Total			24,470

(Source: Information provided by the test checked divisions)

Apart from above, Bankatwa minor canal was constructed upto 2.210 Km against a total design length 9.200 Km and Bankatwa distributary canal was constructed only upto 8.800 Km against the design length of 18.800 Km. Besides, Prempur distributary canal of 14.000 Km length had a gap at Km 4.500.

The above mentioned status of construction of canals under Phase I to III was in respect of canals in the test checked divisions, therefore, the State Government should ascertain canal-wise status of physical completion of works *vis-a-vis* proposed in the project and take immediate steps to complete the balance works in a time bound manner in order to put the project fully functional.

In reply, the State Government stated (November 2023) that as per the guidelines of the Central Water Commission, irrigation facility in 1.01 lakh hectare out of 11.29 lakh hectare CCA of the project was to be extended through pressure/sprinkler system for which provision of funds was not made in the approved cost of the project. The canals pointed out in the audit observation are covered under pressure irrigation. The State Government further stated that the work of forming the project for creation of pressure irrigation system through underground pipeline was in progress.

The fact remains that the canals envisaged in SNP were not constructed and as replied by the State Government, the balance work is being taken up in a new project.

4.4 Construction of Outlets and Sumps

Outlets and Sumps were not constructed in any of the canals constructed in Rapti system. Due to this, supply of water from the canal to the field was not made till March 2022

Outlet is a masonry structure which acts like a head regulator for the watercourse. An outlet is provided at the canal bank to transfer water from the canal to fields to be irrigated. Provision of construction of 17,639 outlets and 942 sumps was made in the project at an estimated cost of ₹ 104.07 crore.

Audit observed from the records of CE, SNP that 16,585 outlets were constructed as of March 2022. Due to not constructing of outlets and sumps, even if water is available in the canal, it cannot be used for irrigation in the fields. Adverse impact of not constructing sumps was more serious in respect of created CCA of 2.18 lakh hectare under RMC and its distribution system, as 0.87 lakh hectare (40 per cent) of CCA under the system was to be covered under pressure irrigation. Audit in this respect also observed that outlets and sumps were not constructed in any of the canals constructed in Rapti system till March 2022 due to which supply of water from the canals to the field was not made. The test checked divisions stated that the construction of outlets and sumps would be taken up in future through separate project.

In the field visits conducted by Audit, it was observed that at some places of Rapti system water was being used by the farmers by pumping water from canals with their personal means as can also be seen from the Photograph below.



Photograph-4.1: Farmers pumping water from Rapti Main Canal

In reply, the State Government stated (November 2023) that projects of construction of outlets/sumps in the distribution systems between Km 0.000 to Km 125.682 of Rapti Main Canal has been approved for construction in the year 2023-2025.

The reply of State Government was not tenable, as the construction of 17,639 outlets and 942 sumps was already included in SNP (DPR 2017) at an estimated cost of ₹ 104.07 crore. However, only 16,585 outlets were created and the works of sumps were not taken up as of March 2022. Further, outlets/sumps were not constructed in the distribution system of RMC to carry forward the water to the field, despite it being part of SNP's DPR.

4.5 Utilisation of CCA

Audit observed shortfalls in availability of water at the head of canal network leading to inadequate supply of water in the canal network and consequently to fields. Development of command area of the created canals was also lagging behind the requirement. Significant audit observations are discussed in the succeeding paragraphs.

4.5.1 Arrangements for diversion of water from rivers

Out of 11.29 lakh hectare CCA of SNP, 2.18 lakh hectare CCA was to be created in Rapti Rohin doab (RMC and distribution system) and remaining 9.11 lakh hectare area was lying in Ghaghara Rapti doab. The Saryu barrage at river Saryu receives 360 cumecs water from Girija barrage through Saryu Link Channel. The Saryu Main Canal (SMC) which offtakes from the left bank of Saryu barrage provides water to both Rapti Ghaghara doab and Rapti Rohin doab. SMC bifurcates at its tail at Km 63.150 into Gonda and

Basti branches. Apart from Gonda and Basti branches, the network of seven other branch canals, *vis.*, Imamganj, Tarabganj, Mankapur, Tikari, Itiyathok, Bansi and Khalilabad covers the entire Ghaghara Rapti doab. Similarly, Rapti Rohin doab, receives water through RMC takes off on the left bank of Rapti barrage and CBC offtakes from Banganga river. The planning for supply of water into the canal network of SNP has also been depicted in **Table 4.4**.

Table 4.4 (A): Network of canal system for supply of water into Ghaghara Rapti doab

Name of barrage/feeder canal	Name of canals/barrage receiving water
Girija Barrage	Saryu Link Channel
Saryu Link Channel	Saryu Barrage
Saryu Barrage	Saryu Main Canal & its system
Saryu Main Canal	(i) Imamganj branch canal & its system (ii) Basti branch canal & its system (iii) Gonda branch canal & its system <i>Besides, Saryu Main Canal also provide 95 cumec water to Rapti Link Channel for Rapti system</i>
Gonda Branch	(iv) Tarabganj branch canal & its system (v) Itiyathok branch canal & its system (vi) Mankapur branch canal & its system
Mankapur Branch	(vii) Tikari branch canal & its system
Basti Branch	(viii) Bansi branch canal and its system (ix) Khalilabad branch canal and its system

(Source: Information provided by CE, Saryu Pariyojana-I, Ayodhya and DPR)

Table 4.4 (B): Network for supply of water into canal system in Rapti Rohin Doab

Name of barrage/feeder canal	Name of canals receiving water
Rapti Link Channel	Rapti Barrage
Rapti Barrage	Rapti Main Canal system
Rapti Main Canal	Banganga Barrage
Banganga Barrage	Campierganj branch canal and its system

(Source: Information provided by CE, Saryu Pariyojana-I, Ayodhya and DPR)

It can be observed from the details given in above tables that water to canal network of SNP is provided mainly through SMC. From SMC, Imamganj, Gonda and Basti branch canals feed water to the six branch canals. Apart from this, SMC also feeds water to RMC through RLC.

4.5.1.1 Release of water to canal network

In the DPR of the project, crop water requirement was assessed at 76.20 to 359.42 cumec during Kharif season and 14.50 to 178.03 cumec during Rabi season.

Audit analysed the data of release of water in SMC *vis-a-vis* actual demand of water in the command area of SNP during 2017-22. The status of supply of water in SMC is given in **Table 4.5** and **Table 4.6**.

Table 4.5: Days of running of Saryu Main Canal

Year	Kharif (No. of days)			Rabi (No. of days)		
	Demand	Running of canal	Shortfall (per cent)	Demand	Running of canal	Shortfall (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2017-18	132	106	26 (20)	Nil	Nil	Nil
2018-19	98	63	35 (36)	18	18	Nil
2019-20	131	123	08 (06)	15	15	Nil
2020-21	64	61	03 (05)	84	84	Nil
2021-22	91	78	13 (14)	33	33	Nil

Note: Shortfall of less than 10 per cent has been ignored.

(Source: Information provided by the SE, Irrigation Construction Circle, Bahraich)

Table 4.6: Release of water in Saryu Main Canal

Year	Kharif		Rabi	
	No. of days during which water not released as per demand (out of col. 3 of Table no. 4.5)	Percentage ⁸ shortfall in release of water (number of days out of col.2)	No. of days during which water not released as per demand (out of col. 6 of Table no. 4.5)	Percentage shortfall in release of water (number of days out of col.4)
(1)	(2)	(3)	(4)	(5)
2017-18	74	14-50 (22) 54-88 (52)	Nil	Nil
2018-19	50	11-49 (43) 56-80 (07)	04	23-35 (02) 56-78 (02)
2019-20	61	12-44 (59) 55-76 (02)	15	48 (01) 51-73 (14)
2020-21	23	12-45 (23)	76	13-50 (12) 54-93 (64)
2021-22	21	14-45 (12) 73 (09)	14	40 (02) 51-85 (12)

Note: Shortfall of less than 10 per cent has been ignored.

(Source: Information provided by the SE, Irrigation Construction Circle, Bahraich)

⁸ The percentages of shortfall have been shown in two groups in column (3) and column (5), *vis. 11 to 50 per cent* (the first row) and *51 per cent & above* (the second row).

It is evident from the tables above that there was short release of water ranging between 11 and 88 *per cent* in Kharif and 13 to 93 *per cent* in Rabi season against the demand of water during 2017-22. Short release of water in SMC adversely impacted the supply of water into connected⁹ Imamganj, Basti and Gonda branch canals as detailed in *Appendix 4.1*.

10 to 69 per cent canals in Kharif season and 26 to 85 per cent canals in Rabi season were not operated during 2017-22

Audit in this respect further observed that in the five test checked divisions¹⁰, 10 to 69 *per cent* canals in Kharif and 26 to 85 *per cent* canals in Rabi season were not operated during 2017-22. The details of operation of canals during 2017-22 was as below:

Table 4.7: Operational status of canals of Phase I and II in the test checked divisions

Year	Total number of canals ¹¹	CCA ¹²	Number of canals remained in operation (<i>per cent</i> to col. 2)		Number of canals not operated (<i>per cent</i> to col. 2)	
			Kharif	Rabi	Kharif	Rabi
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2017-18	336	3,80,969	103 (31)	69 (21)	233 (69)	267 (79)
2018-19	336	3,80,969	119 (35)	52 (15)	217 (65)	284 (85)
2019-20	336	3,80,969	210 (63)	111 (33)	126 (37)	225 (67)
2020-21	336	3,80,969	248 (74)	183 (54)	88 (26)	153 (46)
2021-22	336	3,80,969	304 (90)	249 (74)	32 (10)	87 (26)
Total	336	3,80,969	(31 to 90)	(15 to 74)	(10 to 69)	(26 to 85)

(Source: Information provided by the test checked divisions)

The concerned divisions stated that operation of canals depends upon the availability of water. In reply, the State Government provided (November 2023) status of release of water in the canal system during 2022-23 (both Rabi and Kharif season) and 2023-24 (only Kharif season) and stated that almost cent *per cent* irrigation water was provided against the demand during 2022-23 and 2023-24. The State Government did not furnish specific reply to the Audit observations relating to non-operation of canals and stated (November 2023) that all the completed canals were being operated after commission of the project in December 2021.

However, the State Government did not clarify the reasons for less water supply during 2017 to 2022 as mentioned in the audit observation. Apart from this, the State Government's claim that water was being provided from the canals as per the demand, was also not acceptable, because according to the data provided by the Government in the reply, there was less release of

⁹ As per information provided by SE, Irrigation Construction Circle, Bahraich, there was no demand of water in RLC during 2017-22, hence no water was released from SMC to RLC.

¹⁰ Canals of Phase-I & II (Ghaghra-Rapti doab) were operational. However, no canals of Phase-III (Rapti-Rohin doab) were operated as of March 2022. Five out of 17 divisions, involved in the operation of canals of Phase-I and II, were selected in PA. They are SNK, Ayodhya, SNK-2, Gonda, SNK-3, Gonda, SNK-4, Gonda and SNK-4, Basti.

¹¹ SNK, Ayodhya (62 canals), SNK-2, Gonda (52 canals), SNK-3, Gonda (31 canals), SNK-4, Gonda (91 canals) and SNK-4, Basti (100 canals).

¹² This CCA pertains to Gonda, Mankapur, Tikari, Itiyathok, Khalilabad and Basti Branch canals and their distribution system.

water in Saryu Main Canal during rabi season (only 29 to 53 *per cent* during 11 days of January 2023, 26 to 70 *per cent* during 20 days of February 2023 and 26 to 74 *per cent* during 21 days of March 2023).

Further, less water availability in the canals of the project during Rabi season was disclosed in the hydrological survey carried out by the Department for assessing the feasibility of the project. Inadequate availability of water for the Rabi seasons still persisted. Therefore, there was an urgent need to identify the solutions for providing adequate water in the command area of the project so that farmers can get the expected benefits.

The proposed irrigation through RMC and distribution system was not started up to March 2022 because of non-construction of outlets and sumps in the canals.

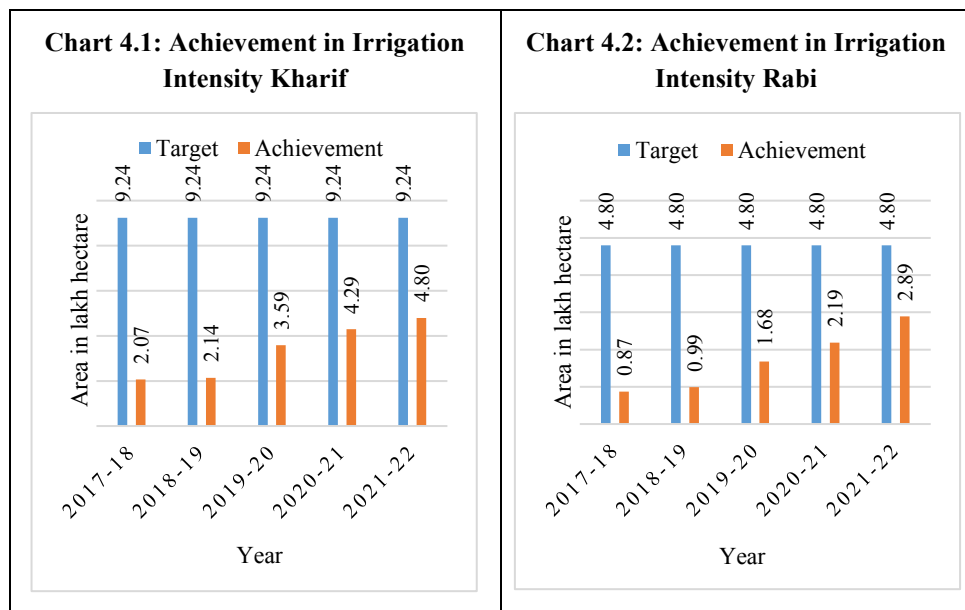
4.6 Irrigation coverage

SNP targeted creation of Irrigation Potential (IP) of 14.04 lakh hectare in the 11.29 lakh hectare CCA during the twin cropping seasons *vis.*, Rabi: 4.80 lakh hectare; and Kharif: 9.24 lakh hectare. Audit, however, observed shortfalls in IP during 2017-22 as detailed in **Table 4.8** and **Charts 4.1** and **4.2**.

Table 4.8: Details showing irrigation coverage

Year	(Area in lakh hectare)					
	Kharif			Rabi		
	Target as per DPR	Achievement (<i>per cent</i>)	Shortfall (<i>per cent</i>)	Target as per DPR	Achievement (<i>per cent</i>)	Shortfall (<i>per cent</i>)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2017-18	9.24	2.07 (22)	7.17 (78)	4.80	0.87 (18)	3.93 (82)
2018-19	9.24	2.14 (23)	7.10 (77)	4.80	0.99 (21)	3.81 (79)
2019-20	9.24	3.59 (39)	5.65 (61)	4.80	1.68 (35)	3.12 (65)
2020-21	9.24	4.29 (46)	4.95 (54)	4.80	2.19 (46)	2.61 (54)
2021-22	9.24	4.80 (52)	4.44 (48)	4.80	2.89 (60)	1.91 (40)

(Source: Information provided by CE, Saryu Pariyojana-I, Ayodhya)



Position of achievement in irrigation intensity in the test checked divisions is given in **Appendix 4.2**. Thus, shortfalls in extending irrigation facility in the command area of SNP during Kharif ranged between 48 and 78 *per cent* with 41 to 80 *per cent* in the test checked divisions. Similarly, in Rabi, the overall shortfalls ranged between 40 and 82 *per cent* with a shortfall ranging between 32 and 86 *per cent* in the test checked divisions. Amongst other reasons, not utilising of 2.18 lakh hectare CCA (IP: 3.27 lakh hectare) created under Rapti Main Canal system due to absence of outlet and sump to carry water from canals to field, also declined the achievements significantly against the target of creation of IP.

In reply, the State Government stated (November 2023) that the work of development of the command area was being carried out by Greater Sharda Sahayak Command Area Development Authority (GSSCADA), after which, the farmers of the entire command area of the project would get water for irrigation easily.

The fact remains that even after the completion of the project, the irrigation targets for both Kharif and Rabi crops were not achieved.

4.7 Development of command area

Command Area Development works were completed in only 20 per cent area of the project as of March 2023

Optimum utilisation of canal water in the fields depends upon the development of command area of the canal system. The Command Area Development and Water Management (CAD&WM) Programme has to be implemented in a holistic manner so that irrigation potential created (IPC) gets utilised soon after its creation, improves water use efficiency, increases agricultural productivity and production and brings sustainability in the irrigated agriculture in a participatory environment.

According to the revised guidelines of CAD&WM Programme issued by GoI in September 2015, the activities of command area development *inter*

alia included survey, planning, design and execution of On Farm Development (OFD) works including construction of field channels. The CAD&WM programme is implemented under Pradhan Mantri Krishi Sinchai Yojna (PMKSY) - *Har Khet Ko Pani* from 2015-16 onwards. In order to promote water use efficiency in irrigation, the CAD&WM programme has been targeting at least 10 *per cent* of CCA for development of micro-irrigation infrastructure for facilitating use of devices like underground piping system, *etc.*, for sprinklers, rain guns, pivots, *etc.*

In Uttar Pradesh, GSSCADA under the administrative control of I&WRD, is responsible for development of command area of the canal systems. GSSCADA has taken up work of development of command area of SNP in 1999-2000 in three phases as detailed in **Table 4.9**.

Table 4.9: Details of works taken for development of command area

Phase	Area proposed (lakh hectare)	Estimated cost (₹ in crore)	Year in which work taken up	Year of completion	Area developed (lakh hectare)	Expenditure (₹ in crore)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Phase I	1.62	124.00	1999-2000	2008-09	1.62	143.96
Phase II	2.80	571.90	2009-10	Incomplete	0.65	Not provided
Phase III	4.80	Not provided	2021-22	On going	Under progress	6.26 ¹³
Total	9.22				2.27	

(Source: Information provided by the GSSCADA)

Out of total proposed creation of 11.29 lakh hectare under SNP, GSSCADA developed (1999-2009) 1.62 lakh hectare CCA (205 canals) under Phase I by constructing 11,894.621 Km earthen field channels, 1,347.39 Km lined field channel and 353.66 Km field drains. Further, GSSCADA had taken up development works in 2.80 lakh hectare area under Phase II in 2009-10 but till March 2018, only 0.65 lakh hectare (23 *per cent*) area was developed. Further examination of records in this respect disclosed that I&WRD had forwarded a DPR in February 2019 to GoI for seeking funds under AIBP to complete the remaining work of Phase II (1.64 lakh hectare¹⁴). GoI however, directed (July 2019) to the State Government for sending a comprehensive proposal in respect of the remaining area of Phase II (1.64 lakh hectare) and for the area of 2.07 lakh hectare¹⁵, not taken up by GSSCADA (total 3.71 lakh hectare¹⁶). I&WRD however did not forward the revised proposal to GoI as of March 2023.

¹³ As of March 2023.

¹⁴ Proposed area under Phase II = 2.80 lakh hectare - 0.51 lakh hectare (unserviceable area)-0.65 lakh hectare (developed area) = 1.64 lakh hectare.

¹⁵ 11.29 lakh hectare – (1.62 + 2.80 + 4.80) lakh hectare = 2.07 lakh hectare.

¹⁶ Total CCA created by I&WRD = 11.29 lakh hectare. GSSCADA developed 1.62 lakh hectare in Phase I and 0.65 lakh hectare in Phase II. GSSCADA declared that 0.51 lakh hectare area was not serviceable and 4.80 lakh hectare area was proposed in Phase III. Thus, 3.71 lakh hectare area was left to be covered.

Besides, work of development of 4.80 lakh hectare CCA was also taken up in 2021-22 under Phase III which was at the stage of survey and tendering as of March 2023.

Thus, as of March 2023, only 2.27 lakh hectare (20 *per cent*) out of total CCA of 11.29 lakh hectare created under SNP was developed by GSSCADA.

Audit also conducted joint physical verification and noticed minimal existence of field channels in the command area of the test checked canals. It was noticed that in only one canal (Chilbila minor canal, Saryu Nahar Khand, Ayodhya), out of 35 test checked canals, field channels were found constructed. Audit also observed that in respect of two canals, outlets in the canals were established but field channels to carry water to the fields were not constructed as can be viewed from the photographs below:

Photographs of Outlets without field channel



In reply, the State Government stated (November 2023) that GoI had directed to prepare DPR in respect of Saryu Nahar Pariyojana Phase III, Arjun Sahayak Project, Madhya Ganga Phase II, Bansagar canal project and 15 other projects under incentivisation scheme for bridging irrigation gap (ISBIG). These 15 projects included Saryu Nahar Pariyojana Phase-II (balance area: 2.15 lakh hectare). Subsequently, GSSCADA prepared DPR for development of 1.64 lakh hectare under AIBP and forwarded the same to GoI for approval. In response, GoI directed to prepare DPR in respect of 3.71 lakh hectare in place of DPR of 1.64 lakh hectare. The State Government further stated that after completion of Saryu and Rapti canal systems, the DPR for the development of balance area would be prepared

¹⁷ Under Saryu Nahar Khand-4, Gonda.

and forwarded for approval. The State Government also stated that construction of outlets had been completed in most of the canals.

The State Government however did not state the circumstances under which only 0.65 lakh hectare area could be developed during 2009-10 to 2017-18. Besides, the State Government did not forward the DPR for 3.71 lakh hectare area as of November 2023, as desired by GoI due to which balance work in 2.15 lakh hectare under Phase-II remained incomplete. Consequently, development of command area was lagging behind and only 20 *per cent* out of total CCA of 11.29 lakh hectare under SNP was developed by GSSCADA as of November 2023.

4.7.1 Non-execution of component of CAD&WM

The broad activities under CAD&WM programme were On-Farm Development (OFD) works including construction of lined field channels, construction of lined field, intermediate and link drains, correction of system deficiencies and reclamation of waterlogged areas, creation of micro-irrigation facility in at least 10 *per cent* of the CCA of each project, software activities like training, monitoring, evaluation, demonstration with respect to water use efficiency and adaptive trials and one time functional/ infrastructure grant to registered Water User Associations (WUAs). According to the guidelines issued by GoI in September 2015, all aspects of the CAD&WM Programme need be taken up in an integrated, convergent and coordinated manner.

Audit however, observed that in the development of 2.27 lakh hectare¹⁸ area as of March 2023, the components, *vis.* correction of system deficiencies and reclamation of waterlogged areas, at least 10 *per cent* of the CCA of each project under Micro-irrigation, software activities like training, monitoring, evaluation, demonstration with respect to water use efficiency and adaptive trials and one time functional/ infrastructure grant to registered Water User Associations (WUAs) were not executed.

Further, Per Drop More Crop (PDMC) component of PMKSY *inter alia* envisaged promoting efficient water conveyance and precision water application devices like drips, sprinklers, pivots, rain-guns in the farm, secondary storage structures at tail end of the canal system to store water when available in abundance, extension activities for promotion of scientific moisture conservation and agronomic measures, capacity building, training and awareness campaign, information communication technology interventions in the field of water use efficiency, precision irrigation technologies, on farm water management, crop alignment, *etc.* The

¹⁸ Component wise details was provided in respect of Phase I work (1.62 lakh hectare) and in respect of development of 0.65 lakh hectare area under Phase II, details of components of CAD&WM executed was not provided.

Department of Horticulture and Food Processing implemented this scheme in the State.

As per information provided by Director, Horticulture and Food processing, Lucknow, the financial as well as physical targets for providing facilities of drip/sprinkler irrigation in the eight districts¹⁹ covered under SNP were not achieved during 2017-22. Details of allotment of funds and expenditure there against during 2017-22 in the eight districts has been given in **Appendix 4.3(a)** and summarised in **Table 4.10**.

Table 4.10: Financial achievements in PDMC scheme

Year	Financial (₹ in lakh)		
	Allotment	Expenditure (per cent)	Surrender (per cent)
(1)	(2)	(3)	(4)
2017-18	618.66	377.65 (61)	241.01 (39)
2018-19	973.90	947.58 (97)	26.32 (03)
2019-20	1,886.92	1,781.45 (94)	105.47 (06)
2020-21	2,512.50	2,499.02 (99)	13.48 (01)
2021-22	1,835.88	1,814.07 (99)	21.81 (01)

(Source: Data provided by the Director, Horticulture and Food Processing, Lucknow)

The achievements of physical targets of PDMC in the eight districts during 2017-22 were in the range of 20 to 72 *per cent* during 2017-18, 39 to 100 *per cent* during 2018-19, 71 to 100 *per cent* during 2019-20, 21 to 100 *per cent* during 2020-21 and 15 to 63 *per cent* during 2021-22, as detailed **Appendix 4.3(b)**. The shortfalls in the physical targets were mainly due to slower adoption of new technology, unavailability of willing and suitable beneficiaries and farmers of Schedule Caste Sub Plan (SCSP) and Covid-19 pandemic. Thus, the purpose of promoting micro irrigation in the command of the project was not achieved.

In reply, the State Government stated (November 2023) that determination and construction of field channels and pressure wells was possible only after the operation of water in the canals. The State Government further added that in 1.01 lakh hectare CCA, irrigation was to be provided through pressure/sprinkler system for which provision of funds was not part of the estimated cost of ₹ 9,802.68 crore of SNP. The State Government stated that after completion of project, work on project for laying of underground pipelines to extend irrigation facility in 900 hectare through pressure irrigation was taken up as pilot project which was in progress.

The reply of the State Government was not tenable, because project cost of ₹ 9,802.68 crore included ₹ 16.14 crore for construction of sumps (pressure well) on different locations of RMC and Campierganj branch canal and on distributary and minor canals.

¹⁹ Gonda, Balrampur, Shravasti, Bahraich, Gorakhpur, Basti, Sant Kabir Nagar and Siddharthnagar. Information in respect of Maharajganj was not provided.

4.7.2 Water User Association not formed

Water User Association (WUA) at *kulaba*, minor or distributary canal level was to be constituted by I&WRD with the main objective to bring about water users' participation in water management and also to create among the water users', a sense of ownership of irrigation system in their area.

Audit examination of the records, however, revealed that WUAs were not constituted in the command area of SNP compromising the efficient operation of the canal network.

In reply, the State Government stated (November 2023) that the process of formation of WUAs was in progress in command area of canals constructed in Phase-I and II of the Saryu Nahar Pariyojana.

The fact remains that one of the most essential components of water distribution from the canals could not be executed due to which the objective of optimum utilisation of available water in the canals with public participation, remained unachieved as of November 2023.

4.8 Maintenance of canals

Proper and periodic maintenance of canal structures is vital to ensure effective utilisation of created assets. Assessment of need of maintenance through regular survey and physical verifications, timely availability of adequate funds and effective system of maintenance of canals are the components to keep the structures fit for use. The State Government prescribed (December 2000) norms²⁰ in respect of funding for the maintenance of canals of different capacity.

Audit observed that during 2017-22, ₹100.81 crore was allotted to CEs, SNP for maintenance of canals, which included ₹ 23.79 crore allotted to the five test checked divisions for canal maintenance. Engineer-in-Chief, I&WRD, however, did not provide the basis for allocation of funds to SNP.

The per year requirement of fund as per norms and allotment to the five test checked divisions during 2017-22 was as detailed in **Table 4.11**.

Table 4.11: Allotment of fund to the test checked divisions

(₹ in lakh)

Name of division	No of canals	Total CCA (hectare)	Fund required as per norms per year	Allotment of fund (per cent)				
				2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SNK, Ayodhya	62	42,522	93.22	44.47	77.20	126.33	71.22	268.41
SNK-2 Gonda	52	79,534	161.94	10.00	8.00	6.00	48.86	196.45
SNK-3 Gonda	31	69,214	142.07	10.00	8.00	7.00	55.13	155.56

²⁰ ₹ 210 per hectare for main, branch and distributary canals and ₹ 195 per hectare for minor canals.

Name of division	No of canals	Total CCA (hectare)	Fund required as per norms per year	Allotment of fund (per cent)				
				2017-18	2018-19	2019-20	2020-21	2021-22
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SNK-4 Gonda	91	1,15,836	232.37	10.00	18.00	28.86	58.37	259.03
SNK-4 Basti	100	73,863	148.84	11.23	26.28	295.48	197.02	382.52
Total	336	3,80,969	778.44	85.70 (11)	137.48 (18)	463.67 (60)	430.60 (55)	1,261.97 (162)

(Source: Data collected from the test checked divisions)

Note: SNK- Saryu Nahar Khand

The five test checked divisions did not estimate the requirement of funds for maintenance of canals during 2017-22 due to which adequacy of funds *vis-a-vis* requirements could not be ascertained in Audit. However, the allocation of funds to the five test checked divisions during 2017-21 was only 11 to 55 *per cent* as compared to the norm prescribed by the State Government in the year 2000. The allocation of funds in the year 2021-22 was, however, more than the norms (162 *per cent*).

Audit also examined the performance of maintenance of canals in above mentioned five test checked divisions and noticed that during 2017-22, only 12 to 83 *per cent* canals were taken up for maintenance as detailed in **Table 4.12**.

Table 4.12: Details of canals taken up for maintenance during 2017-22

Name of division	Total number of canals	2017-18	2018-19	2019-20	2020-21	2021-22
		Number of canals (per cent)	Number of canals (per cent)	Number of canals (per cent)	Number of canals (per cent)	Number of canals (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
SNK, Ayodhya	62	25 (40)	28 (45)	32 (52)	12 (19)	17 (27)
SNK-2, Gonda	52	07 (13)	08 (15)	06 (12)	16 (31)	50 (96)
SNK-3, Gonda	31	NA	NA	NA	16 (52)	31 (100)
SNK-4, Gonda	91	08 (09)	04 (04)	17 (19)	27 (30)	85 (93)
SNK-4, Basti	100	00 (00)	06 (06)	39 (39)	14 (14)	95 (95)
Total	336	40 (12)	46 (14)	94 (28)	85 (25)	278 (83)

Note: Not made available (NA), SNK- Saryu Nahar Khand

(Source: Schedule of works expenditure provided by test checked divisions)

The divisions stated that in view of limited availability of finance, the maintenance work was done keeping in view the condition of the canals.

Joint physical verification of selected canals by Audit disclosed poor condition of canals as the canals were full of shrubs/vegetation and the banks of many canals were found damaged, as depicted in photographs below:

Photographs showing poor maintenance of canals

	
<p>Photograph-4.4: Chilbila minor</p>	<p>Photograph-4.5: Udaipur minor</p>
	
<p>Photograph-4.6: Biramapur minor canal</p>	<p>Photograph-4.7: Narayanpur Dy.</p>

In reply, the State Government stated (January 2024) that under SNP, an amount of ₹ 151.84 crore has been estimated on the basis of rates determined by CWC for annual maintenance of canals which is proposed for inclusion in budgetary provisions for next year.

Thus, a significant component of maintenance of created assets under the project was marred with *ad-hocism* due to which the physical condition of the canals constructed under the project had deteriorated majorly.

4.9 Human resources availability

For implementation of an irrigation project, apart from planning for the aspects, *vis.*, technical, agricultural, environmental and financial, aspect of suitable and sufficient organisational structure including human resources should also be considered and adequate number of human resources should be put in place with proper documentation.

According to the Irrigation manual of order prescribed by I&WRD, Deputy Revenue Officer along with *Jiledar* is responsible for canal revenue and matters related to revenue establishment.

Besides, *Amin* is responsible for measurement of irrigation and to prepare the '*Jamabandis*'²¹ for revenue collection. The '*Patraul*' is to read and report the gauges of water flow in the canals and to give information about the total areas irrigated till that date in the gauge reports on the 10th and 25th of every month, as well as to submit this information in Form 14B by 25th of every month to *Jiledar*.

There were shortages of human resources affecting upkeep of records

Audit examination of records in the test checked divisions however revealed shortage of key human resources, affecting the operation of SNP. It was observed in Audit that in 14 out of 17 test checked divisions, in respect of 10 to 52 *per cent* posts, the officers/officials were not deployed as per the sanctioned strength and the shortages ranged between six to 100 *per cent*. The shortage of human resource was more critical in respect of posts, *vis.* *Jiledar*, *Seench Parvekshak*²², and *Seenchpal*²³ who are responsible for overseeing the operation of canals and canal revenue related issues. It was observed in 14 out of 17 test checked divisions that Deputy Revenue Officers/*Jiledar* were not deployed alongwith huge shortage of other staff ranging between 11 *per cent* to 100 *per cent*. Details are given in **Appendix 4.4**. Due to shortage of staff, upkeep of records related to operation of canals was very poor in all test checked divisions.

In reply, the State Government stated (January 2024) that revenue related works had been executed through contractors by hiring manpower under contingency item.

Audit, however, did not find any evidence in the records in respect of such engagements in the test checked divisions.

²¹ Records of irrigation provided and collection of revenue from the beneficiaries.

²² To prepare *Jamabandi*, assist WUA and to monitor the functions of *Seenchpal*.

²³ To record and report gauges of water, to report correctness of outlets, to record irrigated area *etc.*

To sum up, the Saryu Nahar Pariyojana was commissioned in December 2021, however all the components of the works were not completed. There was shortfall in creation of CCA envisaged under the project due to incompleteness of the canals. Besides, the created CCA was not being used effectively as even though water was available in the canals, it could not be diverted into the field due to not constructing of outlets and sumps. Shortfall in release of water in the Saryu Main Canal against demand was in the range of 11 to 88 *per cent* during kharif and 13 to 93 *per cent* during rabi season during 2017-22. The canals lacked adequate maintenance which deteriorated the canal constructed under the project majorly.

The command area development work was completed only in a small part of the created CCA, due to which the proposed irrigation facility could not be extended in Ghaghara Rapti Doab and Rapti Rohin Doab. Water user associations were not formed. Key personnel were not deployed in the test checked divisions due to which upkeep of records related to operation of canals was inadequate.

Recommendation 9: *The State Government should immediately determine the status of physical completion of works and creation of culturable command area and accordingly should expedite the completion of balance works.*

The State Government replied (November 2023) that railway bridges were to be constructed at several places and operation of canals was obstructed due to non-acquisition of land at some places. The State Government further stated that the action had almost been completed on these issues.

Recommendation 10: *The canals constructed under Rapti Main canal and its distribution system should immediately be put to use by constructing outlets, sumps in the canals and field channels and drains below the outlets.*

Recommendation 11: *There is an urgent need to identify the solution for providing adequate water in the command area of the Saryu Nahar Pariyojana, especially in Rabi season so that farmers can get the expected benefits.*

Recommendation 12: *There is an urgent need to review the works of Command Area Development in view of huge gap between the created CCA and utilised CCA.*

Recommendation 13: *Water user associations should be formed immediately to ensure equal distribution of available water in the canal network.*

Recommendation 14: *Maintenance of created assets should be ensured to keep the assets usable in order to get the envisaged benefits.*

PRAYAGRAJ
THE 13 APR 2025



(RAM HIT)

Principal Accountant General (Audit-I)
Uttar Pradesh

COUNTERSIGNED

NEW DELHI
THE 17 APR 2025



(K. SANJAY MURTHY)

Comptroller and Auditor General of India