

Water Quality and Availability in the State of Telangana: Current Scenario

I. Introduction

In the past decade, Telangana state faced ongoing problem with its water resources, in terms of both availability, as well as quality. The state has suffered numerous droughts, due to deficit rainfall and poor water retention of tanks and other bodies, leading to a scarcity of water for both drinking and irrigation purposes.

As per the Central Ground Water Board, most district in the State recorded more than 4 metres depletion in groundwater in the last 10 years, leading to severe ecological balances. Further, several groundwater sources have been reported to contain more than one contaminant, leading to numerous water-borne diseases. Habitations that have been covered by drinking water and purification schemes are seen to slip back into quality and scarcity affected habitations, showing that a more sustainable solution is urgently required.

II. Current Scenario of Water Quality

There are a total of **1041** fluoride-affected habitations spread **28 out of the 31 districts** in Telangana. The maximum number of fluoride-affected habitation is in Mahabubabad i.e. 98 habitations. However, no cases of arsenic-affected habitations have been registered under the National Sub-Mission on Arsenic and Fluoride.

As per the data available on the National Water Quality Sub-Mission dashboard, there are **98 fluoride-affected habitations in Mahabubabad**, followed by **95 affected habitations in Vikarabad** and **80 fluoride-affected habitations in Nalgonda**. The district-wise breakup of the arsenic and fluoride-affected habitations in the state is highlighted below:

Table A: Number of Fluoride and Arsenic Affected Habitations in Telangana

Sl. No	Districts	Arsenic Affected Habitations	Fluoride Affected Habitations	Total Affected Habitations
1	ADILABAD	0	1	1
2	BHADRADRI KOTHAGUDEM	0	26	26
3	JAGITIAL	0	33	33
4	JANGOAN	0	71	71
5	JAYASHANKAR BHUPALPALLI	0	38	38
6	JOGULAMBA GADWAL	0	9	9
7	KAMAREDDY	0	20	20
8	KARIMNAGAR	0	53	53

9	KHAMMAM	0	0	0
10	KOMARAM BHEEM ASIFABAD	0	0	0
11	MAHABOORNAGAR	0	74	74
12	MAHABUBABAD	0	98	98
13	MANCHERIAL	0	1	1
14	MEDAK	0	60	60
15	MEDCHAL MALKAJGIRI	0	8	8
16	NAGARKURNOOL	0	32	32
17	NALGONDA	0	80	80
18	NIRMAL	0	1	1
19	NIZAMABAD	0	32	32
20	PEDDAPALLI	0	9	9
21	RAJANNA SIRICILLA	0	38	38
22	RANGAREDDY	0	25	25
23	SANGAREDDY	0	21	21
24	SIDDIPET	0	45	45
25	SURYAPET	0	30	30
26	VIKARABAD	0	95	95
27	WANAPARTHY	0	20	20
28	WARANGAL URBAN	0	5	5
29	WARANGAL	0	50	50
30	YADADRI BHONGIRI	0	66	66
31	HYDERABAD*	0	-	-
	Total	0	1041	1041

Source: National Sub-Mission on Arsenic and Fluoride, accessed as on 23rd July, 2018. Note:* data is not available

Table B: Number of Schemes under NWQSM in Telangana for 2017-18

Name of the Districts	No. of Schemes	Habitations under the Schemes	Funds released (in INR lakh)	Expenditure out of fund released (in INR Lakh)	Physically completed schemes	Habitations Benefited
ADILABAD	1	2	53.2	53.20	1	2
BHADRADRI KOTHAGUDEM	1	26	846	846.00	1	26
JAGITIAL	0	0	0	595.40	1	0
JANGOAN	0	0	0	0	0	0
JAYASHANKAR	2	33	1309.6	1518.20	3	33

BHUPALPALLI						
JOGULAMBA GADWAL	1	8	695.6	695.60	1	8
KAMAREDDY	0	0	0	0	0	0
KARIMNAGAR	5	146	12145.6	11341.60	1	146
KHAMMAM	0	0	0	0	0	0
KOMARAM BHEEM ASIFABAD	0	0	0	0	0	0
MAHABOONNAGAR	1	122	12572.4	15180.00	2	122
MAHABUBABAD	0	0	0	0	0	0
MANCHERIAL	1	1	8	7.00	1	1
MEDAK	2	64	2948.8	748.51	2	64
MEDCHAL MALKAJGIRI	1	8	2007.6	748.51	2	64
NAGARKURNOOL	0	0	0	0	0	0
NALGONDA	3	158	7928.4	7928.40	0	158
NIRMAL	0	0	0	0	0	0
NIZAMABAD	2	52	2926	1765.10	1	52
PEDDAPALLI	1	1	38.8	38.80	1	1
RAJANNA SIRICILLA	0	0	0	0	0	0
RANGAREDDY	1	109	7557.2	4949.60	0	109
SANGAREDDY	1	13	888.4	888.40	1	13
SIDDIPET	0	0	0	0	0	0
SURYAPET	0	0	0	0	0	0
VIKARABAD	0	0	0	0	0	0
WANAPARTHY	0	0	0	0	0	0
WARANGAL URBAN	0	0	0	0	0	0
WARANGAL	4	223	16834.4	12574.50	2	223
YADADRI BHONGIRI	0	0	0	0	0	0
HYDERABAD*	-	-	-	-	-	-
Total	27	966	68760.00	61137.91	18	966

Source: National Sub-Mission on Arsenic and Fluoride, accessed as on 23rd July, 2018. Note: * data is not available

As of 31st March 2018, there are **27 schemes** in the state. The 27 schemes are spread across 31 districts, as listed in the table above. The maximum number of ongoing schemes is in Karimnagar. In 2017-18, the Government of India has released **INR 68760.00 lakhs** for these projects. It is also important to highlight that Telangana has utilised **88.91 per cent** of the released funds thus far. The maximum amount of funds has been utilised in Mahaboobnagar.

III. Water Availability in the State of Telangana

According to data published by Food and Agriculture Organisation's AQUASTAT, India is one of the countries that uses groundwater the most. India uses 80 per cent of its water for irrigation needs, and 65 per cent of this is sourced from groundwater. Groundwater availability therefore is a primary metric in determining the overall availability of water.

The State of Telangana holds **3.6 per cent of national groundwater** resources and **2.89 per cent of the country's population**. A number of factors determine the groundwater levels of a region, including the amount of rainfall, usage of groundwater for irrigation, dependence on groundwater, incentives to use/misuse groundwater, and degree of groundwater development. The following table (**Table 3**) gives a district-wise comparison of the depth to groundwater level, based on 2018 levels. The table also illustrates areas that face high risk of scarcity by measuring the proportion of wells (measuring wells) with depth between 20 and 40 metres¹.

As per the average depth to water level, the district of Medak with 19.29m performs the worst and the district of Wanaparathi with 6.91m performs the best. Similarly, as per the metric of per centage of wells with depth between 20 and 40m, Siddipet is in the most precarious position with 33 per cent. Machrial, Warangal (U) and Jagityal all have no wells in this range. ²

Table 3: Depth to Water Level in March 2018

S.No	District Name	Average Depth to Water Level	% of Wells (20-40 m)
1	MAHABUBNAGAR	14.96	23
2	NAGAR KURNOOL	14.55	30
3	WANAPARTHI	6.91	0
4	JOGULAMBA(GADWAL)	7.94	8
5	RANGAREDDY	15.83	26
6	MEDCHAL	10.87	12
7	VIKARABAD	14.91	10
8	MEDAK	19.29	24
9	SANGA REDDY	15.29	30
10	SIDDIPET	16.1	33
11	NIZAMABAD	13.35	8
12	KAMA REDDY	15.56	27
13	ADILABAD	10.59	8
14	NIRMAL	12.71	12
15	MANCHRIAL	8.47	0
16	ASIFABAD (KOMRAM BHEEM)	9.09	5

¹ Composite Water Management Index: A Tool for Water Management, Niti Aayog, June 2018.

² Ibid.

17	KARIMNAGAR	11.8	6
18	PEDDAPALLY	11.35	6
19	JAGITYAL	8.12	0
20	RAJANA(SIRCILLA)	17.6	26
21	WARANGAL(U)	8.98	0
22	WARANGAL(R)	10.28	10
23	BHOPALPALLY(JAYASHANKAR)	12.83	19
24	MAHABUBABAD	9.14	3
25	JANGOAN	12.76	4
26	KHAMMAM	7.94	7
27	BHADRADRI(KOTHAGUDEM)	11.91	9
28	NALGONDA	12.57	17
29	SURYAPET	10.31	7
30	YADADRI	12.8	13
31	HYDERABAD	8.11	0
	STATE FIGURES	12.03	12

Source: Groundwater Levels Scenario in Telangana March 2018

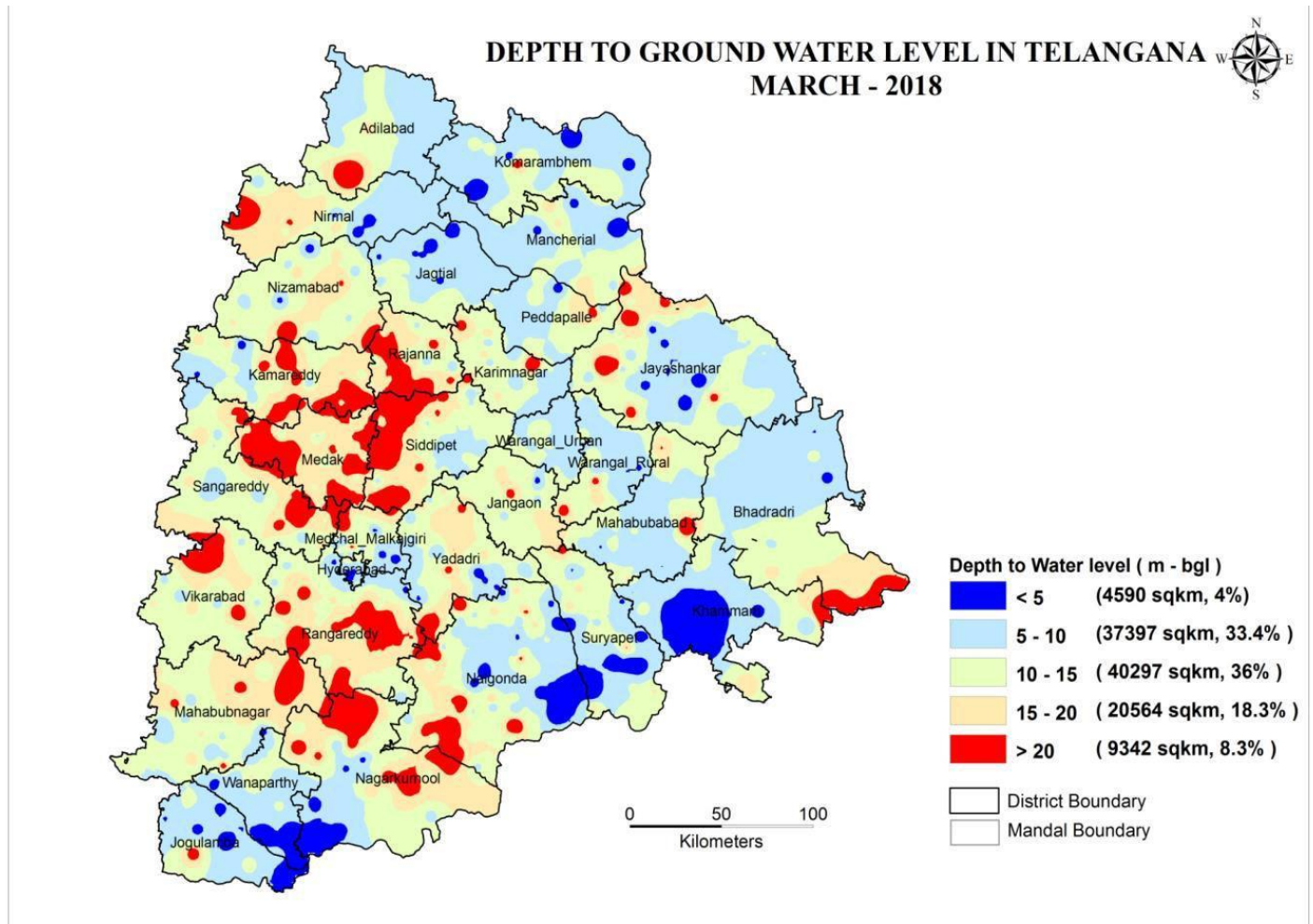
Figure 1 provides a holistic picture of ground-water levels in the state so as to enable macro-level analyses. Water levels are observed to be deeper in the western parts of the state such as Mahabub Nagar, Ranga Reddy and Kama Reddy districts, where groundwater is the major source of irrigation³. The **Niti Aayog Composite Water Management Index** also points out that Telangana has not yet initiated the process of **power feeder separation** and does not charge for **borewell electricity**⁴. This indirectly incentivizes over-exploitation of groundwater for irrigation, as is evident in this region. Eastern parts of the state, such as Khammam, Suryapet and Manchrial, are observed to have shallower water levels. This is possibly due to higher rainfall and low groundwater development.⁵

³ Ground Water Year Book 2016-17 Telangana State, Central Ground Water Board, August 2017.

⁴ Composite Water Management Index: A Tool for Water Management, Niti Aayog, June 2018.

⁵ Ground Water Year Book 2016-17 Telangana State, Central Ground Water Board, August 2017.

Fig 1



Source: Groundwater Levels Scenario in Telangana March 2018

According to the Niti Aayog, the State of Telangana has made **progress in the field of surface and groundwater restoration**, with improvement of 90 per cent of critical wells and restoration of 70 per cent of irrigation potential of identified bodies. However, a **huge urban-rural disparity** continues to exist. While 80 per cent of urban households have received access to water, only 55 per cent of rural habitations have been fully covered.⁶

IV. State Initiatives to improve Water Quality and Quantity in Telangana

A. Mission Kakatiya

1. Background

⁶ Composite Water Management Index: A Tool for Water Management, Niti Aayog, June 2018.

Irrigation has been severely affected by the problem of water scarcity. This is largely due to the fact that most of the Minor Irrigation (MI) tanks, that are used to provide water for irrigation, had become defunct or shrunk due to silting and improper maintenance over the years. This paucity of water for irrigation had an adverse effect on the income earned by the farmers of Telangana.

Mission Kakatiya was launched in 2015, and aimed to restore all MI tanks (46,531) in the State in phased manner in a span of five years i.e., 20 per cent per year. The mission recently entered its fourth phase. The objectives of the Mission as follows:

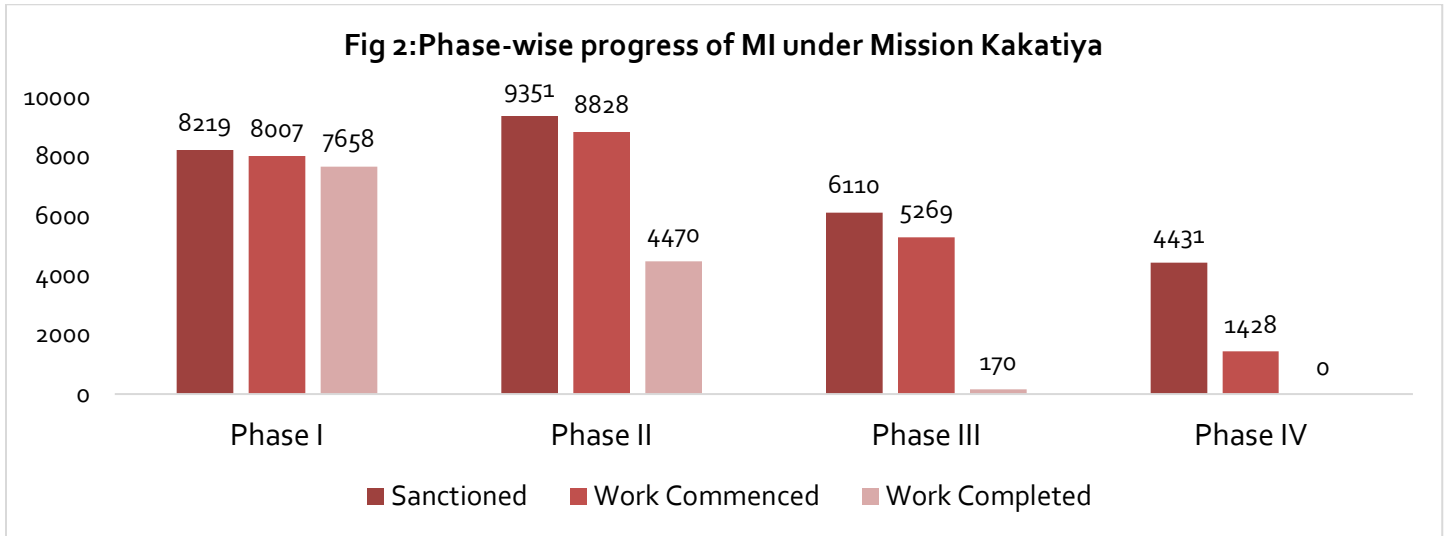
- (i) Development of minor irrigation infrastructure
- (ii) Comprehensive programme for restoration of tanks, through components such as de-silting, repair works, restoration of feeder channels, re-sectioning of irrigation channel etc.
- (iii) Strengthening of community based irrigation management

2. Reported Improvements

Since the last three years of its inception, Mission Kakatiya has received wide praise for its innovative methods of implementation. Due to the increased water storage and retention capacity in the tanks, several improvements have been seen in the areas surrounding the restored tanks. A recent report by NABARD Consultancy Services (NABCONS) claims that the average rise in groundwater level was **6.91 metres** at the base year (2014), whereas it was **9.02 metres** by 2016. Due to this, intensity of irrigation in the areas surrounding the restored tanks has gone up **45.6 per cent**. Increase in water availability has increased the area cultivated under paddy from **49.20 per cent to 62.10 per cent** in 2016. In a testament to the objective of the mission, NABCONS also reports a **78.50 per cent** increase in household agricultural income in the beneficiary areas of the restored tanks.

3. Progress till Date

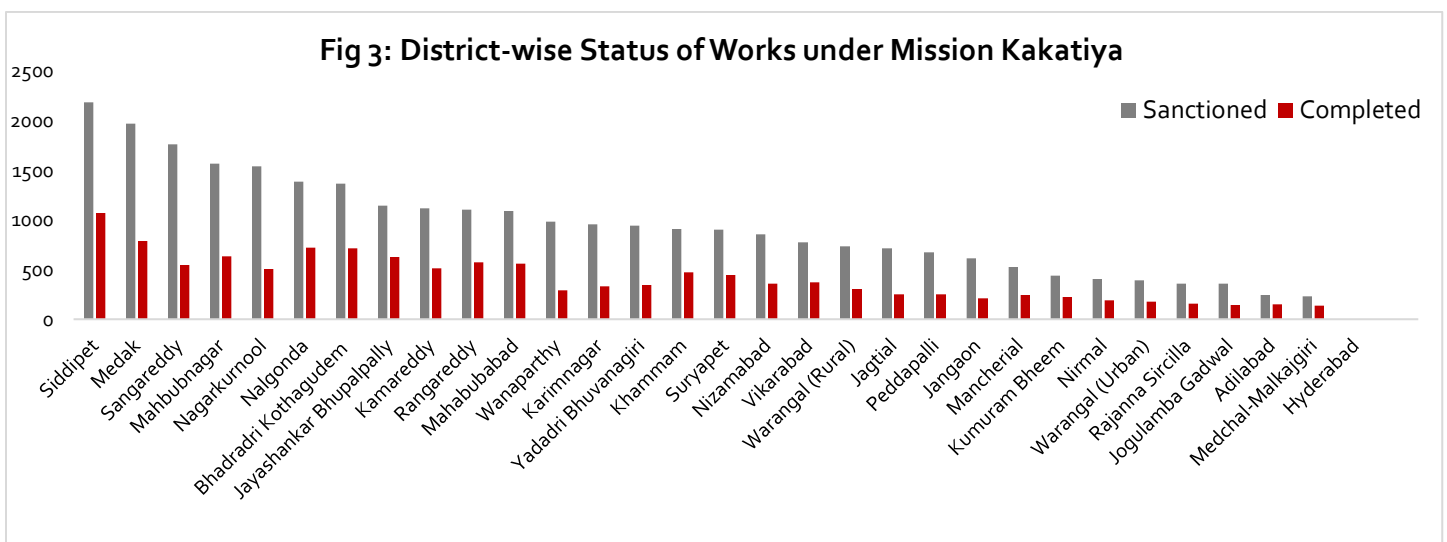
As per the mission, 20 per cent of the tank would be restored each year. As of July 2018, **12,298 tanks** have been completed restored, amounting to **26 per cent of the total tanks** under the mission – a 34 per cent shortfall of from the original target. Progress of each phase of the mission is analysed below.



Source: Mission Kakatiya, MIS, accessed as on 23rd July, 2018

As seen in Figure 2, the rate of restoration has decreased since Phase I, which saw **98 per cent** of sanctioned tanks being restored. Phase II saw a much lower rate at **48 per cent**, while Phase III witnessed only a **3 per cent** restoration rate. This significant shortfall was pointed out by the Report of the Comptroller Auditor General (CAG) Report in Economic Sector (March 2017) for the Government of Telangana. The delay has been attributed to a number of issues, with the government stating that a lesser number of projects were taken up in Phase III due to heavy rains in September 2016, which filled almost 40,000 tanks with water.

A district-wise analysis of the progress of Mission Kakatiya also shows that targets are not being met, with an average completion rate of 45 per cent. **Adilabad** sees the highest conversion from the stage of sanctioning to completion, with 62 per cent, followed by **Medchal-Malkajgiri** at 59 per cent and **Jayashankar Bhupalpally** at 55 per cent. However, districts such as Wanaparthy have extremely low completion rates, at only 30 per cent, followed by Sangareddy and Nagarkurnool at 31 per cent and 33 per cent respectively.



Source: Mission Kakatiya, MIS, accessed as on 23rd July, 2018

4. De-siltation Efforts

To bring tanks up to their original capacity, de-siltation is a vital component of the mission. Not only will the removal of the silt increase water retention of the tanks, but it was proposed that the silt would be used as manure for the fields with the participation of farmers by transporting and spreading in the fields with their cost. Silt is thought to be beneficial to farmers as it improves water retention of the soil, ground-water recharging, drinking water for cattle, reduction of fluoride content, increasing crop yield as a fertilizer, and to use as carbon credits in the international market.

However, as per the CAG Report, only **8.08 cum silt** was removed as against 12.07 lakh cum estimated in 2017. It was reported by the government that the farmer's had no interest in using the silt for agriculture, and therefore it was not being removed. This should be looked into, as it may hamper the efficacy of the restoration process, and it leads to the loss of valuable benefits of silt in the agricultural process.

B. Mission Bhagiratha

To address the problem of scarcity of drinking water, the Telangana Government has been actively working towards the provision of safe water to all households in the state. The biggest push towards this goal comes in the form of Mission Bhagiratha, a water grid project that aims to provide safe drinking water to all. The objective of the mission is the provision of 100 litres of clean drinking water per person in rural households and 150 litres per person in urban households.

The entire project is divided into 26 segments across 30 districts, comprising 25,000 habitations, at an estimated cost of ₹43,791 crore⁷. It is estimated to benefit more than 2.7 crore of the population of the state. The Krishna and Godavari rivers and existing reservoirs will be interlinked to collect, reserve and supply treated drinking water in the state, to every household in the proposed network. The pipeline network will be as long as 1.697 lakh kilometres.

Data on the progress of the mission is scarce, but the estimated target of March 2018 for the completion of the project has not been met. Many officials in Telangana, including the Chief Minister, have been reported to be pushing for its completion. As per the media, certain roadblocks to the project have included resistance in laying of main pipeline by the public, and confusion between the contractors and local bodies.⁸

⁷ Mission Bhagiratha Website, accessed as on 23rd July, 2018

⁸ <https://www.deccanchronicle.com/nation/current-affairs/060318/telangana-water-level-drops-crisis-likely.html> accessed on 23/07/18.