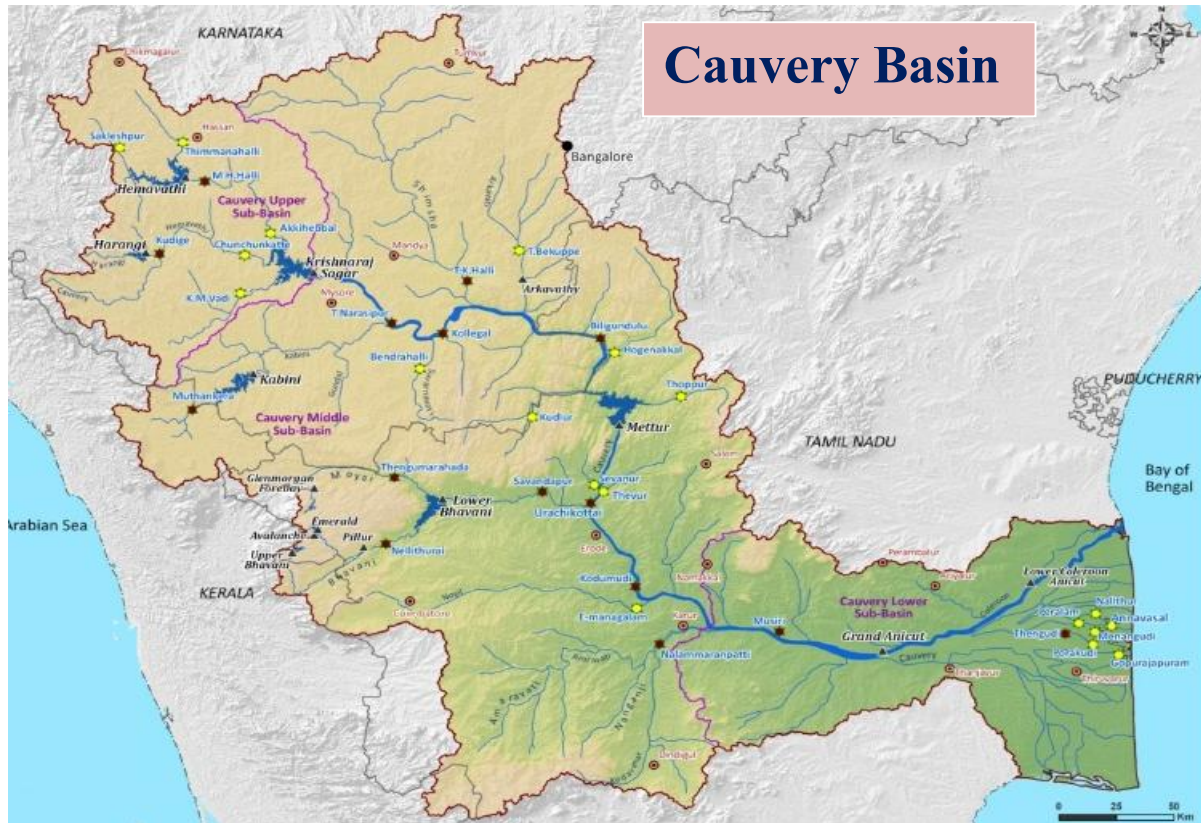


High Level Technical Team on Cauvery (Constituted by Hon'ble Supreme Court of India)



Volume – I Main Report

New Delhi
October 2016

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Report

1.0 Introduction and Background

The Hon'ble Supreme Court while deliberating on I.A. No. 18 in I.A. of 2016 in Civil Appeal No 2456 of 2007 directed to constitute a High Level Technical Team vide its order dated 04.10.2016 to visit the Cauvery basin area to assess the ground realities in the basin and submit a report to the Hon'ble Supreme Court on 17-10-2016.

The Ministry of Water Resources, RD & GR vide Office Memorandum dated 04.10.2016 constituted a High Level Technical team in pursuance of the above Order of Hon'ble Supreme Court with the following composition for the said purpose:

S/ Shri

1. G S Jha, Chairman, CWC	Chairman
2. S Masood Husain, Member (WP&P), CWC	Member
3. R K Gupta, Chief Engineer, CWC	Member
4. Chief Secretary or his representative from the state of Tamil Nadu	Member
5. Chief Secretary or his representative from the state of Karnataka	Member
6. Chief Engineer from the state of Tamil Nadu	Member
7. Chief Engineer from the state of Karnataka	Member
8. Chief Engineer from the state of Kerala	Member
9. Chief Engineer from the UT of Pondicherry	Member

Subsequently Ministry of Water Resources, RD & GR vide O.M. dated 05-10-2016 asked Shri B. Rath, Additional Commissioner, Ministry of Agriculture & Farmers Welfare to accompany the Team. A copy of the said O.M. dated 04-10-2016 is enclosed at Annexure - 1.1.

1.1 Pre Field Visit Discussions

The High Level Technical Team (hereinafter called the Team) met at Bengalure on the morning of 07.10.2016. The broad aspects of the visit were discussed. The brief details are as follows:

- The water allocation has been made by the Cauvery Tribunal at 50 % dependability. Thus the probability of stress is relatively higher.
- The cropping pattern of the area need to be assessed.
- The drinking water requirements of Karnataka and irrigation water use need to be assessed and considered.
- The status of standing crop/ sown crop area needs to be assessed.

- e. The available storages and water used by the States are to be considered.
- f. The water requirements of the States have also to be accounted/considered.

It was decided that the team would visit the Cauvery basin areas on 7th and 8th October in the state of Karnataka whereas the Cauvery basin areas in Tamil Nadu would be visited on 9th and 10th October, 2016.

2.0 Memorandum and Presentation by the Government of Karnataka

A memorandum was submitted by Government of Karnataka and a presentation was made by Director, Karnataka State Natural Disaster Monitoring Centre on 07.10.2016 to the Team. The copy of the presentation is enclosed at Annexure 2.1

The salient points of the memorandum and presentation are as follows:

- a. Out of the assessed yield of 740 Thousand Million Cubic Feet (TMC) at 50 % dependability a volume of 192 TMC has to be ensured by Karnataka at Billigundulu, a Gauge and Discharge site maintained by Central Water Commission in any normal year.
- b. The breakup of 192 TMC at Billigundulu includes 52 TMC from regulated releases from Krishna Raja Sagar (KRS), 60 TMC from Kabini and 80 TMC from uncontrolled catchment below KRS and Kabini reservoirs.
- c. It has been reported that upto 5th of October, 2016 there have been a shortfall of 51.35 % against the average inflow considering the data of last 25 years (1991-2015)
- d. An area of 10.061 lakh acres is to be irrigated from four reservoirs in Karnataka.
- e. The cropping pattern includes Paddy and semi dry crops. The total area sown during the current Kharif period is 6.15 lakh acres which is about 61.1 % of the potential area.
- f. The estimated drinking water requirements for the balance period upto May 2017 is 23.05 TMC
- g. The rainfall pattern during South West (SW) monsoon (1st June 2016 to 30th Sept 2016) in Cauvery basin, KRS catchment and below reservoir catchments have been provided in the memorandum. It indicates a shortfall of 21 % in entire basin and 25 % in KRS catchment and 13 % below reservoirs in Cauvery basin. There is a shortfall of 59 % in Kabini catchment.
- h. The total inflows as reported by Karnataka in all the four reservoirs during the period SW Monsoon (1st June 2016 to 30th Sept 2016) is 131.62 TMC against the long term average of 257 TMC in the

corresponding period. This is 51.2 % of the long term average indicating a deficit of about 48.8%.

- i. As per the analysis presented by Karnataka the cumulative flows in 4 reservoirs were below 42 years average in 24 years out of 42 years.
- j. The inflows during NE monsoon are short in 19 years out of 42 years considering the average of 42 years.
- k. The total live storage available in all the four reservoirs together is 32.005 TMC as on 5th October 2016.
- l. 2015-16 and 2016-17 have been consecutive deficit years therefore the gravity of shortfall during current year is more.
- m. Out of 1436 minor irrigation tanks about 53 % of the tanks are dry, 39 % of the tanks received water between 30-50 % and 8 % of the tanks got more than 50 % of their capacity.
- n. The annual replenishable ground water resource of the state is 16.81 BCM and net ground water availability is 14.81 BCM. The annual ground water draft is 10.01 BCM.
- o. Out of 106 assessment ground water blocks/units, 30 have been categorised as over exploited, 6 as critical, 7 as semi critical.
- p. Karnataka State Natural Disaster Monitoring Centre based on various parameters for assessing moisture adequacy index has estimated that about 90 % of the area of Karnataka in Cauvery basin is under severe to moderate moisture stress condition. 42 taluks out of 48 taluks have been declared as drought affected.

The copy of the memorandum is enclosed at Annexure - 2.2

The copy of the programme of filed visit in Karnataka is enclosed at Annexure - 2.3

3.0 Visit to Cauvery basin areas in Karnataka and Tamil Nadu

3.1 Visit to Cauvery basin areas in Karnataka

Brief details of the areas/places visited in Cauvery basin area in Karnataka on 7th and 8th October, 2016 and the observations of the Team are as under:

Date	Reservoir	Places / villages visited	Normal area under Crop (Acres)	Area covered during current year (Ha)	Observations
07.10.2016	KRS / MANDYA DISTRICT	Hammanhalli	4400	Not Sown	The paddy nurseries have dried up. About 80 acres have been brought under gram crops through tank irrigation
		Tailur achkut			The tank is dry and is as old as 1895. The moisture in the soil is because of intermittent rains.
		Pennayadodi under Basagrahalli branch	5200	4800	Ragi is sown using ground water and some area has Malburry crop.
		Harlikерri	2325	800	Area has Ragi and Jowar
		Sulekere tank under VC command	6440	5970	The area has crop in good condition but if water as required is not supplied the entire crop in the area will wither away.
		Khere Dharamakere	129	98	The crop is good but needs water.
		Harlahalli under Lokasara branch	12570	12570	As of now the crop is good but needs water. If not, will

					wither away
		Hebbakwadi branch	14073	5344	Nursery has withered away.
		Mallavali Tank	543	0	Total dry area. The GW table is more than 800 feet below ground level.
		Shetahalli village under Nidagatta branch	7121	1647	Paddy area converted into dry land crop such as maize. The crops have started drying up.
		Chennapille Kopalu	2134	0	
		Kiragavalu	578	460	The crop is Okay as of now but will wither away if the water is not supplied.
		Mikkere	150	135	The crop is Okay as of now but will wither away if the water is not supplied. Three more watering required.
		Chikkamalagudu under Thuruganur branch canal	60	55	Crop is green but requires water for sustainability further 100 days crop period
		Chikkamalagudu under Hebbakwadi branch canal	563	450	Crop withered dry area
08.10.2016	Hemavati/ Mandya District	Gumamanahalli	11878	1131.8	Out of 1131.8 acres crop in about 300 acres have withered away. The areas have not received water during last 2 years.

		Kamanayakanhalli under Distributary 66	11170	1117	No water this year. Bore well water gone deep. No rain, the crops are withering.
		Achanhalli and Bukenakere under Distributary 64	14757	198	No water for last 2 years. Totally dry land
	Hassan District	Dodahalli under high level canal	2639	66	Area not notified for irrigation
		Kongalabedu under right bank canal	315	133	Area not notified under irrigation this year.

During the Team's visit to areas in Karnataka, a number of farmers, farmers organisations and public representatives submitted representations regarding the distress situation. The details of these representations including the original are given in Volume III of the report.

The night halt on 08.09.2016 was made at Salem town in Tamil Nadu.

3.1 Visit to Cauvery basin areas in Tamil Nadu

Before the start of the visit to Cauvery basin areas a memorandum was submitted by Government of Tamil Nadu on 9th October, 2016. The copy of the same is enclosed at Annexure - 3.1

The salient points of the memorandum are as follows:

- i. Tamil Nadu being the lower riparian has to run from pillar to post for seeking releases and justice for the livelihood of its farmer.
- ii. Mettur dam because of poor storage could not release water as scheduled on 12th June.
- iii. 12 lakh acres have been programmed during the current year against 14.93 lakh acres hoping that the NE monsoon will be normal and also Karnataka would release rightful share of water.
- iv. Considering the monsoon condition and also due to non release of water by Karnataka only single Samba crop in an area of 4.46 lakh acres out of 12 lakh acres have been taken up by direct sowing thereby reducing the water requirements. Nurseries have been raised for transplanting in about 2.04 lakh acres and rest of the area is ploughed and ready for cultivation.

- v. The water was first released on 20th September. Upto 7th October about 17.45 TMC has been released for irrigation.
- vi. Government of Karnataka has utilised water for areas which are not permitted under the award. Many tanks have been established around the reservoirs and the water used under these reservoirs are not accounted for inflows and outflows.
- vii. A minimum of 143 TMC of water is required for proposed irrigation during the current year with 50 % area under direct sowing.
- viii. Rainfall in the catchment should also be considered while assessing the distribution of water.
- ix. Ground water should not be reckoned as use of water by any riparian state.
- x. North East Monsoon is not dependable.
- xi. There is a shortfall of 4.8 TMC of water to be made available by Karnataka as per Hon'ble Supreme Court Orders during the current year/ season.

A presentation was also made by Government of Tamil Nadu on 09.10.2016 before taking up the field visit.

The salient points of the presentation are as follows:

- a. Mettur dam has to cater to the needs of Cauvery delta system, Lower Coleroon Anicut and Cauvery Mettur project.
- b. Cauvery delta system consist of 36 branch canals with a total length of more than 1600 km and a distributary system of more than 24000 km. The distributary system is centuries old system
- c. The flow realised at Billigundulu upto end of September is 53.097 TMC against the due share of 134 TMC during the corresponding period (about 39.6 % of the normal flows)
- d. The rainfall deficit in Nagapattinam, Thanjavur and Thiruvarur district are 14 %, 9 % and 30 % respectively with respect to normal rainfall.
- e. The storage in Bhavanisagar reservoir is 5.15 TMC (16 % of the capacity)as on 05.10.2016
- f. The water requirements for Samba crop (the only crop taken during the current year) in an area of 12 lakh acres against the potential of 14.93 lakh acres the water required for the balance period is 143 TMC. The crop area taken up during the current distress year is about 80 %,
- g. States that Karnataka has taken up projects of the order of 1,24,991 acres which are not permitted under Tribunal award.

The copy of the presentation is enclosed at Annexure – 3.2

Two locations were visited under Bhavanisagar reservoir:

- a. Kudivat anicut -
Nursery has been raised for 4000 acres. Two crops have been lost and ground water table as of now is at about 1100 ft.
- b. Yellispat village has a potential area of 4085 acres but so far no sowing has taken place. There is no rainfall, no water though the canals. The Ground water table is about 1000 ft below the ground level.

Subsequently Mettur dam/ reservoir and Bhavanisagar reservoir were inspected by the team. The status of reservoirs is given at Annexure 3.3 and 3.4 respectively.

The status indicates that water in Mettur reservoir as on 09.10.2016 is 33.46 TMC at 70.880 feet level and in Bhavanisagar reservoir is 5.111 TMC at 867.69 feet level.

A presentation was made by the Department of Agriculture, Govt. of Tamil Nadu in the night of 09.10.2016 before the field visit of the command area was taken up next morning. The copy of the presentation is appended at **Annexure 3.5**

Salient points of the presentation are as follows:

- A. The rainfall distribution during South West Monsoon during the current year varies from 9 % to 41 % across 8 districts.
- B. The details of 12 lakh acres programmed during the current year across 8 districts have been indicated. A total of 4.91 lakh acres have been covered so far.
- C. Out of 4.91 lakh acres sown so far an area of 4.46 lakh acres have been sown under direct sowing and balance 44,962 acres transplanted.
- D. About 85 % of the sown area is under stress.
- E. Livelihood of the farmers has been affected.
- F. Due to late opening of Mettur dam Rs. 64.30 Cr have been granted as a special package to the farmers.
- G. Pre season campaign was conducted to motivate farmers for taking up direct sowing.
- H. Samba facilitation centres opened in all delta blocks to inform farmers about availability of seeds, fertilisers and plant protection chemicals.

10.10.2016 :

The details of places / areas visited by the Team in the Cauvery basin areas in Tamil Nadu as on 10.10.2016 and its observations are as under:

Date	District	Places / villages visited	Normal area under Crop (Acres)	Area covered during current year (Ha)	Observations
10.10.2016	Thanjavur	Sozhankudikadu	672	572 (direct sown)	Seeds have not even germinated. The labours are without work.
		Chokkanavur	735	635	Last rainfall was about one month back. NO watering done. Seeds germinated Sowing was in August The crop is under stress
	Tiruvarur	Perugavazhndhan	2065	2065	Sown in first week of September. The area is at the tail end. About 4 days back some water was released and first watering done
	Tiruvarur	Vadakadu Kovilur & Alangadu	1475	1475	75 % of the crop partially dry and 25 % totally dry. Sown some 40 days back.
	Tiruvarur	Villangandu & Melaperumazhai	2038	2038	The area is under stress for the want of water
	Tiruvarur	Keelaperumazhai & Kunnalur	3785	3785	Germination started. Needs water for sustainability
	Tiruvarur	Singalanthi & Nedumbalam	2055	2055	The land is dry and needs water
	Nagipattinam	Karrungani	1114	1002 acres	No water so far. Sown

				direct sown and 112 acres under transplanted	15 days back No GW because of sea water intrusion. Drinking water problem.
	Nagipattinam	Thirupoondi West	941	611 direct sown and 330 acres transplanted	The soil is dry and under stress
	Nagipattinam	Killukudy	828	825 direct sown and 3 acres transplanted	75 % not even germinated. Sown about 35 days back. Water is insufficient.

During the Team's visit to areas in Karnataka, a number of farmers, farmers organisations and public representatives submitted representations regarding the distress situation. The details of these representations including the original are given in Volume III of the report.

A Memorandum was submitted by the representative of Government of Puducherry. The copy of the memorandum is enclosed at Annexure – 3.6.

The salient feature of the memorandum is as follows:

- i. Karaikal region of UT of Puducherry forms part of Cauvery delta. Irrigation water requirements of Karaikal region is made from the seven distributaries of Cauvery being regulated from Grand Anicut
- ii. The water in these distributaries are dependent on Mettur dam and its opening.
- iii. Karaikal region being the tail end of Cauvery distribution will get water only when the water is released by upper regulators.
- iv. Karaikal region is entitled to get 7 TMC of water in any water year as per final award and 4.01 TMC as per interim award.
- v. So far no water has been received in Karaikal region
- vi. Ground water is not fit for irrigation because of salt water intrusion
- vii. Karaikal region has a cultivable area of 10990 hectares

Govt. of Karnataka submitted the following documents:

1. Response of Government of Karnataka on the presentation and memorandum of Government of Tamil Nadu (a to e)
2. Comments of Karnataka to the PowerPoint Presentation of Tamil Nadu

Copies of the above documents are enclosed in Annexure – 3.7 and 3.8.

The comments of Tamil Nadu on the memorandum of Govt. of Karnataka are enclosed at Annexure – 3.9.

In addition, during the discussion at the time of the preparation of the Report, the Representatives of Govt. of Karnataka and Tamil Nadu submitted their additional views on 15-10-2016 which are enclosed as Annex – 1 and Annex – 2 (Main report).

A few photographs taken during the field visit are enclosed at Annexure – 3.10