

## BRIEF NOTE ON UPPER BHADRA PROJECT

Upper Bhadra Project is a major lift irrigation Scheme under implementation in the central region of Karnataka State. It envisages lifting upto 17.40 TMC of water in first stage from Tunga river to existing Bhadra reservoir and lifting 29.90 TMC of water in second stage from Bhadra reservoir to Tunnel near Ajjampura, in Tungabhadra sub-basin of Krishna basin. After Tunnel, it is planned to irrigate an extent of 2,25,515 ha by micro irrigation in districts of Chikmagalur, Chitradurga, Tumkur and Davangere.

The primary objective of the project is providing sustainable irrigation facility in khariff season and the other objective of the project is to recharge the ground water table and provide drinking water by filling 367 tanks in drought-prone taluks of the above said districts.

### Taluka-wise Area Benefited under Upper Bhadra Project (comprehensive)

SL No	District	Taluk	Area for Irrigation (Ha)				Total Area for Irrigation (Ha)	Tank filling (Nos)
			Tarikere Lift	Chitradurga Branch Canal	Tumkur Branch Canal	Jagalur Branch Canal		
1	Chikmagalur	Tarikere	20150	411	1628	-	22189	81
		Kadur	-	1864	20502	-	22366	32
2	Chitradurga	Hosadurga	-	31035	13573	-	44608	27
		Holalkere	-	371	-	-	371	21
		Hiriyur	-	37052	29982	-	67034	32
		Chitradurga	-	23266	-	5700	28966	08
		Challakere	-	13266	-	-	13266	51
		Molkalmuru	-	-	-	-	-	20
3	Tumkur	C.N Halli	-	-	4657	-	4657	19
		Sira	-	-	14558	-	14558	41
		Pavagada	-	-	-	-	-	30
4	Davanagere	Jagalur	-	-	-	7500	7500	05
<b>Total</b>			<b>20150</b>	<b>107265</b>	<b>84900</b>	<b>13200</b>	<b>225515</b>	<b>367</b>

**Background :**

The areas of Chitradurga, Tumkur and part of Davanagere districts are affected by ***chronic droughts***. There are no major projects constructed in these areas except Hemavati Project which is providing irrigation facilities to part of Tumkur district & Bhadra Project to parts of Davanagere district. The farmers have to depend on rainfall for cultivation purpose which is scanty and irregular. There is shortage of water for drinking purpose also. The water available is sub-surface and has fluoride contents & hence is not of potable standards. ***As per the survey conducted by the central Govt., it is confirmed that some areas of Tumkur and Chitradurga may turn into deserts by 2030.*** As such, to mitigate the problems faced by the people of these areas, a proposal was initiated by utilizing the water available in Tunga and Bhadra rivers of Krishna sub-basin.

As the location of this drought prone area was located at higher level than that of the rivers, various proposals were worked-out to meet the demands of the region and Upper Bhadra Project was first mooted in the year 1969 envisaging the construction of storage dams across Magundi village in Chikamagalur district to provide irrigation facilities to drought prone districts; Chikmagalur, Chitradurga, Tumkur and Bellary. This project was filed before KWDT for an allocation of 36.00 TMC. KWDT report mentioned that “...it cannot be said that the demand for this project is not worth consideration. But, unless a further study is made of the water available in the river Tungabhadra, the project may be deferred...”

Since then several alternatives have been worked out to provide irrigation mainly to Chitradurga and Tumkur districts. However, 23.00 TMC of water was allocated to UBP under Scheme-A in the revised master plan during the year 2001, with 10.00 TMC being direct allocation and 13.00 TMC being savings from modernization of Tunga Anicut (6.25 TMC), Bhadra Anicut (0.50 TMC) and Vijayanagar Channels (6.25 TMC). Further, it was proposed to utilize additional 19.00 TMC of water under Scheme-B. With this, a total allocation of 42.00 TMC was proposed for utilization under UBP.

Considering allocation of 23.00 TMC under Scheme-A, Government in the year 2003, accorded administrative approval to Upper Bhadra Project Stage-I (including Ubrani-Amrutapur LIS) for Rs. 2813 Crores dated 23.08.2003.

The project comprised of construction of a dam across Bhadra River on the upstream of Bhadra reservoir near Magundi village, a pick up dam & lifting arrangements near Tegargudda and a main canal running for a length of 114.65 km including tunnel near Ajjampura. Thereafter, the main canal start from tunnel exit & is bifurcated into Chitradurga Branch Canal (CBC) and Tumkur Branch Canal (TBC)

each of length 210 kms and 441 kms respectively. The proposed areas of irrigation under these canals are

Chitradurga Branch Canal (Scheme-A)	Kharif semidry	2,54,023 Acres	1,02,843 Ha
	Rabi semidry	1,01,185 Acres	40,966 Ha
	<b>Total</b>	3,55,208 Acres	1,43,809 Ha
Tumkur Branch Canal (Schem-B)	Kharif semidry	2,09,703 Acres	84,900 Ha
	Rabi semidry	83,417 Acres	33772 Ha
	<b>Total</b>	2,93,120 Acres	118672 Ha
<b>Grand total</b>		<b>6,48,328 Acres</b>	<b>262482 Ha</b>

The project also envisaged lifting 19.483 TMC water from Tunga River to Bhadra Reservoir for Scheme-B of UBP. There were representations against this proposal by the people affected by the submergence of lands in Chikmagalur district and also by environmentalists who apprehended damage to the environment as the canal was running in Wildlife area.

In order to address the above issues including the aspects of water availability and conveyance and also to examine possible alternatives for implementing the UBP, the Government constituted a Committee under the Chairmanship of Sri K.C. Reddy, a technical expert. After a detailed study which included hydrological aspects for availability of water, technical feasibility for storage and conveyance, environmental impact and interaction with the project affected people, the Committee recommended to modify the earlier Scheme by providing for :

- i) Lifting 15 TMC of water from Tunga river to Bhadra reservoir (Package-I);
- ii) Lifting of 21.5 TMC of water from Bhadra Reservoir to delivery chamber near Ajjampura (Package-II);
- iii) Construction of Ajjampur tunnel to deliver water to Chitradurga Branch Canal (Package-III);
- iv) Construction of Chitradurga Branch Canal to irrigate 1,02,843 ha &
- v) Filling up of 156 Minor Irrigation tanks coming under drought prone areas of Chickmagalur, Chitradurga, Kolar & Tumkur districts for drinking water purposes.

The availability of 21.50 TMC of water for the UBP Scheme-A was thus confirmed by the Expert Committee.

Further, as regards Scheme-B, the Committee was of the view and mentioned in its report that “...as the issues of determination of flows available in Krishna basin and distribution of the flows beyond the presently allocated quantum are before the Krishna Water Dispute Tribunal recently constituted and therefore the availability of water beyond the allocated quantity will be known only after the tribunal gives the award, depending upon the total availability in the State and in the sub-basin, further utilization could be planned keeping in view the forest and environmental constraints.” The committee finally recommended that for Scheme-B of the Project, investigations regarding availability of water and planning other alternative schemes should be continued.

The Government accepted the recommendations of the K.C. Reddy Committee and transferred the work to KNNL for implementation in November 2006. A DPR for UBP Scheme-A with the above provisions was prepared amounting to Rs. 5985 Crores and submitted for approval of Government.

Upper Bhadra Project Scheme-A has been accorded in-principle approval by the Government of Karnataka for Rs 5985 Crores comprising of Rs.3388 Crores towards irrigation component and Rs.2597 crores towards drinking water component at SR 2007-08, vide letter dated 15-09-2008.

***Brief details of the project components are as follows:***

**i) Irrigation component:**

The cost of the irrigation component of the project is Rs.3388 crores. Irrigation facility is proposed to be provided to drought prone areas of Tarikere & Kadur taluks in Chickmagalur district and Hosadurga, Hiriyyur, Chitradurga & Chalkere taluks of Chitradurga district to an extent of 1,07,265 ha. A provision of 15.90 TMC is made for providing irrigation facilities.

**ii) Drinking water component:**

The drinking water component is estimated to cost Rs.2597 crores. An allocation of 5.60 TMC (158.60 MCum) of water is made for filling up of 119 MI tanks coming under Tumkur and Kolar districts for drinking water purpose. The filling up of tanks will facilitate recharging of ground water besides diluting the fluoride content of the soil particularly in certain taluks of Kolar & Tumkur district.

Also, as a part of UBP, a scheme to irrigate 5471 ha and fill up 52 Nos. of tanks for area above Ajjampura tunnel and area before tunnel in Tarikere taluk at a cost of Rs. 75.00 Crores utilizing 0.80 TMC of water has been administratively approved by the Government.

**CWC Comments :**

- (i) The hydrology aspect of the project has been cleared by the Directorate, Hydrology, vide letter no. CWC. U.O.NO.II/135/09-PA(S)/553 dated: 06.06.2010
- (ii) The ISM (Inter State Matter) Directorate of CWC has observed that clearance on Inter State aspects cannot be accorded unless the three projects viz., Modernization of (i) Tunga Anicut; (ii) Gondi Anicut & (iii) Vijayanagara Channels from where savings of water to the extent of 6.25 TMC, 0.50 TMC & 6.25 TMC respectively i.e., totaling to 13.00 TMC proposed which is linked with the availability of water to an extent of 13.00 TMC for Upper Bhadra Project is established
- (iii) In compliance to the above, Government of Karnataka have already submitted the Detailed Project Report of (i) Modernization of Tunga Anicut [estimated cost Rs.295.00 crores] & (ii) Modernization of Gondi Anicut [estimated cost Rs.92.82 crores] (iii) Modernization of Vijayanagar Channels (estimated cost of IRs. 255.0 crores) to CWC for acceptance by the Technical Advisory Committee of MoWR/ CWC.

**UBP Scheme B :**

A proposal for providing irrigation facility and filling up of tanks of Chikmagaur, Chitradurga and Tumkur districts under Upper Bhadra Project Scheme-B has been approved by the Board of KNNL in its 36<sup>th</sup> meeting held on 08.08.2007. This involves lifting 19.00 TMC of water from Tunga river to Bhadra reservoir and utilizing 11.005 TMC of water from Scheme-B to irrigate 1.3 lakh hectares in taluks of Chikmagaur and Kadur of Chikmagalur district, Hosadurga and Hiriyur of Chitradurga district and Sira, Chikkanayakanahalli of Tumkur district. The balance 7.995 TMC was proposed to be used for filling the tanks coming within the command area and the region in Pavagada, Sira, Koratagere and Madhugiri taluks of Tumkur district.

Now, the KWDT-II tribunal has given its award on utilization of surplus waters. But, no allocation for UBP Scheme-B of 19.00 TMC as required providing for irrigation under Tumkur Branch Canal is made in the award. As there is additional allocation of 6.00 TMC only is made to UBP out of surplus water, it had become imperative to explore alternate possibilities to irrigate areas in Tumkur district which was originally proposed under UBP Scheme-B.

In this regard, with a view to explore possibility of saving water under CBC with the use of modern technologies such as drip irrigation and to extend irrigation benefits to area under TBC, NETAFIM Irrigation India Limited, a company specializing in low pressure drip irrigation systems has

been consulted. NETAFIM have suggested a comprehensive solution suited to the local needs of the region maximizing water use efficiency with minimum use of Electric Power for operating the micro irrigation system at the farmers' field, using LPS<sup>TM</sup> (Low Pressure System).

Due to the increased efficiency of the system under drip irrigation over flood irrigation, it would be possible to provide irrigation under both CBC and TBC within the allocated quantum of water.

**Present Proposal :**

In view of the facts explained, Upper Bhadra Project is presently planned to irrigate an extent of 2,25,515 hectares by micro irrigation in drought-prone districts of Chikmagalur, Chitradurga, Tumkur and Davangere utilizing the present lifting arrangements of Scheme-A.

The primary objective of the project is providing sustainable irrigation facility in khariff season and the other objective of the project is to recharge the ground water table and to meet drinking water needs by filling 367 tanks in drought-prone taluks of the above said districts.

The comprehensive project envisages providing irrigation and drinking water to the parched lands of Central Karnataka plateau and in specific:

- (i) Providing irrigation facility by adopting Micro Irrigation for an area of 2,25,515 Ha of land in Tarikere, Kadur taluks of Chikkamagalur district, Hosadurga, Hiriyur, Chitradurga and Challakere taluks of Chitradurga district, Jagalur taluk of Davangere district and Sira, Chikkanayakanahalli taluks of Tumkur district. The total requirement of water for irrigation in the command area is 539.07 MCM (19.04 TMC).
- (ii) Filling up of 367 Tanks to 50% of their live capacity are proposed. The requirement of water for the purpose is 307.48 MCM (10.86 TMC) including augmentation of 2.00 TMC for VaniVilas Sagar Reservoir. The filling up of tanks will facilitate recharging of ground water besides diluting the fluoride content.

***The Project Comprises following components :***

**(a) Lifting water from Tunga to Bhadra Reservoir (Up to 17.40 TMC)**

Lifting of water from river Tunga and feeding it into a diversion canal 11.263 Km long so as to drop into Bhadra Reservoir. It is proposed to lift 98.554 MCM (3.48 TMC) of water each month from June to October for five months. Total static head of lift is 89.00 m in two stages.

**(b) Lifting water from Bhadra (29.90 TMC)**

Second part of the scheme is to draw 29.90 TMC of water from Bhadra Reservoir at a regulator on its right flank. The canal from Bhadra Reservoir runs for a length of 47.50 Km and terminate at distribution chamber near Ajjampura. This consists of 2 parts - i.e., open cut canal of 40.535 Km and a tunnel of 6.90 Km in length. There are two lifts in the open cut canal.

**(c) Chitradurga Branch Canal, Tumkur Branch Canal and Jagalur Branch Canal**

- (i) It is proposed to irrigate 3,650 Ha and 16,500 Ha around tunnel in Tarikere taluk by gravity as well as lifting water from the main canal before the Tunnel. The utilization is 1.20 TMC of water.
- (ii) Chitradurga Branch Canal runs for a length of 139.636 Km feeding the lands by gravity in Kadur and Tarikere taluks of Chikkamagalur district, Hosadurga, Hiriyyur, Chitradurga, Holalkere and Challakere taluks of Chitradurga district. The total area proposed under Chitradurga Branch Canal is 1,07,265Ha utilising in all 10.61 TMC of water.
- (iii) Jagalur Branch Canal taking off from Chitradurga Branch Canal for a length of 26.172 Km feeding the lands by gravity in Chitradurga taluk of Chitradurga district and Jagalur taluk in Davangere district. The total irrigated area proposed under Jagalur Branch canal is 13,200 Ha utilizing 1.11 TMC.
- (iv) Tumkur Branch Canal runs for a length of 157.534 Km feeding lands by gravity in Chikkanayakanahalli and Sira taluk of Tumkur district, Tarikere, Kadur taluks in Chikkamagalur district, Hosadurga, Hiriyyur in Chitradurga district. The area proposed for irrigation under Tumkur Branch Canal is 84,900 Ha utilizing 6.12 TMC of water.

**Allocation of water :**

The quantum of water available for UBP is 21.50 TMC. Further, an additional allocation of 2.40 TMC for irrigation in Jagalur taluk in Davanagere district and drinking water needs of Pavagada taluk in Tumkur district is made by the Government, vide G.O.No WRD 49 KBN 2009 dated: 19.03.2012. This is out of 23.00 TMC of water in Krishna basin allocated to Karnataka from Godavari tribunal. With this, the total allocation to UBP is 23.90 TMC.

The availability of 6.00 TMC of water out of surplus flow in Krishna basin has been confirmed by the committee entrusted with preparation of Krishna basin in comprehensive master plan.

Details of Water Allocation of 29.90 TMC are as shown below:

1.	As per revised master plan 2002, with direct allocation of 10.00 TMC and the balance to be met out of modernization of Tunga Anicut system (6.25 TMC) Bhadra Anicut system (0.50 TMC) and Vijayanagar Canal system (6.25 TMC)	21.50 TMC
2.	As per allocation to Jagalur taluk, vide GO No WRD 49 KBN 2009 dated 19.03.2012 out of 23.00 TMC allocated to Karnataka in lieu of Indirasagar-Pollarvam diversion scheme of AP.	2.40 TMC
3.	Availability of additional water out of surplus flow in Krishna basin (6.00TMC) is confirmed by the committee entrusted with preparation of comprehensive master plan.	6.00 TMC
<b>Total allocation</b>		<b>29.90 TMC</b>

\* The Modernization works of Tunga Anicut system Bhadra Anicut system and Vijayanagar Canal system are taken up separately & thus saving of 13.00 TMC is achieved for utilizations of UBP.

\*\*An allocation 1.50 TMC is allocated Ubrani - Amrathapura LIS out of the allocation of 23.00 TMC (10.00 +13.00 = 23.00 TMC) and the balance 21.50 TMC is allocated to Upper Bharda Project.

**Utilization of an allocation 29.90 TMC is for proposed ICA & tank filling details are is shown below:**

Sl. No.	Canal	Drawl Point (Off-take) (Km)	ICA (Ha)	Utilization for Irrigation (LPS Drip System) (TMC)	No of Tanks (Nos)	Utilization for Tank Filling (TMC)	Total Utilization (TMC)
1.	Chitradurga Branch Canal (CBC)	Exit Canal of tunnel	107265	10.61	37	1.35	11.96
2.	Tumkur Branch Canal (TBC)	Exit Canal of tunnel	84900	6.12	131	3.28	9.40
3.	Jagalur Branch Canal (JBC)	125.167 Km of CBC	13200	1.11	07	0.75	1.86
4.	Tarikere Flow & Lift Canal	DC near Ajjampura Tunnel	20150	1.20	79	0.27	1.47
5.	Allocation to Pavgada Taluk for Drinking Water	From tail-end of CBC	-	-	30	0.54	0.54
6.	Allocation to V V Sagar to meet the	86 <sup>th</sup> Km of TBC by distributary	-	-	-	2.00*	2.00*



	shortfall	of length of 10 Km					
7.	Tank Filling in Chalkere Taluk	125.832 Km of CBC	-	-	42	1.25	1.25
8.	Tank Filling in Molakalmur Taluk		-	-	20	0.92	0.92
9.	Tank Filling in Holalkere Taluk	25.710 Km from CBC	-	-	21	0.50	0.50
	<b>Total</b>		<b>225515</b>	<b>19.04</b>	<b>367</b>	<b>10.86</b>	<b>29.90</b>

Considering all the above mentioned aspects, the estimated cost of the project is **Rs.12,340 Crores** (at price level of WRD, SR for 2012-13) and the cost per hectare works out to Rs 5.47 lakhs per ha. The project serves the districts of Chikmagalur, Chitradurga, Tumkur and Davangere, brings 2,22,515 Ha of drought prone lands under irrigation(drip) by utilizing **19.04 TMC** of water and filling of **367 Nos.** of tanks to recharge the ground water and thereby supply drinking water facility in these region which face severe shortage of water by utilizing **10.86 TMC** of water. This filling also includes augmentation to Vani Vilas Sagar by 2.00 TMC. The expenditure incurred up to end of March 2014 is Rs 896.90 Crores

**Present Status of the Project :**

The details of the works taken up are as mentioned below

Sl. No.	Name of work	Tendered amount (Rs in Cores)	Expenditure incurred up to <b>March-2014</b> (Rs in Cores)	Remarks
1	<b>Package-I</b> : Lifting of 15 TMC of water from Tunga to an approximate lift of 80 m and delivering the water to the existing Bhadra Reservoir Project	324.00	101.61	Works under progress
2	<b>Package-II</b> : Lifting of 21.5 TMC of water from Bhadra reservoir to an approximate lift of 80m and delivering the water to delivery chamber near Ajjampura tunnel	1032.00	511.08	Works under progress
3	<b>Package-III</b> : Construction of Tunnel for an approximate length of 6.9 Km	223.96	2.61	Works under progress

4	Construction of Tarikere flow & lift canal	0.98	--	Detail estimates are under preparation
5	Construction of Chitradurga branch Canal	33.00	--	Alignment up to Km 30 is approved & the works in initial reaches are under progress
6	Construction of Tumkur Branch Canal	--	--	Works are still to be taken up
7	Construction of Jagalur Branch Canal	--	--	Works are still to be taken up

**Environmental Clearance :**

- Environment Clearance has been obtained on 05.01.2010 from MoEF, New Delhi for the proposal of irrigating 1,07,265 ha.

COMPARISON OF  
PRESENT PROPOSAL  
WITH  
EARLIER PROPOSAL

## Comparison of Present Proposal with Earlier Proposal

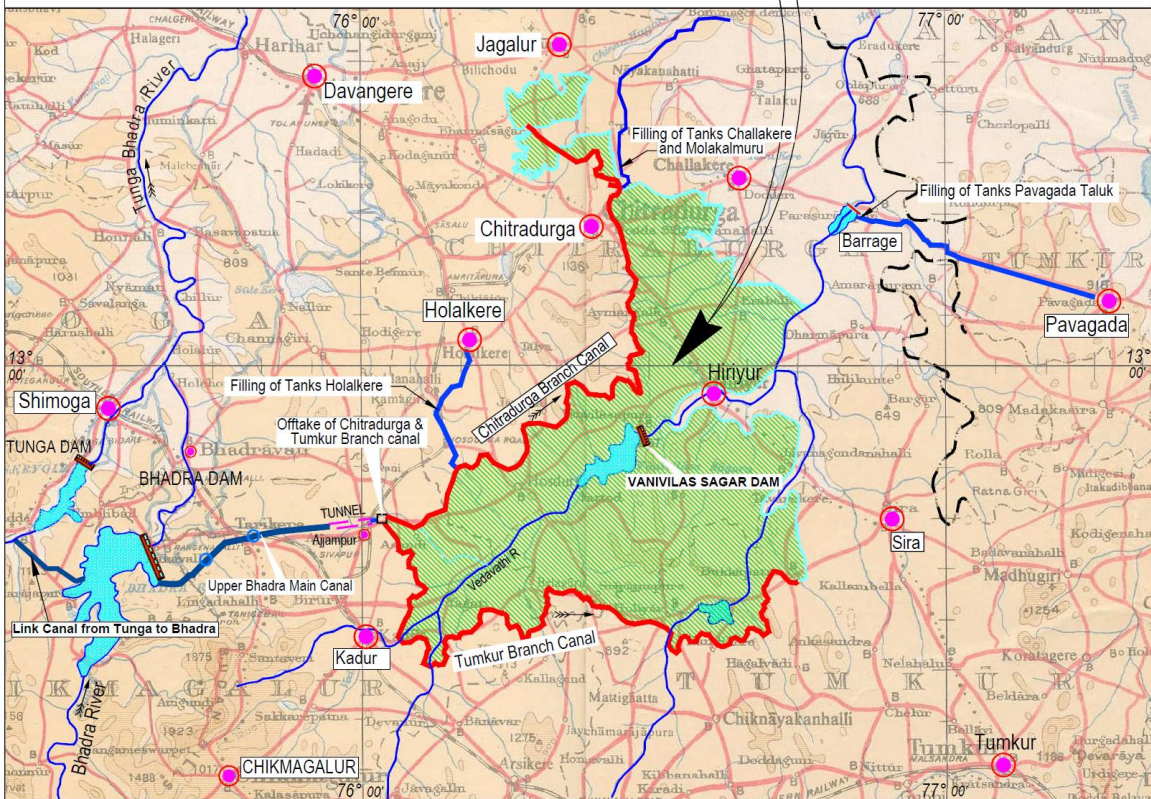
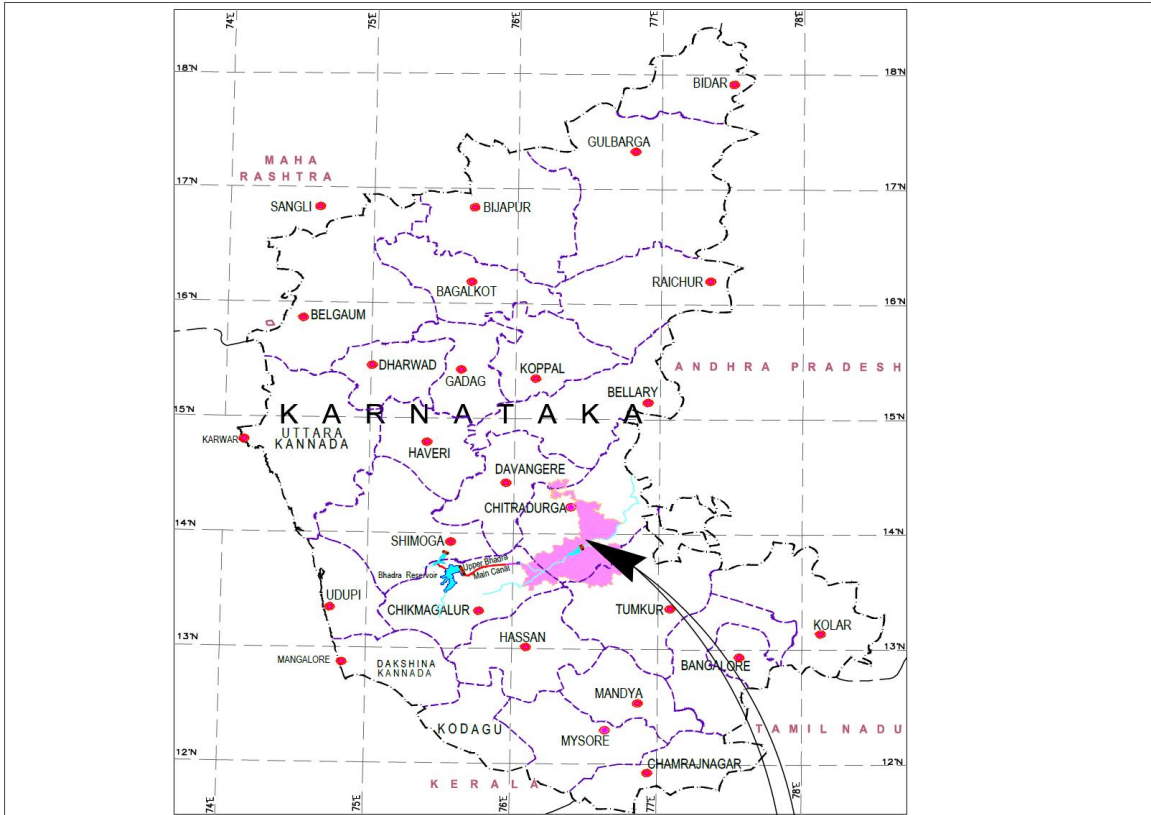
Sl. No	Details	Earlier estimate Proposal (Rs 5985.00 Cr)	Present estimate Proposal (Rs 12340.00 Cr)
1	General	<p>Envisaged utilisation of 21.50 TMC of water for</p> <ul style="list-style-type: none"> <li>➤ irrigating 1,07,265 ha of atchkat coming under Chickamagalur and Chitradurga district and filling of 37 tanks in Chickamagalur and Chitradurga by utilising 15.9 TMC</li> <li>➤ Providing drinking water to Kolar and Tumkur and filling of 119 tanks by utilising 5.60 TMC</li> </ul>	<p>Envisages utilization of 29.90 TMC of water for (fullest capacity of infrastructure already adopted in Package-I &amp; II)</p> <ul style="list-style-type: none"> <li>➤ Irrigating 20,150 ha of land in Tarikere Flow &amp; Lift scheme and filling 79 tanks by utilizing 1.47 TMC</li> <li>➤ Irrigating 1,07,265 ha of atchkat coming under Chickamagalur &amp; Chitradurga district and filling up of 37 tanks by utilizing 11.96 TMC</li> <li>➤ Irrigating 84,900 ha of land in Tumkur branch canal &amp; filling up of 131 tanks by utilizing 9.40 TMC</li> <li>➤ Irrigating 13,200 ha of land in Jagalur branch canal in Davanagere district &amp; filling up of 07 tanks by utilizing 1.86 TMC</li> <li>➤ Filling up of 42 MI tanks coming under Challakere taluk 20 MI tanks in Molakalumuru taluk and filling of 21 MI tanks in Holalkere taluk by utilizing 2.67 TMC</li> <li>➤ Providing drinking water facility by filling up of 30 tanks to Pavagada taluk. By utilizing 0.54 TMC</li> <li>➤ Augmentation of V V Sagar by 2.00 TMC</li> </ul>
2	Type of Irrigation	<b>Flow irrigation</b>	<b>Micro-irrigation through LPS system</b>
3	Acheut in ha	<b>1,07,265</b>	<b>2,25 515</b>
4	Tanks benefitted	<b>156 nos</b>	<b>367 nos</b>
5	Drinking water	Kolar and Tumkur districtst utilising 5.60 TMC by filling the tanks and recharging the ground water	Pavagada Taluk in Tumkur district by utilising 0.54 TMC by filling the tanks and recharging the ground water
6	Cropping period	Khariff season (i.e., from 15 <sup>th</sup> June to 15 <sup>th</sup> Oct)	Khariff season (i.e., from 15 <sup>th</sup> June to 15 <sup>th</sup> Oct)

7	Canals	<ul style="list-style-type: none"> <li>➤ Tarikere flow &amp; lift canal</li> <li>➤ Chitradurga branch canal</li> </ul>	<ul style="list-style-type: none"> <li>➤ Tarikere flow &amp; lift canal</li> <li>➤ Chitradurga branch canal</li> <li>➤ Jagalur branch canal</li> <li>➤ Tumkur branch canal</li> <li>➤ Feeding water to tanks of Molakalmuru, Holalkere &amp; Challakere</li> <li>➤ Feeding water to VVSagar (deficit)</li> </ul>
8	Taluks Benefitted	<p>Chikamagalur District</p> <ul style="list-style-type: none"> <li>➤ Tarikere</li> <li>➤ Kadur</li> </ul> <p>Chitradurga District</p> <ul style="list-style-type: none"> <li>➤ Hosadurga</li> <li>➤ Hiriyyur</li> <li>➤ Chitradurga</li> <li>➤ Challakere</li> </ul>	<p>Chikamagalur District</p> <ul style="list-style-type: none"> <li>➤ Tarikere</li> <li>➤ Kadur</li> </ul> <p>Chitradurga District</p> <ul style="list-style-type: none"> <li>➤ Hosadurga</li> <li>➤ Holalkere</li> <li>➤ Hiriyyur</li> <li>➤ Chitradurga</li> <li>➤ Challakere</li> <li>➤ Molkalmuru</li> </ul> <p>Tumkur District</p> <ul style="list-style-type: none"> <li>➤ C.N.halli</li> <li>➤ Sira</li> <li>➤ Pavagada</li> </ul> <p>Davangere District</p> <ul style="list-style-type: none"> <li>➤ Jagalur</li> </ul>
9	Estimated Cost	Rs 5,985 Crores	Rs 12,340 Crores
10	BC Ratio	1.04	1.263
11	SR adopted	WRD SR for 2007-08 price levels	WRD SR for 2012-13 price levels
12	Water Allocation	<b>UBP : 21.50 TMC</b>	<ul style="list-style-type: none"> <li>➤ UBP 21.50 TMC</li> <li>➤ Jagalur &amp; Pavagada 2.40 TMC</li> <li>➤ Availability of additional water out of surplus flow in Krishna basin 6.00 TMC</li> <li><b>Total 29.90 TMC</b></li> </ul>
13	Water Utilization	<p>Total utilization : 21.50 TMC</p> <p>Out of this</p> <ul style="list-style-type: none"> <li>➤ <b>Flow Irrigation: 15.90 TMC</b> for CBC</li> <li>➤ <b>Water supply to Tumkur and Kolar: 5.60 TMC</b></li> </ul>	<p>Total utilization : 29.90 TMC</p> <p>Out of this</p> <p><b>a) for Drip Irrigation:</b></p> <ul style="list-style-type: none"> <li>➤ Tarikere flow &amp; lift canal 1.47</li> <li>➤ Chitradurga branch canal 11.96</li> <li>➤ Jagalur branch canal 2.40</li> <li>➤ Tumkur branch canal 9.40</li> </ul> <p><b>b) For tank filling :</b></p> <ul style="list-style-type: none"> <li>➤ Feeding water to tanks in taluks of Molakalmuru, Holalkere and Challakere 2.67</li> <li>➤ Feeding water to VV Sagar 2.00</li> <li><b>Total (in TMC) 29.90</b></li> </ul>

14	Peak discharge	81.00 Cumecs	81.85 Cumecs
15	Extent of Land Acquisition	12,547 acres (5245.37 ha)	5223 acres (Total) (2114 ha) [Lower land requirement due to flow irrigation]
16	Extent of Forest diversion	230 ha	312.51 ha (Total)
17	Crops adopted	<ul style="list-style-type: none"> <li>➤ Ragi</li> <li>➤ Maize</li> <li>➤ Pulses</li> <li>➤ Sunflower</li> <li>➤ Groundnut</li> </ul>	<ul style="list-style-type: none"> <li>➤ Groundnut</li> <li>➤ Sunflower</li> <li>➤ Pulses</li> <li>➤ Maize</li> <li>➤ Jowar</li> </ul> <p>(Jowar is considered in lieu of Ragi as per the advice of V.Praveen Rao, Director, Water Technology Centre ANGRAU, Hyderabad)</p>
18	Irrigation Efficiency	➤ <b>50 %</b>	➤ <b>81%</b>
19	Flow	<p>proposed to carry discharge in</p> <ul style="list-style-type: none"> <li>➤ June(II) 57.17 Cumecs</li> <li>➤ July(I) 41.25</li> <li>➤ July(II) 26.01</li> <li>➤ August(I) 68.82</li> <li>➤ August(II) 73.55</li> <li>+10% rush Irr. <u>7.35</u></li> <li><b>Total <u>80.90</u> TMC</b></li> <li>➤ September(I) 52.36</li> <li>➤ September(II) 25.38</li> <li>➤ October(I) 2.49</li> </ul>	<p>proposed to carry discharge in</p> <ul style="list-style-type: none"> <li>➤ June(II) 79.79 Cumecs</li> <li>➤ July(I) 81.00</li> <li>➤ July(II) 80.61</li> <li>➤ <b>August(I) 81.85</b></li> <li>➤ <b>August(II) 81.85</b></li> <li>➤ September(I) 81.00</li> <li>➤ September(II) 81.00</li> <li>➤ October(I) 75.27</li> </ul> <p>However, it is planned to carry peak discharge of 81.85 cumecs in all months, thereby utilizing the additional discharge drawn to fill up 367 tanks</p>
20	No of Villages benefitted	237 nos	358 nos
21	Cost per ha	Rs 3.00 lakh /ha	Rs 5.47 lakh/ha
22	Energy proposal	180MW towards Package-I & Package-II	242 MW of Power is required for Package-I, II & for Tarikere Lift and drip irrigation system. Wind energy proposal amounting to Rs 1,500 crores has been proposed, as per requirement.

LOCATION  
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