Report on Best Practices being followed in Water Resources/Irrigation – Mission Kakatiya, Telangana

1. *Introduction*

Tanks have been the life line of Telangana owing to the state's geographical positioning. The people of the state are highly dependent on the tanks which are spread across all the 10 districts. The topography and rainfall pattern in Telangana have made tank irrigation an ideal type of irrigation by storing and regulating water flow for agricultural use.

Construction of tanks in Telangana has been an age old activity since pre Satavahana era. During the Kakatiya era, the construction of tanks was carried out with utmost technical expertise. Tanks such as Ramappa, Pakhala, Laknavaram, Ghanapuram, Bayyaram which were built by Kakatiyas resemble seas and they greatly helped agriculture and overall development and prosperity of the Kakatiya kingdom.

This vision and legacy of Kakatiyas were carried forward by Qutubshahis and Asafjahis who ruled this region for centuries. Hundreds of big and small tanks were built in Telangana region during their rule.

Tank irrigation thus has huge bearing on generation of rural employment, poverty reduction and agricultural growth. The sheer size of command area under tank irrigation makes it a large centre of agricultural production and provides a critical opportunity for commercial agriculture through market linkages.

Government of Telangana state desires to uphold the vision of Kakatiyas which envisages revival and restoration of Minor Irrigation Sources in Telangana State. The Government has taken up the massive programme of restoring all the 46,531 minor irrigation sources under the name “Mission Kakatiya” (manaooru – manacheruvu) in a decentralized manner through

community involvement. The Government is aiming to complete the restoration of all the tanks in five years @ 20% of the tanks each year.

2. *Objective*

The objective of Mission Kakatiya is to enhance the development of agriculture based income for small and marginal farmers through sustainable irrigation resources by accelerating the development of MI infrastructure, strengthening community based irrigation management, adopting a comprehensive programme for restoration of tanks.

Restoration of the tanks would involve the following components.

i. Silt Removal & Silt Application
ii. Restoration of Feeder Channel to the tank (Part of chain of tanks)
iii. Repairs to Bund , Weir & Sluices
iv. Re-sectioning of Irrigation Channels & Repairs to CM & CD works.
v. Raising of FTL, wherever possible//necessary.

3. *Advantages of Silt Removal and Silt Application*

As Per Studies carried out by ICRISAT the following advantages are observed:

i. The water retention capacity of the soil will increase there by decreasing the number of wettings.
ii. De-silting can improve ground water recharge and drinking water facility to cattle in the summer.
iii. Due to de-silting, it is observed that the fluoride content is reduced considerably in the ground water as per studies conducted.
iv. Silt can be used as nutrient / fertilizer to the plant which generally reduces the usage of fertilizers as well as pesticides.
v. The yield of the crop will be increased.

[Students from the University of Michigan, in a year-long study in India's south-eastern state of Telangana, are using silt dug up from ponds during the dry season as fertilizer for farm fields.

The results are stunning: The silt reduced the use of fertilizers by 36 percent and increased the crop yield by nearly 50 percent.

"The most striking finding is that it reduces greenhouse emissions from less fertilizer use by 50-to-90 percent,"]

4. *SCHEDULE OF THE PROJECT*

It is proposed to restore all the 46531 tanks in 5 years,20 % of Tanks each year with a tentative cost of Rs.20000.00 crores

So far restoration of tanks is taken up under three phases i.e. Mission Kakatiya – I, II& III and Mission Kakatiya – IV is under grounding stage. The District Wise & phase wise tanks taken up are as follows:

Sl. No.	District	No. of Tanks Taken up				Total Tanks taken up under MK
		MK – I	MK – II	MK - III	MK - IV	
1	**2**	**3**	**4**	**5**	**6**	**7**
1	SANGAREDDY	359	426	450	496	1731
2	SIDDIPET	858	682	338	221	2099
3	MEDAK	560	665	393	182	1800
4	RANGA REDDY	310	384	217	96	1007
5	MEDCHAL (MALKAJGIRI)	88	67	23	23	201
6	VIKARABAD	243	267	129	98	737
7	MAHABUBNAGAR	406	523	431	167	1527
8	WANAPARTHY	163	296	249	241	949

Sl. No.	District	No. of Tanks Taken up				Total Tanks taken up under MK
		MK – I	MK – II	MK - III	MK - IV	
1	2	3	4	5	6	7
9	JOGULAMBA (GADWAL)	111	93	99	42	345
10	NAGARKURNOOL	277	428	515	255	1475
11	NALGONDA	377	499	330	165	1371
12	YADHADHRI BHONGIR	195	273	316	136	920
13	SURYAPET	236	297	220	130	883
14	ADILABAD	103	70	22	38	233
15	KOMARAM BHEEM	184	123	54	66	427
16	MANCHERIAL	150	155	113	51	469
17	NIRMAL	121	120	63	100	404
18	KARIMNAGAR	223	290	299	148	960
19	PEDDAPALLY	118	235	134	174	661
20	JAGITYAL	199	218	162	133	712
21	SIRCILLA	103	120	69	45	337
22	WARANGAL URBAN	126	137	70	58	391
23	WARANGAL RURAL	224	200	162	159	745
24	JAYASHANKAR BHUPALPALLY	415	434	191	90	1130
25	JANGAON	180	159	147	100	586
26	MAHABUBABAD	335	388	188	158	1069
27	KHAMMAM	292	304	172	119	887

Sl. No.	District	No. of Tanks Taken up				Total Tanks taken up under MK
		MK – I	MK – II	MK - III	MK - IV	
1	2	3	4	5	6	7
28	BADRACHALAM	431	516	219	164	1330
29	NIZAMABAD	275	279	192	95	841
30	KAMAREDDY	381	367	185	158	1091
	Total	**8043**	**9015**	**6152**	**4108**	**27318**

Out of 8043 tanks taken up under Mission Kakatiya Phase – I about 8,003 No. of works amounting to Rs. 1568.40 crores are completed. Under the above completed tanks an ayacut of 6.71 lakhs acres has been stabilized. The balance works are targeted to be completed by March 2018.

Under Mission Kakatiya Phase – II a total of 9015 tanks are taken up for restoration and out of which 7060 works amounting to Rs. 1152.20 crores are completed. The ayacut stabilized under the completed tanks taken up under MK – II is about 3.60 lakh acres.

Under Mission Kakatiya Phase – III a total of 6152 tanks are taken up for restoration and out of which 1521 works amounting to Rs. 224.57 crores are completed.

Administrative Approvals under Mission Kakatiya Phase – IV are under process and as on date 4108 works are sanctioned.

5. IMPACTS OF MISSION KAKATIYA PROGRAMME

To have a Transparent Impact assessment of the Mission Kakatiya by third party, the Government have entrusted the task to M/s NABCONS a sister concern of NABARD.

FINDINGS OF THE IMPACT ASSESSMENT MADE BY THE CONSULTANTS:

i. **Tank Silt Application:** The impact assessment survey shows a decrease in consumption of chemical fertilizers by 35 – 50% which resulted in reduced expenditure on fertilizers by 27.60% over the base year. The decrease in expenditure ranges from Rs. 1500 to Rs. 3000 per acre per season, depending on the crops. Further, the tank silt application contributed to increase in crop yields, reduction on soil erosion, increase in soil moisture retention, levelling of plot sizes etc.,

ii. **Ground Water:** Another good impact of Mission Kakatiya is increase in ground water levels in the tank influence areas. Though the rainfall during the baseline year (i.e., 2013-14) is similar to 2016, the rise in groundwater levels is more in the impact year (2016) due to larger and longer storage of water in the tanks. In base year, the average rise in ground water level was 6.91 m where as it is 9.02 m in the year 2016 from September to February.

iii. **Gap Ayacut:** In the year 2013-14, the gap ayacut was 42.40% whereas it is 23.20% in the year 2016-17, after implementation of the Mission Kakatiya Phase – I.

iv. **Irrigation Intensity:** Irrigation Intensity (total cropped area Khariff & Rabi in ayacut) has been increased by 45.60% over the base year, it is mainly due to the improved water retention capacity in the tanks post restoration works which directly increased the water retention capacity in the tanks. In the base year, the irrigation intensity was 88.40% and it is increased to 134% with implementation of Mission Kakatiya.

v. **Crop Yield:** Increase is witnessed in the yields of Paddy, Cotton and Jowar after Mission Kakatiya Phase – I over the base year. The increase is more significant in Rabi Paddy (19.60% and Cotton (11.60%)

vi. **Fisheries:** Apart from the farmers, the other major beneficiary of MissionKakatiya is the Fishermen community. Longer storage period of water in the tanks has resulted in the increased fish weight, and so the yield. On average, there is an increase of 36- 39% yield, particularly in the Rohu, Katla and Mrigala types of fish.

vii. There is an increase of household agricultural income by 78.50% in the tank ayacut area. The reason for increase can be attributed to increase in irrigated area and also the yields.

6. *ACHIEVEMENTS OF MISSION KAKATIYA*

The ayacut stabilized under three phases of Mission Kakatiya are as follows:

S.No.	Phase	Ayacut Stabilized in Lakhs acres
1	Phase – I	6.71
2	Phase – II	3.80
3.	Phase - III	1.1
	Total	**11.61**

7. *Public Participation of Mission Kakatiya Programme*

So far in 3 Phases of Mission Kakatiya about 20 crore cubic meters of silt transported from tanks to apply on the fields by the farmers themselves voluntarily duly engaging about 8 crore tractor trips. In this way farmers spent on their own about Rs 900 crores. It shows the huge public participation for this programme.