

## **Chapter 12**

### **Socio economic studies, Resettlement & Rehabilitation**

#### **12.1 Introduction**

The water resources development projects will have both positive and negative impacts on the society. The Godavari (Inchampalli) - Cauvery (Grand Anicut) link project is no exception. However, the detailed information on these aspects will be known only after carrying out the comprehensive environmental impact assessment (CEIA) studies for the link project. Presently, the general description of socio-economic aspects in the project area and proposed approach for socio-economic studies of the link project based on similar studies carried out for the link projects in the region well as the details obtained from secondary sources are presented in this chapter.

#### **12.2 Socio economic profile and survey**

The economic profile of the society in the vicinity of the link project will change considerable after implementation of the link project. There will be rise in agricultural income, scope in livelihood options, agro-based industries, animal husbandry, plantations, pisciculture, educational and health avenues and general living standards of the people in the region. At the same time, there is scope for rise in health hazards due to water logging and water storages. Further, there may be some project affected people due to submergence of villages under reservoirs/ ponds, displacement of villages due to alignment of link canal and acquisition from farmers of medium and small land holdings. The resettlement and rehabilitation of these project affected people will be a challenging job for the authorities. Further, the land acquisition will be a prolonged and costly affair on a water resources project.

All the above aspects will be known in detail after carrying out the socio-economic survey of the Godavari (Inchampalli) - Cauvery (Grand Anicut) link project.

### 12.2.1 Regional profile from the available secondary data

#### *Demography*

The total population (as per census of 2011) of the districts in the Project area of Godavari (Inchampalli) - Cauvery (Grand Anicut) link project is presented in **Table 12.1**.

**Table - 12.1: Demographic details in the project area of Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

District	Total Population	Male Population		Female Population		Sex Ratio (no.of Females /1000 Males)	SC Population		ST Population	
		Number	%	Number	%		Number	%	Number	%
<b>Telangana</b>										
Khammam	2797370	1390988	49.72	1406382	50.28	1011	462896	16.55	765565	27.37
Nalgonda	3488809	1759772	50.44	1729037	49.56	983	637385	18.27	394279	11.30
<b>Andhra Pradesh</b>										
Krishna	4517398	2267375	50.19	2250023	49.81	992	871063	19.28	132464	2.93
Guntur	4887813	2440521	49.93	2447292	50.07	1003	957407	19.59	247089	5.06
Prakasam	3397448	1714764	50.47	1682684	49.53	981	787861	23.19	151145	4.45
Nellore	2963557	1492974	50.38	1470583	49.62	985	666588	22.49	285997	9.65
Chittoor	4174064	2090204	50.08	2083860	49.92	997	785760	18.22	159165	3.81
<b>Tamil Nadu</b>										
Tiruvallur	3728104	1876062	50.22	1852042	49.68	987	821646	22.03	47243	1.26
Vellore	3936331	1961688	49.84	1974643	50.16	1007	860212	21.85	72955	1.85
Kancheepuram	3998252	2012958	50.34	1985294	49.65	986	948081	23.71	41210	1.03
Tiruvannamalai	2464875	1235889	50.14	1228986	49.86	994	565329	22.94	90954	3.69
Villupuram	3458873	1740819	50.33	1718054	49.67	987	509767	31.54	3756	0.23
Cuddalore	2605914	1311697	50.34	1294217	49.66	987	763944	29.32	15702	0.60

Source: District Census Hand Books-2011.

It can be seen from the above table that the male population is about 49 to 50% and female population is about 50 to 51% in all the districts. The Sex Ratio varies from 981 to 1011. The Scheduled Caste (SC) population varies from 16.55% in Khammam district to just above 31.5% in Villupuram district while the Scheduled Tribe (ST) population varies from 0.23% in Villupuram district to 27.37 % in Khammam district.

### Livestock and Poultry

The livestock population and poultry in the districts of the project area as per Nineteenth Livestock Census – 2012 is presented in **Table 12.2**.

**Table – 12.2: Livestock population and poultry in the project Area of Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Particulars	Khammam	Nalgonda	Krishna	Guntur	Prakasam	Nellore	Chittoor
1	2	3	4	5	6	7	8
<b>Livestock population</b>							
<b>Cattle</b>							
(i)Indigenous	587796	425242	69383	101843	72415	105164	195658
(ii)Exotic	3390	71229	10037	8228	2430	10804	731207
<b>Buffaloes</b>	570567	788427	696118	1007942	970366	624664	84368
<b>Sheep</b>							
(i)Indigenous	477693	1898197	507511	620593	1406391	1051938	1249819
(ii)Exotic	1572	8088	550	529	187	0	258
<b>Goats</b>	493562	533773	151118	213249	406239	351426	428721
<b>Pigs</b>							
(i)Indigenous	20752	24597	8242	7098	8324	5164	7418
(ii)Exotic	1657	394	1945	2124	1752	200	867
<b>Horses &amp; Ponies</b>	5	56	19	17	39	29	21
<b>Mules</b>	0	10	28	2	0	0	0
<b>Donkeys</b>	6	2	9	152	151	51	32
<b>Camels</b>	2	0	0	0	0	0	2
<b>Total Livestock</b>	2157002	3750015	1444960	1961777	2868308	2149440	2698371
<b>Density (Nos./ Km<sup>2</sup>)</b>	135	263	166	172	163	164	178
<b>Poultry</b>							
<b>Backyard fowls</b>	1751145	1814178	1194566	861912	922568	1086898	1228069

<b>Ducks</b>	561	3209	9232	3331	25834	56544	10300
<b>Turkey</b>	38	987	174	783	190	347	1051
<b>Quails</b>	0	57	72	2	152	13	35
<b>Other Poultry</b>	429	1164	4977	2132	898	600	850
<b>Birds in Farms/ Hatcheries</b>	461394	7229973	10540773	6107099	263993	306079	11359408
<b>Total Poultry</b>	2213844	9051500	11751991	6975527	1237864	1491093	12600851
<b>Density (Nos./ km<sup>2</sup>)</b>	138	636	1346	612	70	114	832

Source: Nineteenth Livestock Census-2012.

**Livestock population and poultry in the project area of  
Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Particulars	Tiruvallur	Vellore	Kancheepuram	Tiruvanna malai	Vullupuram	Cuddalore
1	9	10	11	12	13	14
<b>Livestock population</b>						
<b>Cattle</b>						
(i)Indigenous	97975	128237	215087	174290	291188	100386
(ii)Exotic	112853	398843	132285	502339	520847	233817
<b>Buffaloes</b>	56397	16308	57457	15523	17714	14428
<b>Sheep</b>						
(i)Indigenous	62727	206375	99427	227073	239892	51058
(ii)Exotic	12053	68785	20219	31038	15718	8287
<b>Goats</b>	187984	262659	192242	226240	449125	328824
<b>Pigs</b>						
(i)Indigenous	1625	13126	1884	9819	15675	14357
(ii)Exotic	793	5739	625	792	1356	1112
<b>Horses &amp; Ponies</b>	454	904	52	113	73	188
<b>Mules</b>	0	0	0	0	2	0
<b>Donkeys</b>	586	1845	360	98	256	192
<b>Camels</b>	0	0	0	0	0	1
<b>Total Livestock</b>	533447	1102821	719638	1187325	1551846	752650
<b>Density (Nos./ Km<sup>2</sup>)</b>	157	182	161	192	216	203
<b>Poultry</b>						
<b>Backyard fowls</b>	336306	474587	282818	232245	502907	418776

<b>Ducks</b>	73221	7404	35410	8543	29419	10558
<b>Turkey</b>	2175	981	3229	1142	3457	2638
<b>Quails</b>	5887	118	219	5537	618	67
<b>Other Poultry</b>	2849	4506	1544	244	624	944
<b>Birds in Farms/ Hatcheries</b>	459274	3828176	484998	208022	1977307	517474
<b>Total Poultry</b>	879712	4315772	808218	455733	2514332	950457
<b>Density (Nos./ Km<sup>2</sup>)</b>	259	710	180	74	350	257

Source: Nineteenth Livestock Census-2012.

It can be seen from the above table that Nalgonda district has the highest number of livestock and Tiruvallur district has the least number. However, Nalgonda district has the highest density of livestock while Khammam district has the lowest density of livestock. The live stock in the project area is dominated by cattle, goats, buffaloes and sheep. Krishna and Tiruvannamalai have the highest and lowest poultry respectively. The poultry mainly consists of backyard fowls and birds in farms and hatcheries.

## **Agriculture**

The population inhabiting in and around the project area is mainly dependent on agriculture. Cotton, soyabean, tur, vegetables and wheat are the dominant crops grown in the command area. Jowar, chillies, turmeric, safflower, sunflower, pulses, paddy and flowers are also grown in limited area. The agriculture in most of the areas is under rain fed as the irrigation facilities are limited.

## **Literacy**

The district-wise literacy status as per the census 2011 is given in **Table 12.3**.

**Table – 12.3: Literacy rate in the project area of  
Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

District	Male literacy		Female literacy		Total literacy	
	Number	%	Number	%	Number	%
<b>Telangana</b>						
Khammam	901640	72.30	728594	57.44	1630234	64.81
Nalgonda	1160757	74.10	840262	54.19	2001019	64.20
<b>Andhra Pradesh</b>						
Krishna	1598959	78.30	1410759	69.18	3009718	73.74
Guntur	1634726	74.79	1325715	60.09	2960441	67.40
Prakasam	1107686	72.92	796749	53.11	1904435	63.08
Nellore	1011922	75.74	820267	61.99	1832189	68.90
Chittoor	1484794	79.83	1183084	63.28	2667878	71.53
<b>Tamil Nadu</b>						
Tiruvallur	1495711	89.69	1296010	78.32	2791721	84.03
Vellore	1504355	86.50	1269573	71.95	2773928	79.17
Kancheepuram	1611461	89.89	1401921	79.02	3013382	84.49
Tiruvannamalai	909803	83.11	717010	65.32	1626813	74.21
Vullupuram	1234479	80.55	961297	63.15	2195776	71.88
Cuddalore	1000322	85.93	814959	70.14	1815281	78.04

Source: District Census Hand Books-2011.

It is observed from the above table that the total literacy rate varies from 63.08% in Prakasam district to 84.49% in Kancheepuram district. The male literacy rate varies from 72.92% in Prakasam district to 89.89% in Kancheepuram district, whereas the female literacy rate varies from 53.11% in Prakasam district to 79.02% in Kancheepuram district.

### **12.2.2 Project specific aspects Sample Design and Methodology**

Total 9 villages (partly) are likely to be affected due to creation of the link alignment. The Socio-economic survey shall be carried out in all these affected villages. For assessment of present socio-economic status and community profile of the project area, the information from both primary and

secondary sources shall be collected and used. The data from primary sources shall be collected through questionnaire. The village wise information shall be collected by the investigators from villagers and other sources in each village through a village survey schedule covering different socio-economic parameters including demographic profile, land ownership, operational holdings, cropping pattern, agricultural practices, agriculture input pattern, animal husbandry, poultry, employment, income and expenditure, social infrastructure facilities, public health issues, gender, tourism, migration, education etc.

Likewise, the information at household level shall be collected through household interview schedule designed with specific questionnaires to facilitate interviewing the villagers in project affected as well project influenced villages, consisting the variables like family composition, education, housing facilities, drinking water, land holdings, irrigation facilities, sanitation, employment, income, occupation, migration, rehabilitation and resettlement options, rehabilitation and resettlement package, location preference, compensation, participation of the people in implementation of the project, willingness to pay by the users for assured water supply etc. Household level information shall be used to know the personal profile of the respondents and problems being faced/to be faced by them.

### **Selection of Villages**

The link alignment will affect 9 villages (partly). **EIA &EMP.**Socio-economic survey shall be carried out in all these 9 villages.

### **Selection of Households**

All the households in all the 9villages likely to be affected due to the project shall be covered in the socio-economic survey.

## Questionnaire

To collect the data on the present socio-economic status of the Project Affected People, two types of questionnaire shall be developed: one for Socio-economic survey of the households and other for village level data and information.

## Profile of the Study Area

As already discussed in earlier paras, Godavari (Inchampalli) - Cauvery (Grand Anicut) link project envisages construction of a barrage and contemplated to use existing reservoirs to store the link waters during monsoon period and utilise the same in their respective commands, mostly during post monsoon. Due to creation of link alignment, 9 villages (partially) are likely to be affected. The affected villages are located in Macherla, Piduguralla, Vinukonda and Dachepalli mandals of Guntur districts and Pullalacheruvu, Donakonda and Yarragonda palem mandals of Prakasam district as detailed in **Table 12.4**.

**Table-12.4: Villages likely to be affected in the project area of Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No.	Village	Taluka/Mandal	District
1	Thallapalle	Macherla	Guntur
2	Julakallu	Piduguralla	Guntur
3	Sivapuram	Vinukonda	Guntur
4	Bhatrupalem	Dachepalli	Guntur
5	Isukatripuravaram	Pullalacheruvu	Prakasam
6	Lakshmipuram	Donakonda	Prakasam
7	Kataruvani palli	Yarragonda palem	Prakasam



The affected families from 9 affected villages are to be rehabilitated. A socio-economic survey shall be conducted as part of the proposed Comprehensive Environmental Impact Assessment(CEIA) studies of the project to be taken up in these villages to facilitate in-depth understanding of the present socio-economic status of people, perception of the people regarding implementation of the project and also their attitude towards Rehabilitation and Resettlement of the affected families, so that suitable Rehabilitation and Resettlement measures can be suggested to minimise the adverse impact of the project on the project affected families. For the present DPR, the Socio-economic profile of the 9 affected villages of the project area based on the available information in the District Census Hand Books-2011 is described in the following paragraphs. Out of these, the details in respect of two villages Jellepeta tanda and Prempuri are not available in the Census books.

**i) Demography:** Nine villages are partially affected by the link canal. Total population of all the 9 villages is 21575 spread over 5474 households. Thus, the average number of members per household is about 4. Population of males in affected villages is 10846, while that of the females is 10729. The average sex ratio in the affected area is 986. Details are given in **Table 12.5**.

**Table-12.5: Demographic details in the affected villages in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl. No	Village	Taluka/Mandal	No. of House Holds	House hold Members			Sex ratio (No. of Females/100 Males)	
				Male	Female	Total		
1	Thallapalle	Macherla	1110	2108	2276	4384	1080	
2	Julakallu	Piduguralla	1706	3207	3137	6344	978	
3	Sivapuram	Vinukonda	476	888	862	1750	971	
4	Bhatrupalem	Dachepalli	474	902	882	1784	978	
5	Isukatripuravaram	Pullalacheruvu	1378	2976	2844	5820	956	
6	Lakshmipuram	Donakonda	330	765	728	1493	952	
7	Kataruvani palli	Yarragondapalem	Un-inhabited					

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**ii) Caste:** The number of Schedule Caste (SC) and Scheduled Tribe (ST) population in the project affected villages are 4123 and 3263 respectively. Details are given in **Table 12.6**.

**Table 12.6: SC and ST Population in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No.	Village	Taluka/Mandal	Population		
			SC	ST	Total
1	Thallapalle	Macherla	346	711	1057
2	Julakallu	Piduguralla	1148	264	1412
3	Sivapuram	Vinukonda	489	148	637
4	Bhatrupalem	Dachepalli	121	1341	1462
5	Isukatripuravaram	Pullalacheruvu	1719	778	2497
6	Lakshmipuram	Donakonda	300	21	321
7	Kataruvani palli	Yarragonda palem	Un-inhabited		

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**iii) Literacy:** The total literacy rate in the nine affected villages varies from 32% to 50%. The male literacy rate is higher than that of female literacy rate. While the male literacy rate varies from 43% to 60%, the female literacy rate ranges from 21% to 40%. Details are given in **Table 12.7**.

**Table 12.7: Literacy rate in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl. No.	Village	Taluka/Mandal	Male Literacy		Female Literacy		Total Literacy	
			Number	%	Number	%	Number	%
1	Thallapalle	Macherla	1041	49	757	33	1798	41
2	Julakallu	Piduguralla	1929	60	1264	40	3193	50
3	Sivapuram	Vinukonda	506	57	288	33	794	45
4	Bhatrupalem	Dachepalli	430	48	213	24	643	36
5	Isukatripuravaram	Pullalacheruvu	1453	49	861	30	2314	40
6	Lakshmipuram	Donakonda	332	43	151	21	483	32
7	Kataruvani palli	Yarragonda palem	Un-inhabited					

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**iv) Educational facilities:** All the nine affected villages have one primary school each and 5 villages have middle school too. None of the villages have middle schools and colleges. The secondary schools are reported to be available at a distance of 2.0 km to 10.0 km, where as the colleges' area available at distance of 5.0 km to 10.0 km. Details are given in **Table 12.8**.

**Table 12.8: Details of schools available in the affected village in Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl. No	Village	Taluka/ Mandal	No. of Schools/facility within			Distance of College (km)
			Primary	Middle	Secondary	
1	Thallapalle	Macherla	3	2	2	5 to 10 km
2	Julakallu	Piduguralla	4	2	> 10 km	> 10 km
3	Sivapuram	Vinukonda	2	1	5 to 10 km	> 10 km
4	Bhatrupalem	Dachepalli	2	1	> 10 km	> 10 km
5	Isukatripuravaram	Pullalacheruvu	8	1	5 to 10 km	> 10 km
6	Lakshmipuram	Donakonda	2	5 to 10km	> 10 km	> 10 km
7	Kataruvani palli	Yarragonda palem	Un-inhabited			

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**v) Land use pattern:** Total geographical area of all 9 villages affected due to link canal is about 13409 ha, out of which 36.4% area is agriculture land, 21% is forest land and remaining 42.6% land belongs to other categories like permanent pastues, current and other fallows, culturable waste land etc. Details are given in **Table 12.9**.

**Table- 12.9: Land use pattern in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No	Village	Taluka/ Mandal	Land use (ha)			
			Agriculture	Forest	Others	Total
1	Thallapalle	Macherla	462	464	927	1853
2	Julakallu	Piduguralla	2547	62	538	3147
3	Sivapuram	Vinukonda	476	0	337	813
4	Bhatrupalem	Dachepalli	513	2287	105	2905
5	Isukatripuravaram	Pullalacheruvu	548	0	3011	3559
6	Lakshmipuram	Donakonda	331	0	801	1132
7	Kataruvani palli	Yarragonda palem	Un-inhabited			

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**vi) Sources of water:** Six out of nine villages have tap water facility. Hand pumps are available in six villages. Well is available in one village whereas tube/ borewell is available in 2 villages. Details are given in **Table 12.10**.

**Table 12.10: Sources of water in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No	Village	Taluka/ Mandal	Sources of Water for Drinking and Other Purposes			
			Tap	Hand Pump	Wells	Tube/ Bore wells
1	Thallapalle	Macherla	√	√	×	×
2	Julakallu	Piduguralla	√	√	√	√
3	Sivapuram	Vinukonda	√	√	×	×
4	Bhatrupalem	Dachepalli	√	√	×	×
5	Isukatipuravaram	Pullalacheruvu	√	√	×	√
6	Lakshmipuram	Donakonda	√	√	×	×
7	Kataruvani palli	Yarragonda palem	Un-inhabited			

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**vii) Power supply:** Power supply in six villages is available for domestic, agricultural and at five places available for other purposes. Details are given in **Table 12.11**.

**Table 12.11: Power Supply in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No	Village	Taluka/ Mandal	Power supply for			
			Domestic	Agricultural	Other purpose	All purpose
1	Thallapalle	Macherla	√	√	√	√
2	Julakallu	Piduguralla	√	√	√	√
3	Sivapuram	Vinukonda	√	√	×	×
4	Bhatrupalem	Dachepalli	√	√	√	√
5	Isukatipuravaram	Pullalacheruvu	√	√	√	√
6	Lakshmipuram	Donakonda	√	√	√	√
7	Kataruvani palli	Yarragonda palem	Un-inhabited			

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**viii) Health facilities:** No villages having any health center facilities. Three villages are having primary health centers at a distance of 5.0 km to 10.0 km whereas Allopathic Hospitals and Maternity and child welfare centers are available at distance of 10.0 km for all villages. Details are given in **Table 12.12.**

**Table 12.12.**  
**Details of hospitals in the affected village in the**  
**Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No	Village	Taluka/ Mandal	Medical Facilities Available		
			Allopathic Hospital	Maternity and Child Welfare Centre	Primary Health Center
1	Thallapalle	Macherla	> 10 km	> 10 km	5 to 10 km
2	Julakallu	Piduguralla	> 10 km	> 10 km	5 to 10 km
3	Sivapuram	Vinukonda	> 10 km	> 10 km	5 to 10 km
4	Bhatrupalem	Dachepalli	> 10 km	> 10 km	> 10 km
5	Isukatripuravaram	Pullalacheruvu	> 10 km	> 10 km	> 10 km
6	Lakshmipuram	Donakonda	> 10 km	> 10 km	> 10 km
7	Kataruvani palli	Yarragonda palem	Un-inhabited		

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**ix) Post and telephones:** No village is having post office. Post office facilities are available less than 5.0 km for one village, 5.0 to 10.0 km for two villages and rest more than 10.0 km. Telephone facilities are available in 5 villages. Details are given in **Table 12.13.**

**Table 12.13 Post office and telephone facilities in the affected village in the**  
**Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No	Village	Taluka/ Mandal	Facilities available (Within range in km)	
			Post Office	Telephone
1	Thallapalle	Macherla	< 5 km	√
2	Julakallu	Piduguralla	5 to 10 km	√
3	Sivapuram	Vinukonda	> 10 km	√
4	Bhatrupalem	Dachepalli	> 10 km	√
5	Isukatripuravaram	Pullalacheruvu	> 10 km	> 10 km
6	Lakshmipuram	Donakonda	5 to 10 km	√

7	Kataruvani palli	Yarragonda palem	Un-inhabited
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Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**x) Transport facility:** Transport facility including plying of private/ government buses is available in five villages, whereas this facility is available within 5.0 to 10.0 km for 1 village. The nearest railway station is more than 10 km away for 2 villages whereas it is 5.0 to 10.0 km for three villages. Railway is available at distance of less than 5.0 km for one village. Four villages are connected to major district roads (MDRs), while other two villages are connected to other district roads (ODR). Details are given in **Table 12.14**.

**Table 12.14** Details of transport facilities in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project

Sl. No	Village	Taluka/ Mandal	Transport facilities			
			Bus (Private/ public)	Railway	Connected to	Nearest town
1	Thallapalle	Macherla	√	< 5 km	MDR	Macherla
2	Julakallu	Piduguralla	√	5 to 10 km	MDR	Piduguralla
3	Sivapuram	Vinukonda	√	> 10 km	MDR	Vinukonda
4	Bhatrupalem	Dachepalli	5 to 10 km	5 to 10 km	MDR	Dachepalli
5	Isukatripuravaram	Pullalacheruvu	√	> 10 km	ODR	Pullalacheruvu
6	Lakshmipuram	Donakonda	√	5 to 10 km	ODR	Donakonda
7	Kataruvani palli	Yarragonda palem	Un-inhabited			

Source: District Census Hand Book-2011, Guntur and Prakasam districts.

**xi) Banking and credit societies facilities:** Banks / ATMs are not available in all the affected villages. For banking purpose, people go to different banks which are situated at an average distance of 5.0 to 10.0 km. Agriculture credit societies are available at two villages whereas for other villages it is located at an average distance of more than 10 km. Details are given in **Table 12.15**.

**Table-12.15: Banking and credit society facilities in the affected village in the Godavari (Inchampalli)-Cauvery (Grand Anicut) link project**

Sl.No	Village	Taluka/ Mandal	Banking / Credit Society Facilities Available (Within Range in km)		
			Banking	Agri. Credit Society	ATMs
1	Thallapalle	Macherla	5 to 10 km	√	5 to 10 km
2	Julakallu	Piduguralla	5 to 10 km	√	5 to 10 km
3	Sivapuram	Vinukonda	> 10 km	> 10 km	> 10 km
4	Bhatrupalem	Dachepalli	> 10 km	> 10 km	> 10 km
5	Isukatipuravaram	Pullalacheruvu	> 10 km	> 10 km	> 10 km
6	Lakshmipuram	Donakonda	> 10 km	> 10 km	> 10 km
7	Kataruvani palli	Yarragonda palem	Un-inhabited		

Source: District Census Hand Book-2011, Guntur and Prakasam districts.  
Book -2011, Amravati

### 12.2.3 Short term impact of the link project

In the short term, the implementation of the Godavari (Inchampalli) - Cauvery (Grand Anicut) link project will provide considerable employment opportunities, organized and unorganized. Thousands of people will get work in the region. The business prospects of the small ventures will flourish. There will be increased demand for various materials and industrial growth will improve. On the other hand the pollution levels in the vicinity will increase and impact on health of the society. The displacement of the people and project affected people due land acquisition will affect society much in the short term.

### 12.2.4 Long term impact of the link project

In the long term, the implementation of the Godavari (Inchampalli) - Cauvery (Grand Anicut) link project will improve the general living standards of the people in the vicinity. The education and health facilities will improve. The water supply and sanitation facilities will also be modernized. The employment opportunities will improve. There will be growth in industries in general and agro-based industries in specific. The business opportunism will

improve. The resettlement colonies will provide better life with all amenities as standardized by various authorities and in the long term there will be growth of townships which will improve economic prospects of the region. In the long term, only health hazards may rise and preventive measures are to be taken after properly forecasting the same.

### **12.3 Resettlement and Rehabilitation**

The project implementation could be made easy through attractive R&R package, its proper implementation and the socio-political will.

#### **12.3.1 Resettlement and Rehabilitation package**

As far as acquisition of government land including forest land, compensation would be paid to the concerned government department/agency. The compensation for acquisition of private land would be paid to the respective land owners/ land titleholders within the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. However, in the present DPR, since the cost of enroute storages has been considered on volumetric basis (cost/Mm<sup>3</sup> of storage) based on the costs of the ongoing projects in the vicinity of the link project, no separate rehabilitation and resettlement package is provided. The relevant norms/measures for resettlement and rehabilitation as per the Govt. of India Act-2013 are only discussed in the following paras:

#### **12.3.2 Project affected community**

The project affected community mainly comprises of farmers, agricultural labour, people engaged in traditional professions in the villages and vendors etc.



### 12.3.3 People’s perception towards rehabilitation package

The perception of the project affected community is positive in general about the rehabilitation package. However, the delay in implementation of the R&R package due various legal issues is one of the most striking reason for resisting implementation of the project as perceived by officials in the past experiences.

### 12.3.4 Measures for Resettlement

All the families that are likely to be evicted from their homesteads as a result of the process of land acquisition due to construction of storages and subsequent submergence area would be eligible to receive resettlement benefits, in addition to compensation of homestead plot and structures. In accordance with the provisions of “Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”, the following provisions for resettlement based on similar projects will be provided to the families losing homesteads as given in **Table-12.16**.

**Table 12.16: Provisions for resettlement plan for families losing homesteads**

Sl. No.	Description	Adopted Norms
1	Housing Benefits and compensation	If a house is lost in rural areas, a constructed house shall be provided as per Indira Awas Yojana Specifications.
2	House Building Assistance	One-time financial assistance of not less than Rs. 5,00,000/- for house construction.
3	Construction of Cattle Shed	One-time financial assistance of Rs. 50,000/ PAF shall be given for construction of cattle shed.

Sl. No.	Description	Adopted Norms
4	Transportation aid	One time financial assistance of Rs. 50,000/PAF for each displaced family for shifting of family, building material, belongings and cattle.
5.	Construction of working shed/shop	One-time financial assistance of Rs.1,25,000/PAF shall be given for construction of working shed/shop.
6	Subsistence Allowance	Each affected family losing land, will be given a monthly subsistence allowance equivalent of Rs. 3,000 / month for a period of one year.
7	One time Resettlement Allowance	Each affected family shall be given a one-time "Resettlement Allowance" of Rs. 50,000/-

According to the above provisions, resettlement benefits shall be extended to all the PAFs including adult sons who are likely to be evicted from their homesteads.

**Amenities and infrastructural Facilities to be provided at resettlement areas:** In addition to the resettlement benefits that would be extended to the PAFs, appropriate Amenities and Infrastructural Facilities shall be proposed to be provided at Resettlement sites during the CEIA study of the link project. The broad details of such facilities usually provided (based on similar projects) are discussed in the following paras:

- **Internal village road network:** For easy movement of people and vehicular traffic within the proposed resettlement sites, it will be suggested to construct wide internal village roads in each of the resettlement sites. These internal village roads would be connected to an access road which connects villages.

- **Drainage network within the resettlement site:** It will be proposed to construct Drainage network in each of the resettlement colonies. The main purpose of this drainage network is to clear storm water and domestic waste water from kitchens and bathrooms. It is also proposed that the drainage networks will consist of a lined drain and are covered with RCC slabs. These drains will traverse parallel along internal village roads and finally culminate into a collection tank, before it is screened and filtered and thereafter either stored in an underground storage tank to be utilised for irrigation purposes in the Green Belt areas or discharged for the purpose of ground water recharge.
- **Sanitation network within the resettlement site:** Sanitation network will be proposed to be laid within each resettlement site. The main purpose of this network will be to transport domestic waste (night soil waste from lavatories). In addition, the sanitation network will also carry waste from schools, health care facilities and other complexes within the resettlement sites. It is proposed to treat the sewage through septic tanks. The treated sewage will be disposed in absorption trenches.
- **Safe drinking water:** Safe drinking water @ 135 lpcd will be proposed to be provided to the PAFs by constructing an overhead storage tank and distributed through a network of pipelines. It will be suggested to lay underground drinking water pipeline along the internal village road, on the opposite side of the corridor for drainage and sanitation network. Construction of Conventional Water Treatment Plant will also be considered.
- **Public transport:** For public transportation, it will be proposed to construct a Bus Stop in each of the resettlement colonies. This bus stop shall occupy an area of about 10 m<sup>2</sup> (2 m x 5 m) and shall be covered by a 1.5 m high enclosure wall from 3 sides made of brick and cement with corrugated roofing material spread over 4 steel poles.

- **Drinking water trough for cattle:** For families that wish to rear livestock, it will be proposed to construct drinking water troughs for cattle in each resettlement site.
- **Place of worship:** A plot size measuring 0.5 ha will be proposed to be earmarked for construction of place of worship in resettlement sites.
- **Cremation grounds:** It will be proposed to earmark an area of 1 ha of plot for establishment of cremation ground and / or burial ground.
- **Fair price shops and other shops:** It will be proposed to provide a constructed space for 1 Fair Price shop and 4 other shops in each of the resettlement colonies. An area of 0.005 ha [(4 m x 2.5 m) x 5 shops] may be earmarked in each resettlement site.
- **Post office:** A plot size measuring 10 m long x 5 m wide will be suggested to be earmarked for the construction of post office in various resettlement sites with drinking water post and WC facility.
- **Panchayat ghar:** A plot size measuring 0.25 ha will be proposed to be earmarked for the construction of Panchayat Ghar. It will be suggested to construct the building over an area of 20 m x 15 m with drinking water post and WC facility.
- **Community hall:** A plot size measuring 0.25 ha will be proposed to be earmarked for the construction of community hall (a two storied building over an area of 20 m x 15 m) in various resettlement sites with drinking water post and WC facility.
- **Health care facility:** A plot size measuring 0.25 ha will be suggested to be earmarked for the construction of a Primary Health Centre in the resettlement site with drinking water post and WC facility.

- **Garden and children’s playground:** About 1 ha of land will be devoted for this purpose with amenities like swings, park benches, goal posts, racing track in the play ground.
- **Space for weekly market:** It will also be proposed to allocate 0.15 ha of land in each of the resettlement colonies for weekly market. This area will remain un-developed, where vendors could come in on a weekly basis, set up their temporary shops to sell local produce.

#### **12.4 Measures for rehabilitation**

In the proposed project, majority of the population depends on land for their livelihood. Privately owned land is also expected to be acquired. The exact no. of PAFs shall be assessed during the CEIA study of the link project and appropriate rehabilitation measures would be suggested to the Project Affected Families (PAFs) losing land due to the proposed new storages.

#### **12.5 Local area development plan**

The objective of the plan is to empower families of the fully as well as partially affected villages. Villages which need to be relocated shall be provided Rehabilitation and Resettlement benefits as per the Policy and also other resettlement benefits. Contrarily, it is the project affected families residing in partially affected who are not likely to benefit from the proposed project except for compensation of their acquired properties, which would be mostly part of their lands. Therefore, a Local Area Development Plan shall be framed to extend benefits to not only the residents of the partially affected villages, but also to residents of the villages adjoining to project area which are also within the study area. The following aspects shall be covered under the Local Area Development Plan.

- Educational Facilities
- Health Care and Medical Facilities

- Infrastructure Development
- Economic Development
- Social and Cultural Development

## **12.6 Monitoring and evaluation**

The successful implementation of Rehabilitation and Resettlement Plan of Project Affected People requires continuous monitoring of the programme at different levels. NRRP - 2007 lays provision for appointment of a Commissioner, Rehabilitation and Resettlement and an Administrator, Rehabilitation and Resettlement to ensure smooth and effective land acquisition, implementation of Rehabilitation and Resettlement measures, monitoring of Rehabilitation and Resettlement operations etc. Appropriate institutional arrangement shall be suggested for effective implementation and monitoring of Rehabilitation and Resettlement activities, in tune with the R&R policy in the CEIA study of the link project. Besides, government organizations like Department of Revenue, Rural Development, Agriculture, Forest, Horticulture, Rural Industries etc, shall be contacted for dovetailing their programmes for the economic rehabilitation of Project Affected Families.

## **12.7 Beneficial economic impact**

The increase in income from crop farming with the availability of irrigation facilities is considered as the direct benefit of the project. The changes in income of the other activities of the households in the command areas and consequent changes in total employment are taken as the indirect benefits due to higher benefits in agriculture.

### **12.7.1 Beneficial impacts of the link canal**

The link project would greatly help in improving the general prosperity of the region on account of the following.

- i) Introduction of the irrigation in about 9.45 lakh ha of the area would increase the net value of produce by nearly 4.80 times. This would lead to substantial rise in the average annual income of the local population, as they are mostly dependent on agriculture.
- ii) Agricultural development by introduction of irrigation would give impetus to agro-based, small scale and cottage industries, dairy and poultry development, development of communication network, infrastructural, health and educational facilities, rise in the economic activities, rise in the living standards of the general public and several other aspects of socio-economic development.
- iii) Environmental enhancement of the region on account of the afforestation programmes on the banks of link canal, branch canals and distributaries.
- iv) Adequate protected and fresh assured drinking water supplies to the rural and urban population, major chunk of which is hitherto suffering from acute shortages of potable drinking water.
- v) The link project would create a lot of employment opportunities to the local population during its construction period. The continuous and increased agricultural operations due to irrigation and development in industrial, infrastructural and economic aspects would largely enhance the continued employment opportunities even after construction of the link project.

Typical layout map of rehabilitation colonies, plan of houses for rehabilitation are shown in **Plate 12.1**

### **12.7.2 Employment generation during construction of the project**

The data on employment generation in respect of Upper Ganga Canal Development & Modernization project (Govt. of U.P) has been taken into

consideration for assessing the employment generation in this report. The project is one of the nine irrigation projects considered by the Advisory Group on Expenditure and Employment Generation in Major and Medium Irrigation Projects set up by Central Water Commission (CWC) in their study. As this project suits the scenario of the proposed link canal project in its nature, the employment norm of 35 achieved in this project has been taken into account for arriving at the employment likely to be generated during the construction of the link canal project.

The total estimated cost of the link project is Rs 85962 crore (based on 2020-21 price level). The employment generation potential of the project following the norms as mentioned above will be 85961 personnel per annum in the order of 18155 in the technical and 67806 in the non-technical categories. The technical category comprises of 5699 engineers, 5785 other technical, 6671 skilled and semi - skilled personnel whereas the non - technical category comprises of 51766 un-skilled and 16040 administrative personnel, annually. The manpower outlay is given in **Plate 12.2**.

### **Impact matrix**

An impact matrix of Godavari (Inchampalli) - Cauvery (Grand Anicut) link project including the beneficial/adverse impacts relating to physical, biological and socio-economic aspects is given in **Table 12.17**.

**Table-12.17: Impact matrix of Godavari (Inchampalli) - Cauvery (Grand Anicut) link project**

<b>Impact</b>	<b>Assessment</b>
(i) Sedimentation	No significant additional sedimentation is expected. The available dead storages at Nagarjunasagar and Somasila are considered adequate.
(ii) Seismic	Inconsequential, as no new storage reservoirs are proposed for the link project.
iii) Forest area	A no. of small patches of forests totaling to 2080 ha are



submerged	to be acquired along the link canal to facilitate its construction. Suitable provision has been made in the estimate of the link project for compensatory afforestation.
(iv) Other area submerged	An area of 26767 ha consisting of both private and government land is to be acquired for construction of the link canal. Adequate provision towards cost of land acquisition is kept in the estimate of the link canal.
(vi) Groundwater recharge	The groundwater condition will improve along the link canal and in the command area due to irrigation.
(vii) Natural resources	No submergence of any natural resources of economic importance is anticipated.
viii) Irrigated area	An area of 938152 ha will be provided with irrigation by the link project, which includes stabilization of 507135 ha of existing command.
(ix) Hydro power	4 Units of 30 MW each are proposed to be installed additionally at the head of the link canal in the reach II i.e. from Nagarjunasagar to Somasila. The water after power generation would be flows through the link canal.
x) Historical monuments and archaeological structures	No historical monuments or archeological structures are affected by the construction of the link project.
(xi) Salinity intrusion in delta and estuaries	Lean season flows in adjacent natural drainages will get increased on account of ground water recharge from the link project through irrigation to some extent and this will help in reduction of the salinity intrusion in delta areas.
(xii) Salinity in irrigable area	No serious impact is anticipated, as the water table is considerably below ground level.
(xiii) Water logging	-do-

(xiv) Availability of drinking water	As the link canal is planned for providing domestic water to enroute areas, availability of water for drinking would improve.
(xv) Quantity of water diversion	7000 Mm <sup>3</sup> at the off-take point.
<b>(B) Biological impacts</b>	
(i) Public health aspects	No hazards are expected. Infrastructure for health aspects are likely to improve.
(ii) Wild animals and birds.	No adverse impacts are expected
(iii) Other species.	Increases.
<b>(C) Socio-economic impacts</b>	
(i) Socio-economic aspects.	Tremendous socio-economic development expected.
(ii) Resettlement plans	The resettlement of affected people from 9 partially affected villages on account of construction of the link canal (reach-II) in model colonies with all basic amenities is planned. Adequate provision for R&R is made in the estimate.
(iii) Land acquisition	A total area 29880 ha of land is to be acquired for the purpose of laying the link canal. Suitable provision is made in the project estimate.
(iv) Farmers to be benefited	All the farmers in the command area will get the irrigation facilities.
v) Water quality downstream of storage	Water quality in the streams will improve with the addition to the lean season flows due to irrigation.
(vi) Employment generation	Tremendous potential for employment generation during the construction of the link project and continued large-scale employment opportunities

	thereafter, are expected.
(vii) Infrastructure development	Impetus to various infrastructure development aspects like industries, agricultural and related activities, communications, economic activities, health, education and all other spheres of socio-economic aspects is expected.
(viii) General prosperity	The living standards of the population will improve substantially and the general prosperity of the region would get boosted during and after implementation of the link canal project.