

March 31st 2010

To
Mr V. K. Duggal, IAS (Retd),
Member Secretary,
The SriKrishna Committee
Room No. 248
Vignan Bhavan Annexe
Maulana Azad Road
New Delhi

Dear Sir,

This is a submission to the SriKrishna Committee of the situation regarding irrigation in Telengana over the 53 years 1956-2009.

It is based on official data as published by the Government of Andhra Pradesh. It is small part of the lengthier paper submitted to the *Economic and Political Weekly* for publication. It also deals with earlier periods, where we have data, to put the whole scene in perspective.

It will be useful to remember that agriculture now produces only 30% of the total Telengana income but is the basis for survival of nearly 78% of the Telengana population. For agriculture -especially in the semi-arid tropics - irrigation is a key element in raising land productivity, farmers' incomes and assuring stability of livelihoods.

The combined government owned surface irrigation in Telengana to fall from 1955-56 to 2005-09 shows a secular downward trend losing 2.30 lakh hectares or 5.65 lakh acres! This implies a loss of Rs. 22,600 crores of government investment in Telengana irrigation. This is surely something for which successive Governments should be truly ashamed. It also indicates the neglect of this critical sector while much is being made of the massive irrigation investment by the State government in the Jalayagnam scheme. Serious attention needs to be paid to stabilizing surface irrigation flows in Telengana.

Further, there has obviously been lost production and income to the nation and to Telengana farmers from the non-utilization of these extensive and expensively developed irrigated areas. The consequent loss of ground water recharge, the decline in the water table and the reduction in well-irrigated acreage, further reduce Telengana farmers' incomes from their private irrigation sources.

It is also curious that successive State governments seem to be oblivious of the needs of Telengana region in restoring defunct or damaged tanks and stabilizing canal irrigation. As far as tank irrigation is concerned, the Nizam's Government seems to have done a better job than the "popular" and democratic governments that followed. But where canal irrigation is concerned, democratic governments have done well till 1990-92 but the

momentum was lost thereafter and regained only in 2005-09. Whether this is due to new irrigation capacity coming into use or recovery of old irrigated areas due to better monsoons needs to be examined more closely. On the other hand, the Coastal Andhra region had the benefits of British rule and its investment in irrigation of the Godavari and Krishna Deltas.

Only where well irrigation is concerned, Telengana has done extremely well – largely because its farmers have no other option - though even here much depends on availability of power (free, subsidized or otherwise) and the recharge of water table- which again is dependent on the monsoon and surface irrigation seepage.

Well-irrigated area has grown nine-fold from about 135,000 hectares (in 1955-56) to nearly 12,17,642 hectares (in 2005-2009) overtaking, by far, tank- and also canal irrigation) as the major component in Telengana's total irrigation. The chief component of the growth is in the tube well segment, which is a high cost irrigation- both capital and operating - and is entirely dependent on the availability of water and cost of power

The Jalayagnam package is an interesting one. The lift irrigation components of three of the five projects located in Telengana as well those of another five independent lift irrigation projects together require power of nearly 4,700 MW. The entire funding is to be requested from the Union government for these “national projects”. The power requirement of these Telengana irrigation projects cannot be supplied against the existing generation of 14,000 MW (which is itself insufficient to meet current demand!).

Again, the area to be irrigated by one TMC in Telengana is supposed to irrigate over 30,000 acres while the same volume is estimated to irrigate only 6,000 acres in the Coastal Andhra region! Thus these Telengana projects will have to await Union government clearances and funding and additional generation of power. And if they are realized, the acreage actually irrigated per TMC will be one-fifth of the “planned” figure.

It does not take much to conclude that some very simple and extra-clever sleigh of hand is being undertaken to show larger total allocation and larger irrigable areas for Telengana for which clearances, funding and power back up are unlikely in the future. The figures for Telengana being bandied about need very careful scrutiny.

As far as Rayalaseema is concerned, the more viable and modest-sized 14 projects are to cost Rs. 30,000 crore and are funded entirely from the State budget year-after-year. They also need Karnataka and Union Government approvals and these are not likely in the near future – notwithstanding this, construction is being undertaken. Further, the water for all of them is sourced from the Srisaillam reservoir on the Krishna River, which is expected to supply an additional 300 TMC yearly. This means lower generation of power of which nearly 20% is committed to Telengana well irrigation

Much of Telengana's needs and entitlements of surface irrigation and inter-state rivers seem to have been ignored.

Successive State governments seem to have been too pre-occupied to sort out the problems of Telengana irrigation and too uncertain of their tenure to take a holistic view of the development of the region.

With best regards



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TELENGANA IRRIGATION

BY

GAUTAM PINGLE

This is a submission to the SriKrishna Committee of the situation in Telengana over the 53 years 1956-2009 based on official data as published by the Government of Andhra Pradesh. It is small part of the lengthy paper submitted to the Economic and Political Weekly for publication. It also deal with earlier periods, where we have data, to put the whole scene in perspective

Abstract

In Telengana, during the 53 years (1956-2009) well-irrigated area has grown nine-fold from about 0.14 lakh hectares to nearly 13.0 lakh hectares (overtaking, by far, tank- and also canal irrigation) as the major component in Telengana's total irrigation. The chief component of the growth is in the tube well segment, which is a high cost irrigation- both capital and operating - and is entirely dependent on the availability of water and cost of power.

Meanwhile over the same period Telengana has lost 2.30 lakh hectares of tank irrigation. It would need Rs 22,600 crores invested in new projects to make up this loss. Serious attention needs to be paid to stabilizing surface irrigation flows in Telengana.

Agriculture now produces only 30% of the total Telengana income but is the basis for survival of nearly 78% of the Telengana population. Whatever the future irrigation policy and its implementation, it will need close ground level, local district and regional governmental efforts

“Are the agriculturalists in thy kingdom contended? Are large tanks and lakes constructed all over thy kingdom at proper distances, without agriculture being in thy realm entirely dependent on the showers of heaven?” Narada to Yudhishtira¹,

“Irrigation works are the source of crops; the results of a good shower are ever attained in the case of crops below irrigation works.” Kautilya²

“Virtue and prosperity will increase only when tanks and irrigation canals are constructed and favour shown to poor cultivators in the matter of taxation and services”, Krishna Deva Raya³ (Circa, 1509)

“In comparing socio-economic indicators and Millennium Development Goals, there is an almost perfect correlation between poverty and lack of access to irrigation”. Government of Andhra Pradesh⁴

It will be seen from Table 1 below that the major push in tank irrigation came in the 65-year period 1875-1940, when tank irrigation multiplied ten-fold and total irrigation by seven-fold. On the whole, the Nizam's government can justifiably claim credit for this massive effort and achievement – while restoration of defunct tanks and wells held future promise for State and farmers (footnotes 5 and 33 below). Between 1940 and 1957, however, tank irrigation increased by 14% and total irrigation by 18%.

As Table 1 indicates, over the next five decades or so (1956 – 2009), after the merger of Telangana with Andhra, on the other hand, saw a fall in tank irrigation by about 51% or 2,28,876 hectares (while total irrigation more than doubled).

Table 1. Telangana Tank Irrigated Area

(Hectares)		
Period	Tank Irrigation	Total Irrigation
1875 ⁵	41,000	95,000
1901 ⁶		3,04,423
1920 ⁷	1,39,511	2,75,492
1930 ⁸	2,56,714	4,96,394
1940 ⁹	3,73,684	6,19,433
1955-56 ¹⁰	4,47,000	6,98,000
1970-72	2,84,500	7,04,600
1980-82	3,75,700	10,38,600
1990-92	3,28,900	14,07,500
2001-05	1,65,303	13,44,604
2005-09	2,18,124	16,95,395

Source (unless stated): BES, various

Table 2 gives data for the eight-year period from 2001 to 2009, which shows a sharp and steady decline in tank irrigation in the first four years over the period 1990-92. However, in the last four years (2005-09) there has been a recovery. The average for the period 2001-2005, however, conceals a drastic decline of over 34% within the period- losing nearly another 66,324 hectares!! The average for the period 2005-09 is higher due to better monsoon conditions but not any more stable.

Table 2. Eight -Year Tank Irrigated Area

Year	Hectares
2001-02	1,92,844
2002-03	1,53,090
2003-04	1,88,758
2004-05	1,26,520
4-year Average	1,65,303
2005-06	2,43,855
2006-07	2,29,035
2007-08	1,61,587
2008-09	2,38,019
4-year Average	2,18,124

Source: BES, various

As we have seen, in the last five decades, total tank irrigated area in Telengana has declined by 2,28,876 hectares. At the opportunity cost of Rs 4 lakh per acre or Rs.1.56 lakhs per hectare (the estimated cost of canal irrigation), this is large wastage of capital. What makes it worse is that total irrigated area under all sources, after reaching a peak average of 14,00,000 hectares in 1990-92, has declined to 12,80,000 hectares in 2001-05 and then rose to 16,95,395 hectares in 2005-09. This seems to indicate a shift of priority away from the primacy of tank irrigation in Telengana.

Canal Irrigation

From the year 1956-57, canal irrigation begins to receive attention and funding in Telengana largely During the Nizam's rule, one major irrigation project – Nizamsagar - and several medium schemes were undertaken. The real momentum comes with Independence and assistance from Central Government when giant projects such as Nagarjunasagar were undertaken. As Table 3 indicates, the period 2001-05 has seen a sharp decline by over one-thirds compared to the period 1990-92 when the figure was 3,14, 500 hectares. But the period 2005-09 has, fortunately, seen a stabilization around an average of 2,60,00 hectares.

Table 3. Telengana Canal Irrigated Area

(Hectares)		
Period	Canal	Total Irrigation
1875 ¹¹	7,000	95,000
1901 ¹²		3,04,423
1920 ¹³	27,447	2,75,492
1930 ¹⁴	61,700	4,96,394
1940 ¹⁵	51,417	6,19,433
1955-56 ¹⁶	1,15,000	6,98,000
1970-72	1,88,600	7,04,600
1980-82	2,84,500	10,38,600
1990-92	3,14,500	14,07,500
2001-05	1,62,315	13,44,604
2005-09	2,59,629	16,95,395

Source (unless stated): BES, various

Table 4 shows that the decline in canal irrigation within the period 2001-05 was alarming: it had fallen even more precipitously by 53% or 1,31,887 hectares!!¹⁷ It then improved during 2005-09 to exceed the 2001-02 figures, as old areas recovered under the very favorable monsoon conditions of 2005-06 and slightly less favorable years thereafter.

Thus weather conditions seem to affect canal irrigation also, despite it being thought to act as a guaranteed all-weather irrigation. From what the media reports, the new canal irrigation is yet to materialize.¹⁸ Hopefully, these new acreages will be more stable in future than has been the experience in the past.

Table 4. Eight-Year Canal Irrigation

Year	Hectares
2001-02	2,48,091
2002-03	1,48,815
2003-04	1,36,151
2004-05	1,16,203
4-year Average	1,62,315
2005-06	2,63,422
2006-07	2,79,493
2007-08	2,22,023
2008-09	2,73,579
4-year Average	2,59,629

Source: BES, various

However, the statistics of the Irrigation and CAD Department show an increase in canal irrigation ayacut (major and medium) of 1,18,739 hectares during 2004-07, with nearly 59% or 69,876 hectares coming into being (in use?) in 2006-07.¹⁹ The figures of I&CAD and the BES figures of irrigated acreage (given in the Revenue Department) cannot be reconciled largely because I&CAD reports only “developed” ayacut, which does not immediately (if ever) materialize as irrigated areas available to farmers. However, some un-quantifiable under-utilization seems to be apparent.

The State Government can hardly afford under utilization of expensive investment. At Rs. 4 lakhs per acre or Rs 9.88 lakhs per hectare (estimated for new projects) this is an extraordinary loss of sunken capital and, more so, if they are based on water rights allocated from the inter-state Krishna-Godavari Rivers. However, much interest in the political economy system is devoted to “develop” unused water rights on the Krishna-Godavari and to pre-empt any other state or region demanding a share.

In 1999 it was suggested in AP Vision-2020 that:

“Harnessing water resources as envisaged will require an investment of Rs.1,25,000 crores and power of 9,000 MW. Committing these resources will enable the State to utilize 856 TMC of dependable water and 300 TMC of flood flow water available to the State, 50 percent of which would need to be pumped to a height 100-300 meters to lands situated at higher elevations.”²⁰

The Vision document gave skimpy details²¹:

1. Godavari for Telengana	775 TMC	23.5 lakh acres
2. Krishna for Rayalseema, Telengana, Andhra	Flood flow	8.0 lakh acres
3. Pennar for Andhra and Rayalseema	Flood flow	nil
4. Vamsadra, Janjhavati and Bahuda for Andhra	?	?

Thus, the Vision involved more than 32 lakh acres at the cost of Rs. 1,25,000 crore! This works out to almost Rs. 4 lakhs per acre! This is so only if we take the 9,000 MW as part of the Rs.1,25,000 crore bill²². If not, the total bill would be much higher. Of this estimate, the State has spent already Rs.64,469 crores between 2005-10²³ with little result so far.

While Telengana would benefit from such investment in the region, the high power requirement for pumping water, technical feasibility of pumping large volumes continuously over long periods, inter-state and central clearances, high capital costs and scarce funds would indicate that it is a much better alternative to concentrate on saving and restoring existing canal and tank irrigation and extending new tank irrigation and ensuring higher productivity for well-irrigated land.

However, the Telugu Desam government of Chandra Babu Naidu did very little to achieve this Vision in irrigation. On the other hand, the Congress government under Y.S. Rajasekhara Reddy got going very fast by convincing the Planning Commission for

clearances²⁴. His government began pumping thousands of crores into the Jalayagnam scheme aimed at creating vast acreage of irrigation in Rayalaseema and Telengana. It started irrigation projects, which will take decades to fructify, even if all the funds required for them can be mobilized in time. The use of the EPC method of contracting has its critics and some projects seem not to have been planned to the detail required before being tendered out²⁵. This will result in confusion, further delays and cost overruns. Funding of such a magnitude has put State finances under acute stress.

The Jalayagnam package²⁶ is an interesting one. The lift irrigation components of three of these five projects located in Telengana as well those of another five independent lift irrigation projects together require power of nearly 4,700 MW. The entire funding is to be requested from the Union government for these “national projects”.²⁷ The power requirement of these Telengana irrigation projects cannot be supplied against the existing generation of 14,000 MW (which is itself insufficient to meet current demand!).

Again the area to be irrigated by one TMC in Telengana is supposed to irrigate over 30,000 acres while the same volume is estimated to irrigate only 6,000 acres in the Coastal Andhra region! Thus these Telengana projects will have to await Union government clearances and funding and huge additional generation of power. And if they are realized, the acreage actually irrigated per TMC will be one-fifth of the “planned” figure.

It does not take much to conclude that some very simple and extra-clever sleigh of hand is being undertaken to show larger total allocation and larger irrigable areas for Telengana for which clearances, funding and power back up are unlikely in the future. The figures for Telengana being bandied about need very careful scrutiny²⁸.

As far as Rayalaseema is concerned, the more viable and modest-sized 14 projects are to cost Rs. 30,000 crore and are funded entirely from the State budget year-after-year²⁹. The matter also needs Karnataka and Union Government approvals and these are not likely in the near future – notwithstanding this, construction is being undertaken. Further, the water for all of them is sourced from the Srisaillam reservoir on the Krishna River, which is expected to supply an additional 300 TMC yearly³⁰.

Well Irrigation

Well irrigation has been in existence in Telengana for a long time though the human and animal labour costs of lifting water using traditional devices has been a main hurdle. Even in time of famine in the late 19th Century, well irrigation has been able to hold its own as it relied on ground water³¹. Yet its growth took off only after the electrification program got going and covered village after village. Most, if not all, the investment in wells is privately funded and productivity tends to be high as farmers have flexibility in selection of crop pattern and also cultivate more crops in a year per acre irrigated (and many of them commercial crops of higher value than food crops) than is done under other sources of irrigation³².

Table 5. Telengana Well Irrigation

Period	(Hectares)			
	Open Well	Tube wells	Total well	Total Irrigation
1875 ³³	46,000	-	46,000	95,000
1901 ³⁴				3,04,423
1920 ³⁵	1,08,535		1,08,535	2,75,492
1930 ³⁶	1,77,980		1,77,980	4,96,394
1940 ³⁷	1,94,332		1,94,332	6,19,433
1955-56 ³⁸	1,35,600	-	1,35,600	6,98,000
1970-72	2,10,500	4,000	2,14,500	7,04,600
1980-82	3,32,000	9,400	3,41,400	10,38,600
1990-92	6,24,100	80,300	7,04,400	14,07,500
2001-05	4,73,697	5,00,773	9,74,470	13,44,604
2005-09	5,16,467	6,68,974	12,17,642	16,95,395

Source (unless stated): BES, various

As Table 5 indicates, well-irrigated area has grown nine-fold from about 135,000 hectares (in 1955-56) to nearly 12,17,642 hectares (in 2005-2009) overtaking, by far, tank- and also canal irrigation) as the major component in Telengana's total irrigation. The chief component of the growth is in the tube well segment, which is a high cost irrigation- both capital and operating - and is entirely dependent on the availability of water and cost of power. Table 6 shows a secular growth of well irrigation over the eight-year period.

Table 6. Eight-Year Well Irrigation

Year	(Hectares)		
	Open wells	Tube wells	Total
2001-02	5,45,551	4,85,642	10,31,193
2002-03	4,42,472	4,85,238	9,26,710
2003-04	4,46,281	4,96,739	9,43,020
2004-05	4,60,483	5,35,474	9,95,957
4-year Average	4,73,697	5,00,773	9,74,220
2005-06	4,76,136	6,21,264	10,97,400
2006-07	4,93,430	6,55,222	11,48,652
2007-08	N.A	N.A.	13,14,243
2008-09	5,79,837	7,30,437	13,10,274
4-year Average	5,16,467	6,68,974	12,17,642

Source: BES, various

Left to their own deserts by the Government, Telengana farmers have invested their capital in digging or boring wells, fitting pump sets and laying pipelines to bring water to

their fields. The only concession given to well-irrigation farmers is recent – since 2004 – that of providing free power to their wells. This power, however, is given when no one else wants or needs it – mostly at unearthly hours—and a low quality (below 230 volts). With free power being doled out in two shifts, one in the night, farmers say their crops are withering due to poor timing of power supply.

Table 7. Power for Well Irrigation in Telengana

	No: of connections in lakhs (% of state total)	Connected load (MW) (% of state total)
As of 31.03.2004	13.82 (60)	4,320 (52)
As of 31.03.2009	15.66 (58)	5,447 (53)

Source. BES: 2005, 2009

However, as Table 7 indicates, due to free power announced by the Congress government in 2004 and due to the inadequate rainfall, the number of connections in Telengana in 2009 increased by 13% over 2004, while connected load (not necessarily power consumption) increased over the same period by 26%. This indicates how important cost of power is for accelerating well irrigation in the absence of adequate surface irrigation.

The State government is said to provide seven-hours of free power daily to farmers and this accounts for 40 per cent of State’s total power consumption³⁹. How anyone can calculate this, without metering at the user end, is a mystery that has yet to be solved. Basically it is suspected that whatever the power utility cannot account for - either theft by industry or residential users or losses in line transmission seem to be attributed to “free power” and billed to the State government.

Much of the well irrigation depends on the condition of the water table. As far as ground water depletion is concerned nearly 54% of the 462 basins in Telengana have been declared as “safe”, while 18% are “over exploited” and 28 % are “critical” or “semi-critical”⁴⁰. Evidence indicates that the water table is falling and with the decline in surface irrigation – largely of tanks but also of canals- recharge of the water table depends almost entirely on the monsoon. Telengana overlies a shallow rock region and where over-extraction does not necessarily involve long-term groundwater loss. Shallow aquifers of this region can be quickly recharged by one or two wet years or by safeguarding existing tank irrigation sources, which are widespread in Telengana⁴¹. If tank irrigation were not so badly affected, the recharge of ground water would have been much better and thus allowing well irrigation to expand further.

Conclusion

It will be useful to remember that agriculture now produces only 30% of the total Telengana income but is the basis for survival of nearly 78% of the Telengana population. For agriculture -especially in the semi-arid tropics - irrigation is a key element in raising land productivity, farmers’ incomes and assuring stability of livelihoods.

The combined government owned tank irrigation in Telengana fell from 1955-56 to 2005-09 losing 2.30 lakh hectares or 5.65 lakh acres! This is surely something for which successive Governments should be truly ashamed, as it would need Rs 22,600 crores invested in new projects to make up the loss in this irrigated acreage. Serious attention needs to be paid to stabilizing tank, and also canal, irrigation flows in Telengana.

Further, there has been obviously lost production and income to the nation and to Telengana farmers from the non-utilization of these extensive and expensively developed irrigated areas. The consequent loss of ground water recharge, the decline in the water table and the reduction in well-irrigated acreage, further reduce Telengana farmers' incomes from their private irrigation sources.

It is also curious that successive State governments seem to be oblivious of the needs of Telengana region in restoring defunct or damaged tanks and stabilizing canal irrigation. As far as tank irrigation is concerned, the Nizam's Government seems to have done a better job than the "popular" and democratic governments that followed. As far as canal irrigation is concerned, democratic governments have done well till 1990-92 but the momentum was lost thereafter and regained only in 2005-09. Whether this is due to new irrigation capacity coming into use or recovery of old irrigated areas due to better monsoons needs to be examined more closely⁴². On the other hand, the Coastal Andhra region had the benefits of British rule and its investment in irrigation of the Godavari and Krishna Deltas⁴³.

Much of Telengana's needs and entitlements of surface irrigation and inter-state rivers seem to have been ignored. Only where well irrigation is concerned, Telengana has done extremely well – largely because its farmers have no other option - though even here much depends on availability of power (free, subsidized or otherwise) and the recharge of water table- which again is dependent on the monsoon and surface irrigation seepage.

Successive State governments seem to have been too pre-occupied to sort out the problems of Telengana irrigation and too uncertain of their tenure to take a holistic view of the development of the region. What is obviously needed is to move the level of enquiry, data collection, analysis, intervention and investment to a lower level - at least at district level, if not lower - and devise irrigation plans, especially for tank and well-irrigation, conducive to the weather, geography and soils conditions in the region. Too much attention of the political- bureaucratic system has been paid to huge investments in inter-state river projects, which take too long to complete and involve considerable fund mobilization - a significant part of which may be subject to diversion and distortion. What is needed is a more farmer-centric approach compared to the political-bureaucratic-contractor system that now dominates irrigation policy in the State and – or even as some would say - ignores the basic needs of the farming community.

Whatever the future policy and its implementation, it will need close ground-level, local district and regional governmental efforts to balance the delicate surface and ground water situation with the need for farmers to access irrigation in order to improve their livelihoods and raise their incomes.

¹Ganguli, 2001,Vol.II, Sabha Parva, p.12.

² Shamasastri, 1915, p.374.

³ Appadorai, 1936,vol: II, p.668

⁴ Commissioner, Command Area Development, Government of Andhra Pradesh, 2010, p.7.

⁵ Ali, 1898, p.31. He also says: “But in order to get at the correct figures, the area should be increased by 50-25% to cover the difference between the correct area and the area entered in Patwari’s records from which the above statements have been taken and a 25% for double cropped area.”p.32. He reports on a survey of 14 villages in Tekmal Taluq of Medak District the differences between the record and actual ground position was an increase of 263% for irrigated land and 1635 for un-irrigated land (p.113). He also says that: “There are about 18,089 large tanks in Telengana , of which 4,924 are in use and about 3,165 are out of repair. Besides these, there are 10,110 small tanks, of which 5,616 are in use and 4,494 are out of repair. If these were put in through repair about 1,000,000 acres (405,000 ha.) of land would be irrigated”(pp.33-34)

⁶ The figures for 1901 are given in total irrigation for Telengana as 304,324 hectares, with 18,969 tanks and 58,001 wells. Figures were given in square miles for each district. Government of India (1909), see section for each district.

⁷ Pavier, 1981, p.23 , Quershi, 1947, pp. 94-96

⁸ Ibid.

⁹ Ibid.

¹⁰ Sree Rama Sastry, n.d., Table 3, p.62

¹¹ Ali, 1879, p.31.

¹² The figures for 1901 are given in total irrigation for Telengana as 304,324 hectares, with 18,969 tanks and 58,001 wells. Figures were given in square miles for each district. Government of India (1909), see section for each district

¹³ Pavier, 1981, p.23 , Quershi, 1947, pp. 94-96

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Sree Rama Sastry, n.d., Table 3, p.62

¹⁷ That this should be the result of spending Rs 62,998 crores on Major and Medium irrigation during the period 1956-1997 (from the Second to the Eighth Plan) is extraordinary. The expenditure figure for 2005-10 is almost the same!

¹⁸ The Chief Minister is reported to have stated that despite the fiscal troubles, the State Government has decided to complete 39 irrigation projects costing about Rs 6,900 crore during the 2010-11 financial year. The projects, which are in the final stages of completion under Jalayagnam, will be taken up on a priority basis, the objective being 'least effort and maximum benefit'. Chief Minister K Rosaiah today directed the officials to complete the projects on a priority basis by March next year. On completion, the projects will provide irrigation facility to about 14.33 lakh acres of new ayacut. New Indian Express, 16th March 2010.

¹⁹ Irrigation & CAD Department, 2010

²⁰ Government of Andhra Pradesh, 1999, p.174

²¹ Ibid., p.171-172

²² Current generating capacity is 14,047 MW and is insufficient to meet current demand. GoAP (2010b), p.23

²³ See Government of Andhra Pradesh, 2010a, Table 17, p.38

²⁴ The present Chief Minister of Andhra Pradesh is reported to have said that: "When I accompanied the late Chief Minister to New Delhi in 2005, Planning Commission Members put their foot down on the concept of Jalayagnam. However, within a short time they changed their view based on the necessity and urgency as presented by the State" (Times of India, March 18th, 2010). What persuasive skills were used is not mentioned!

²⁵ Allegations of poor planning, mismanagement of tender process, favoritism and outright corruption have been laid by Opposition parties and demands for an investigation are pending with Government of India. Two of the contracting parties are Maytas Infra and Maducon Projects [H<http://www.maytasinfra.com/html/water.html>](http://www.maytasinfra.com/html/water.html) and [H<http://madhucon.com/completedirrigation.html>](http://madhucon.com/completedirrigation.html) (Both accessed on 24.03.2010).

²⁶ "Jalayagnam programme to complete 32 major and 17 medium irrigation projects at a cost of Rs. 65,000 crores to provide irrigation to an extent of 71 lakh acres besides stabilization of an existing ayacut of 21.32 lakh acres while providing drinking water to a population of 1.2 crore and generating power to the tune of 2700 MW. Eight of these projects were to be completed before the kharif season of 2006." Jalayagnam website.

²⁷ "The most expensive of the projects are the lift irrigation projects intended to irrigate the dry Telangana region and supply water to the Anantapur-Ongole-Mehaboobnagar area which is "turning into a desert". With the land level being 300 metres above the water level, lift irrigation is supposed to be the only way out to take water to the dry region. Currently, 3,000 tmc water from Godavari is wasted into the sea as the land is at a higher elevation. For the first time in the post-independence era, the Congress government took up linking of Godavari and Krishna by constructing Indira Sagar Project and Rajiv Sagar project across River Godavari. By executing projects like Rajiv Sagar, Indira Sagar flood flow canal, SRSP Phase-II and so on, 21 lakh acres of parched land in Telangana region would be made fertile." Jalayagnam website.

²⁸ In the Budget Speech for 2010, The Chief Minister (as Finance Minister) stated on February 10,2010, the following: "The Government has taken up Major, Medium and Minor Irrigation projects in a big way under the "Jalayagnam" programme to utilize every drop of water in the

State for agriculture and drinking water purposes. Where it is not possible to command the area by gravity, lift irrigation schemes are being taken up to benefit the backward and drought prone areas. The State Government aims at completing 86 Major and Medium Irrigation Projects besides taking up programmes for raising Flood Banks, Modernization of Delta and Lift Irrigation Schemes with an ultimate objective of creating new Irrigation Potential of 98.41 lakh acres, besides stabilization of 22.26 lakh acres. During 2004-05 to 2008-09, as part of “Jalayagnam” programme an additional irrigation potential of 19.26 lakh acres was created in addition to providing stabilization of 3.09 lakh acres. GoAP (2010b), p.8. The Budget Estimate Allocation for 2010-11 is Rs 19,708 crores for Major and Medium Irrigation and Rs 2,074 crores for minor irrigation. GoAP (2010a), Table 17, p.38 (emphasis added).

²⁹ The total amount spent out of the State Budget between 2005-10 on Major and Medium Irrigation projects works out to Rs 64,469 crores. GoAP (2010a), Table 17, p.38.

³⁰ Srisailem is already overtaxed with having to generate power, supply existing irrigation to Rayalaseema and act as a balancing reservoir for Nagarjuna Sagar project downstream and (thereafter) the Krishna Delta. The Srisailem reservoir, therefore, has to be maintained at a high enough water level to allow water to flow into the Rayalaseema canals. Consequently, this means power generation and releases into the Krishna River towards Nagarjuna Sagar and the Delta will have to suffer. Keeping Srisailem at full reservoir level increases the risk of catastrophe due to dam breaks for the Nalgonda, Vijayawada-Guntur and Krishna Delta and its high density populated areas in eight districts, 108 mandals and 12 lakh hectares of area. (Commissioner, CAD, 2010, p.82.) This nearly took place in the unprecedented flood of August 2009 while Srisailem was kept at full reservoir level to facilitate Rayalaseema irrigation. The situation resulted in Srisailem backwaters flooding Kurnool and Alampur towns and more extensive damage along the Krishna and Tungabhadra river valleys further upstream of Srisailem. Fortunately, the dam itself, despite full and emergency releases into the river (and after giving everyone a fright), held and, fortunately, the flood eased off. The releases too had to held-up as downstream Nagarjunasagar project was nearing its full capacity and more release from there would inevitable flood high population density areas of Vijayawada and Guntur agglomerations and the Delta itself. Coordination and synchronization of the Krishna flows needs to be based solely on technical parameters of dam safety, irrigation and power generation. This requires integrated releases by Maharashtra, Karnataka and Andhra Pradesh – and by Telengana and Rayalaseema States (when they are formed) – if the entire valley and the Coastal Delta of the Krishna are to have predictable and flood free river flows and secure irrigation.

³¹ Ali, 1879, p.31

³² Pingle, 1976, Table 11, p.103 and p.212-215. In this statistically representative sample survey of 564 farms in 1970-71, it was found that even by using five different methodological analyses well irrigation showed higher per acre returns. These relative rankings are not likely to change by much even as the absolute figure will alter due to price and other changes.

Returns to Irrigation in Telangana (1970-71) (Rs. /Acre)

	Canal	Tank	Well
Gross Output	720	703	805
Business Income	425	454	520
Net Profit	74	82	103
Production Function analysis	102	108	239
Net Profit by Linear Programming	215	257	985

³³ “In the Telengana districts there are in all 52,685 wells, of which 33,851 are in use and about 18,834 are out of repair. If these were put in repair an area of about 210,740 acres (85,000 ha.) at the rate of 4 acres per well would in like manner be completely protected in a season of drought. This area would on average yield about 225,792 tons of grain which would support a population of 91,000.” Ali,1879, p.33. The areas under well irrigation were remarkable stable during the famine period, 1875-1877

³⁴ The figures for 1901 are given in total irrigation for Telengana as 304,324 hectares, with 18,969 tanks and 58,001 wells. Government of India (1909). Figures were given in square miles for each district - see section for each district

³⁵ Pavier, 1981, p.23 , Quershi, 1947, pp. 94-96

³⁶ Ibid.

³⁷ Ibid.

³⁸ Sree Rama Sastry, n.d., Table 3, p.62

³⁹ BSE 2005, Table 10, p.222; BSE 2009, Table 10.8, p.264

⁴⁰ Groundwater Department – figures are for 2007

⁴¹ [Fishman, R.H](#) et al, 2009

⁴² The Chief Minister of Andhra Pradesh in a press interview is supposed to have stated that: “During 2004-09 about 570,000 acres (230,000 hectares) of new ayacut was brought under minor irrigation and another 10,00,000 acres (405,000 hectares) stabilized”(emphasis added). New Indian Express, 16th March 2010. As is seen from official records cited in our paper; if it did, it certainly did not happen in the Telengana region.

⁴³ In the Godavari and Krishna Deltas the construction of annicuts in the mid-nineteenth century on the initiative of Sir Arthur Cotton and his associates under the rule of the East India Company ensured that these areas (hitherto famine ridden) became the basis of the high population densities and culture and civilization of the Coastal Andhra area – especially those of the Central Delta districts. That such a massive effort should be undertaken by a foreign joint-stock Company - which profited from the investment it made here - is a remarkable example for democratic and popular governments of today. It is little wonder that Sir Arthur is revered to the extent of being worshipped today by the population in the Delta as a demi-god.

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