WORLD BANK STUDY ON POWER SUPPLY TO AGRICULTURE IN INDIA: CASE STUDIES OF HARYANA AND ANDHRA PRADESH --- REVIEW BY G. NARENDRANATH and DR.UMA SHANKARI

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"After almost a decade of high – level effort to bring the charges (tariffs) that farmers pay for electricity more nearly into line with the costs of supply, India has barely made a dent in the long standing and increasingly uneconomical practice of subsidizing power to agricultural consumers for irrigation. Progress has been slowed by the understandable but misplaced concern that higher tariffs would harm farmers- and that the injured parties would take political revenge on the reformers. This study seeks to dispel that anxiety." The Report further claims, 'The impact of electricity tariffs on farming costs now and in a hypothetical future of improved service has never been studied in detail. This report seeks to fill the void."

The report finds that "subsidies expected to benefit the poor farmers in fact benefit the large farmers and pilferers of power, many of them not being farmers" (1.13 of Summary Report). The Report concludes "Over the medium term, farmers' income would increase if quality of power supply was improved partially financed through higher tariffs. Marginal and small farmers' incomes stand to gain even more from an improvement in the power supply conditions at higher tariffs" (para 3 of Summary Report) .

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Considerable effort has gone into the study and the results have confirmed many of the fears and misgivings about supply of power to agriculture such as:

1. Power consumption by farmers is much less than what has been reported officially -only 36% of reported figure of 12,469kWh/pump, i.e.2, 463 hours per farmer per year for FY2000 in case of Haryana (HN). Figures not given for Andhra Pradesh (AP).(2.10 of Summary Report)
2. Transmission and distribution losses, mostly pilferage under reported. In the case of Haryana it is estimated to be as high as 47% and not 37% as per official estimates. Figures for AP not given.
3. Poor quality of power supplied, voltage fluctuations, power cuts, transformer breakdowns, etc. leading to motor burn outs and loss of crop yields resulting in heavy losses to farmers. In Haryana these add to the tariff by 23 to 33% and in AP by 80 to 110%.(3.3)
4. Electricity tariffs by themselves form only a very small part of the gross income. In Haryana it is only 9% of the gross income while in AP it is only 4.5% (3.18). But if one were to include the fixed costs of sinking a well, installing a pump, repairs and maintenance, irrigation costs go up to

25% in HN and 36% in AP. For the marginal farmers it is as high as 64% of total costs in AP and 38% in Haryana. Most farmers have only one pump or share a pump. In AP 96 % have only one pump each. In HN 43% have one pump and 46% share a pump.(Table3.4)

5. Farmers using diesel pumps incur highest expenditure at 31% of gross income in HN compared to 25% for electric pump user and only 0.5% for canal users. In AP the comparative figures are 48% for diesel users 36% for electric pump users, and 4-5% for canal users.

6. That there is large scale under – reporting by farmers of actual load of motors.

Despite the above confirmations there are serious problems with the study both in terms of the questions it has raised (and not raised) and the conclusions it has drawn.

Computing the cost of cultivation

a) The major problem with the study is with regard to the manner of computing costs and incomes of farmers cultivating various crops. Nowhere is mentioned – neither in HN study nor in AP study nor in the volume 4 on "Methodological framework and Sampling Procedures Report " is mentioned how the costs of various inputs been computed. Despite higher investment and irrigation cost (25% in HN and 36% in AP) it is intriguing how the annual net farm income for electric(and diesel pump) owners is higher than those using canal water at almost no cost. In the case of electric pumps, one is not sure what has gone into fixed costs. The cost of digging an open well is different from sinking a 4" in-well bore and later abandoning it for deeper bore-well of 6.5" and abandoning it for a still deeper well; again once it fails, install a more powerful motor and higher stage pump. In other words, the "life" of the bore-well, and the average extent it can irrigate, the frequency of bore well failures, and the time taken on an average for a bore well to dry up- all these have to be taken into fixed costs as these are actual expenses incurred and most often money is raised from private sources at high interest (in HN hardly 9% of the finance has come from official sources).

   To have an idea of what happens when the water table goes down in times of drought and when farmers get desperate to save their crops----in our own Panchayat consisting of just 250 families, 20 farmers sank 27 borewells within a span of 2 months!—of which 10 failed to strike water! At an average depth of about 300 ft at Rs. 50 per ft, each well costs about Rs. 15,000. Twenty seven borewells cost around Rs. 4.2 lakhs. Two of these farmers are large farmers, 19medium, 5small and 1 marginal. (See Annexure 2).

b) Further it has been stated that the cost of family labor and land are not taken into account while calculating the net income. The argument that opportunity cost is nil for the farmer is a colonial hangover at best and an exploitative intellectual ploy at worst. First some sections of people are kept at the bare minimum survival level and then it is said that their labor has no opportunity cost!

Will the World Bank academics cost themselves so? The reality is that farmers often feel they would be better off as agricultural workers who earn more in some areas than the farmers! The point is that energy and agriculture experts who have conducted these studies should have made these costing exercises transparent. As of mow we have no way to check how they have arrived at the gross and net incomes.

We enclose herewith details of cost of cultivation of three major crops in Chittoor district of AP viz paddy, sugarcane and groundnut as of FY 2000 (annexure1). We find there is a net deficit of Rs.13,475 in growing sugarcane, of Rs.9,725 in paddy, and a slender profit of Rs.125 in ground nut. This is in spite of not taking into account depreciation of farm implements, risk factor, etc. It is by excluding such factors (not costing land, family labor, management charges, expenditure on failed bore-wells, not costing the seed when using one's own seed, etc. that the farmers are able to exhibit an apparent "profit." These figures are for Chittoor district of AP and they vary according to price fluctuations and many concomitant variables like weather, transport and storage facilities.

c) Another significant variable the surveyors have failed to elicit is the rampant phenomenon of undeclared tenancy, which ranges between 40% to 80% of large and medium holdings and at times even small holdings. Given the un-remunerative nature of agriculture, the landowner finds it less loss making to lease out land so that some of the labor costs and risks are shifted on to the tenant. As for the tenants, who are largely landless laborers, tenancy meets the minimum needs of food and cash. It is invariably supplemented with daily wage earnings. Under these circumstances, the farmer is barely able to keep his neck above water (of debts). Any further addition to his costs he will fiercely resist unless he is assured of a corresponding return in income.

The entire exercise in HN and AP seems to orchestrate to an already set tune: That with more efficient supply of power, farmers will be saved from current indirect expenditures on burnt motors, transformers, and consequent loss of crops, that farmers will therefore be willing to pay higher tariff for assured quality power, which in the not so long run will be profitable to the farmer even if the current tariffs are raised by 5 to 10 times (!), to the level of cost to serve. To underscore this point the studies have also tried to demonstrate how profitable electric power driven farming is, way above even canal irrigated crops.

An Unsustainable System

Before going into this barely concealed tautological argument it would be worthwhile to consider the wider dimensions of the pump driven technology. Although it sounds elemental it is useful to

remember that plants and trees does not need electricity for their survival (unlike say, the computer which cannot "breathe" without electricity). They need sun, water, and soil for their survival. It is our failure to properly manage our water resources that has brought about the power crisis in agriculture. Pump driven technology, either electric or diesel comes into the picture to supply water where surface irrigation proves inadequate.*1

As things stand today we have grossly neglected our traditional tank irrigation and water management systems (only barely beginning to recognize their value) and rushed into construction massive irrigation projects across big rivers without much thought to the distribution of waters and the necessary provision for drainage of these waters. With the result that much of the dammed water is never reaches anywhere close to the tall claims of the original planners. Across the country, these big dams present a sorry spectacle, with those close to the canals using more water than they should and the tail enders left to fend for themselves. Through seepage and bad drainage there is often much water logging as experienced in several parts of Punjab and Haryana, forcing farmers in these areas to go in for crops amenable to such situations (such as paddy). Although canal water is supposed to assure a timely and adequate supply of water, apart from water logging through seepage and bad drainage there are problems of dependency on the regulating officials and timely supply of sufficient quantities of water. It is to overcome such bottle necks that farmers even in canal irrigated areas have taken to irrigation pumps which frees them from such dependency.

Putting the cart before the horse

The Haryana case study is a typical example of how our planners instead of looking at a problem squarely in the face and analyzing the root causes are trying to cure the symptoms of the disease. Despite poor rainfall Haryana is endowed with a system of irrigation canals covering 75% of the state. Due to faulty planning and poor maintenance the canals are unable to serve more than 50% of the area. The rest of the area, including even some of the area serviced by canals is being served by groundwater tapped through open and bore walls. If adequate attention was paid to restoring and extending the canal system, checking seepage, and ensuring proper drainage, substantial extent of the potential of 80% of area declared to be under canal network would be realized. Investment in this sector would then free the state and the farmers of the burden of dependency on electric and diesel power. (As things stand, as per the report (Page 7 of 8 of Annex.I) between FY 1982 and FY 1996 net irrigated area increased by 23% of which 60% was by tapping ground water in the private sector.

Trapping groundwater with subsidized power provided by the state has only encouraged indiscriminate sinking of bore wells by farmers and over exploitation of ground water beyond recharging capacity (See Table A 1.5 of Annex 1 of Haryana case study). As of 1995, 40 blocks out of 107 have been declared dark areas with another 17 on the gray list. Except for those areas close to the canals where ground water is recharged with canal water seepage, the rest of the blocks are soon to

follow this path not “in the long run” as mentioned in the report but in say 5 to 6 years if the present trend continues.*2

Thus how to rationally use the various water resources in the state, saving and recovering lost soils, using least possible pump energy for agriculture is the main issue of agriculture in Haryana. Reforms of power, cropping patterns, state subsidies and near monopoly purchase of food grains, mechanization of farming, usage of chemical fertilizers and pesticides etc., have to be understood and under taken within this overall framework of efficient and sustainable land and water usage**.***3 Therefore urgent reforms are necessary. However, a surgical withdrawal of state subsidies, state control and state role and given free play to market forces has not been and cannot be the one point panacea for all these ills. The situation calls for a multi pronged approach stretched over a period and most importantly by taking the affected (likely to be affected) people into confidence and at minimal suffering to them.

Upland Farming Bind

The reports reveal that electric powered irrigation involves higher costs compared to canal irrigation (25%vs.5%in HN and 36% vs 4% in AP- see Table 3.15 and 3.16 of Summary Report).However the net farm income per farm on average in HN is more or less the same for canal users (64,410) and electric pump users(62,700-Table 3.17) In AP in contrast, the net income of electric pump farmers is roughly three times that of canal users! (Rs.1,00,730 as against Rs. 33,560 per hectare for canal users-Table 3.18 of Summary Report) As discussed earlier, while pump driven farming may make for more intensive cultivation, the high costs and risks associated with ground water based farming is not reflected in the report. We can say this with confidence, not only from our own experience as practicing farmers living in the grey area of Chittoor district but also from the reports on the tragic suicides of cotton farmers of Telengana trying to emulate the canal users. We suspect that the reports have not taken into account the high degree of failure of bore wells especially as the water table goes down (beyond its recharging capacity). A comparison has been circumvented as both the HN and AP studies do not reveal how they have calculated the cost of cultivation. Figures have not been shown in rupees but in percentage terms, which do not express the ground realities effectively.

Despite the rather expensive and not so remunerative character of pump irrigation, farmers especially of upland areas have shown a great inclination for electric pump irrigated farming. And the demand under present circumstances appears likely to grow (Most of the diesel pump farmers are potential electric farmers). This is because the farmers in the upland areas are caught in a bind. Traditional dry land farming is prone to high risk. Within a span of five years there could be two years of normal rainfall and two years of drought and one year of plentiful rains. Besides, prices and yields of rain fed crops are extremely low. In sharp contrast, irrigated crops will mean, despite the risks and efforts, three times more income in Haryana (62,700 against Rs.20,730) and A. P. (three and half times) (Rs

1,00,730 against Rs 28,490) (See tables 3.17 and 3,18 of summary). It must be remembered that in years of rain failure or untimely rains the returns in rainfed farming could be negative. This explains the desperation of the farmers in upland regions to go in for pump irrigated farming. Further, with no or little hope of state sponsored irrigation ever reaching them and the scope of pump irrigation freeing the individual farmer from collective obligations in maintaining traditional water harvesting systems (such as channel repair work and maintenance of tanks), the upland farmer feels it is a do or die battle for him, between prosperity and poverty and is willing to go to any lengths to sustain (and increase) his land under irrigation. Thus he enters the gambling den of pump irrigated agriculture where the stakes can at times be very high. For instance, for the tomato farmer in Chittoor district with an investment of Rs. 25, 000 to Rs. 40, 000/- per acre in cultivation costs (not taking fixed costs into account) he can reap anywhere between one to three lakhs within four months depending upon the price of tomato ranging between Rs. 5/- an Rs. 12/-per kg. If there is a slump, as it often happens, (below Rs. 3/ per Kg to as low as 10 paise per kg) he loses everything.. Thus farmers in Madanapalle region (chittoor dist., AP) have virtually converted entire area into a dark region as far as ground water is concerned, pumping their money (often borrowed) into sinking more and more and deeper and deeper bore wells, using heavy doses of fertilizers and chemicals and denuding whatever is left of the forests scouting for sticks to support the heavy tomato crops. It is in the light of this scenario that one has to assess not only the profitability but even the desirability of pump driven irrigated agriculture.

As mentioned earlier, in our own panchayat, which is in a grey region 27 borewells were sunk in the last two drought stricken months by farmers desperate for water to save their crops. (of which 14 have failed). In the neighbouring village (50 households) 18 borewells were sunk of which 10 were successful, at an average depth of around 300 feet but all within a close range of each other and are sure to go dry sooner or later if rains don't come to the rescue (See Annex 2).

In other words these upland farmers desperate to sustain their (unsustainable) irrigation, making heavy investments in borewells on a continuous basis, are in no mood to pay more for power at higher rates. Nor will they trust the Government on its promises. In an atmosphere of competing political interests, with opposition parties promising 'free' electricity, there is little hope of such econometric exercises succeeding. Farmers will oppose any attempt to fix meters as they suspect that this will be one measure being introduced, although with concessional rates initially, would ultimately mean high rates for them. Where they cannot resist or if meters are installed against their wish this will only result in their colluding with the maintenance staff to make the meters non - functional (faulty). Given the large spread of the area across which the service connections are given it is easy to make the system non – functional. Even the best meters will not work if the consumers are unwilling.

The Haryana study "finds farmers willingness to pay for improved availability quite high, especially among small and marginal farmers… According to these estimates, marginal and small farmers are

willing to pay between Rs. 9, 400 to to Rs. 9, 700 for an additional hour/day increase in availability of power (Table 4.1) in the short run ….. while the willingness among medium and large farmers to pay for improvements in reliability (rather than availability) of power supply is quite high … A simulation study revealed that " matching agricultural tariff increases with improvements in quality would actually benefit farmers. At a slow reform pace (Scenario II), incorporating improvements in availability, increased speed in transformer repair and improvements in quality of power supply so that motor burn outs are fewer, farm incomes of small and marginal farmer are expected to increase by 47% to 48% in the medium term (6 years), with a (phased) 473% increase in agricultural tariffs (Table 4.3); farm incomes of medium and large farmers will also increase by 12 to 18%. Under a more accelerated reform scenario with the same phased 473% increase in agricultural tariffs but a more rapid improvements in power supply over 6 years (scenario III), farm incomes of small and marginal farmers increase significantly by 100% to 121% while incomes of medium and large farmers increase by about 37% to 48%. Increasing agricultural tariffs (while allowing power supply conditions to continue to deteriorate (scenario I) would be so detrimental that the income of medium and large farmers would decline by 46% to 55% while small and marginal farmers would find the use of electric pumps no longer sustainable." But the econometric analysis has skipped to explain that the table analyzed above also reveals that under Scenario II with aggressive tariff increase (to the actual level of cost to serve) of 1335% (i.e about 13 times the present tariff rates) the small and marginal farmers would be losing in net farm income by 2 to 3% and medium and large farmers by about 14 to 20% .

These kinds of exercises treat all other factors as constant. But the truth of the matter is that most of the other factors affecting the farmer and the agriculture scene are quite dynamic….. the rapid decrease in the water table, growing water logging and sodicity of soils, increase in cost of inputs, especially fertilizers and pesticides, and diesel with withdrawal of all subsidies, un-remunerative support price and withdrawal of state procurement (all these are part of the world bank suggested reforms). Not recognizing the crisis in the agriculture sector and (treating such factors as constant or non-existent) will reduce such studies to a farce and as only legitimizing exercises for predetermined agendas.

Strategies for increasing the tariffs

The summary report suggests three alternate strategies

1 "A gradual approach putting improvements in service ahead of tariff adjustments…. Substantial resources would need to come from other sources to continue to subsidize farmers and to finance the initial investments required to improve quality."

2 "An aggressive approach making efficiency improvements and tariff increase in parallel and at rapid pace. This would likely require initial increases in agricultural tariffs to start improving the financial condition of the utilities and facilitate privatization of distribution, even before the improvements in quality of services are perceptible."

3 "A selective geographic approach with efficiency improvements and tariff increases closely associated and implemented in specific areas of the state."

The report also speaks of complementary measures: other structural reforms to be implemented by the Government simultaneously in the agricultural sector as a whole to facilitate the reforms in the power sector vis – a – vis agriculture. Such as canal water pricing- "price incentives through increased investments in rural infrastructure and delivery of agricultural support services and safety nets, would improve returns to agricultural production and mitigate the impact of raising electricity tariff, mechanism for workable collective self-enforcement to regulate the use and extraction of ground water resources."

Given the current state of affairs and the political climate, it is most likely that most state governments will speak of the second alternative but opt for the first or third or a combination of 1st and 3rd options. The credibility of governments being poor their attempts to convince the farmers and opposition parties to substantial increases in tariffs for agriculture sector and metering are bound to boomerang. They will also continue to pay lip service to water conservation measures involving ground water.

The World Bank's structural reforms involving greater market access to agricultural products and to compete with international players spells doom for the millions of small and marginal farmers who will increasingly find their agricultural practices unsustainable, forced to lease out or to sell their lands and join the army of "free labor" whose ranks are already swollen by the hundreds of workers from factories closed down across the country unable to compete with big multinationals.*4

The Way Out

It would be unfair to end this review here without offering any alternatives to cope with the power crisis in agriculture. It is nobody's case that an industry which is able to bill only 40% of its produce will ever be able to break even. Around 15 to 20% of the power generated is being pilfered. Technical losses due to poor quality of transmission and distribution results in a loss of a further 15 to 20%. Agriculture accounts for around 15 to 20% in states like A. P., Karnataka, M. P. Maharashtra,

Tamilnadu, Gujarat, Punjab, Rajasthan, UP and Haryana although official estimates for these states are between 27 to 49% (It is common knowledge that much of the power consumption reported under un-metered agriculture consumption is actually pilferage) – as reported in the current Haryana case study).

Farmers unions across the country have argued that if pilferage is checked and technical quality of power supplied (dependability) is improved power utilities will be able to turn the corner without with drawing subsidies to the agriculture sector. Besides, they argue, while the state has given step motherly treatment to upland farmers in respect of producing high yielding varieties of dry crops, assuring them of remunerative prices, neglecting traditional water harvesting systems, and given up attempts to spread canal irrigation to upland areas (where possible) the farmers of these areas have been left to fend for themselves and unlike those in the plains paying nominal amounts for usage of normal water from dams constructed with public money. The farmers of upland areas are investing mostly private money, often borrowed at high interest, to sink borewells costing on an average about Rs. 100, 000/- per service. They therefore demand that the state provide them electric power "free of cost" even as has failed to provide them with water. A second line of argument demands, that while the state has been unable to give them water through canals from dame across rivers, they should atleast have first charge over the power produced by the dammed water. In other words the claim is for the hydel power produced, either free of cost or at cost of production which amounts in the case of most old dams at around 15 ot 20 paise per unit (but varies seasonally depending upon the availability of water storage in the dams). If any loss is being incurred on the power being supplied to them then the utility should claim the balance amount from the state government concerned and the latter is duty bound to pay the same as it owes responsibility for the present flight of the farmers. The World Bank and the state and central governments are not convinced of these arguments but at the same time are unable to implement their decisions due to the fear of political backlash .

We have argued in the earlier part of this essay about the unsustainable nature of pump irrigated farming., beyond a limited period and area. It is our contention that pump irrigation should be the last option for irrigation in an area and all efforts should go into keeping it at a minimal level.*5 Going beyond rhetoric we need to do the following with a sense of urgency:

a) Studies have revealed that with improvements in the efficiency of pumps, suction and delivery systems frictionless foot valves, introduction of capacitors can mean a saving in electric power consumed in agriculture to 15 to 40%. This needs to be urgently undertaken on a war footing with attractive schemes such as concessional rate of tariff (or even no charge) for those who opt for such measures for a definite period (say three or five years) etc.

b) Improvement in quality of power supplied (by installing adequate numbers of transformers, substations and increasing HT lines to prevent line losses, encouragement to local generation of

power and local distribution, utilization of alternate energy sources (solar pumps need more research and development before they can become viable). These efforts, as the current studies have also revealed will ensure a large amount of savings to the farmers who are now plagued every year by low voltage or fluctuation problems leading to motor and transformer burn outs and delays in replacing the damaged units. This brings us to the question, What should be the tariff for agriculture?

1. Under the present circumstances, when agriculture in our country is under severe crisis with depressed prices and unsustainable practices resulting in the unremunerative character of most agricultural enterprises, it is only natural that farmers should resist the withdrawal of subsidized power. Given the political climate it would be practical and reasonable to charge the farmers the hydrogeneration rate of power. Anything 'free' has no value, however critical it may be to the consumer. With power delivery rates ruling at Rs. 3/- to Rs.5/ unit and likely to go up every year it is just that all consumers use power prudently. A reasonable rate would therefore ensure that farmers also use power prudently. The utilities should recover the balance amount of cost of delivery to farmers from the State Govt. concerned as they are predominantly responsible, together with the central governments through their policies and practices over the last 50 years for the current mess that the farmers find themselves in.

2. Checking pilferage and introduction of meters. This is the most challenging of all exercises. The foremost need in this direction is to reverse the trend of culture of pilferage nursed and developed over the last 50 years through political patronage of vested interests and collusion of the power utility staff. It cannot be wished away in a day nor does privatization make angels out of humans. Farmers will pay if they find the price is 'reasonable'. Reasonableness is a relative term and reasonable tariff would be that which was being paid before the reforms process started; or a rate perceived by the consumers to be reasonable in relation to what was being paid earlier; or if conditions improve (quality reliability, & their own capacity), even higher rates would be considered reasonable. All electric utilities must first ensure that agricultural consumers first learn to pay their bills, however small they may be. This can be ensured provided the state government or the utility concerned assures the agricultural consumers that there will be no raise in the tariff rates over a reasonable length of time. For the farmers (whose earnings normally even out under weather conditions over a span of five years), this would mean <u>freezing agricultural tariff for the first five years and change of tariff rates every five years.</u> Such a declaration of intent by the Government / utility will ensure trust in them by the farmers.

3. The best way to locate pilferage is through metering and energy audit at every point of interface of transmission and distribution right up to the consumer level. But as stated earlier, the bonafides of the Government are suspect and unless the govt. declares reasonable tariffs over a reasonable length of time as suggested in the previous para (12) it is difficult to elicit farmers' cooperation

for metering and respecting its normal functioning. It must be clearly understood that without the farmer's willing co-operation all such schemes are bound to fail. Therefore, even if it takes longer, it is better to go slow. Once metering is installed at reasonable, mutually agreeable tariff, pilferage and unauthorized usage can easily be located and through consumers' collectives at transformer level rational usage ensured.

4. To facilitate the above process, it is of utmost importance that the Government ensure greater sustainability of the farmer and the his land, encouraging him to shift towards sustainable farming making sure that his survival needs are taken care of and infrastructure built from village level to the district and state and country to market surpluses after fulfilling local needs. This implies a lot of painstaking reorganization of landholdings, ensuring survival needs of the large numbers of landless and marginal farmers who have nothing to fall back upon, encouraging ecologically suitable cropping patterns and encouraging skills and industries allied to agriculture which could siphon off excess labour and above all ensuring remunerative prices for farm produces.

The way to hell, it is said, is paved with good intentions. When the farmers hear of the reforms of the World Bank and every new scheme, they wait with apprehension of 'now what? 'So convinced is the World Bank of its wisdom that its expert teams are unwilling to listen to the other side. May be there is something in what the farmers are saying through their silent suicides.

NOTES

*1. In the country as a whole roughly 40% to 45% of the arable land can be brought under irrigation mainly through surface irrigation by either canals or tanks supplemented by groundwater. The rest of the area , that is, 55 to 60% of land will more or less be under rain fed conditions. Efforts need to be focused on how to make life sustainable for the millions of humans and livestock who are dependent on these rain fed lands and adjoining forests. The present emphasis on watershed development and joint forest management exercises are in the right direction (although with very serious lacunae). Rainwater harvesting techniques, drought resisting and high yielding rainfed annual and perennial cropping patterns need to be planned carefully and encouraged in these areas. In the remaining 40 to 45% of the area which is amenable to irrigation our planning ought to be to reach out the tapped surface water to the largest extent possible. This planning should start from below i.e. it should start with arresting rain water in forests and tree growth, through rock filled filters and check dams flowing into streams, and tanks or chains of tanks ending up in rivers, diverting the waters through barrages and anicuts and only finally larger dams where necessary across bigger rivers.

*2. To quote the report: "Haryana is mostly arid or semi arid with limited rainfall ranging from 300 mm in the South West to 1100 mm in the north – east. There are no perennial rivers running through the state and about two thirds of the state is underlain brackish water with rising water table and inadequate natural drainage …….. Ground water availability is classified into two types : inside a

surface irrigation command area conjunctive use) and outside the surface the surface irrigation command area (direct use) …….. The water table has registered a fall in fresh water belts and a rise in saline ground water area ……. Over exploitation of groundwater resources is occurring in many parts of the state as evidenced by the decline in groundwater levels, particularly in the north eastern and southern districts. On the other hand, in the central and western part of the state, the water table has risen causing water logging …….. Some major chemical degradation problems identified in Haryana soils are salinity and sodicity occurring sometimes in combination with other soil degradation problems like water logging and to a larger lesser extent with soil erosion. About 4,31,000 Ha 9.7% is affected in the state ….." (annex. Haryana case study : Annex. 1, page 5 , 6, and 8).

*3. Several studies have highlighted the unsustainable nature of the agronomic practices of the last three decades in Punjab and Haryana and recommended changing cropping patterns, to reduce land under rice, wheat rotation and increase area under horticulture to at least 25%. From the side of the Government, this region has turned into the bread basket of the country (covering over 60% of the stocks of FCI) with heavy doses of fertilizers and chemicals at state subsidy for the newly developed strains of High Yielding varieties of wheat and rice, and remunerative state monopoly procurement, and encouragement to farmers to go in for large scale mechanization of farming operations. However, from the farmer's point of view, over the years with no new varieties of seed showing the same dramatic results of the past, rising cost of power and fertilizers, increasing salinity and sodicity and water logging of the soils etc, the returns have tended to decrease. With high capital and operational costs, these cropping patterns are tending to be un-remunerative even with such heavy state subsidies. As the Central Government is forced to raise its procurement price every year to make the cropping remunerative to the farmers, it has succeeded in pushing up the cost of purchase and storage by FCI to beyond the free market price. The failure of or reluctance of state governments to lift these stocks has resulted in over 60Mn tons of stocks of food grains with the FCI, rotting in its godowns. (With international prices much lower unable to export and unable to feed its starving 300 millions the Government is caught in a bind). This is a crisis situation brought upon ours by ourselves due to faulty planning among other things.]

*4. The Bank should realize that private monopoly is worse than public monopoly. Remember the power purchase agreements signed in great haste by the various state governments at the behest of the World Bank, with each of them a potential Enron. And the new Electricity Bill 2000 – can there be a more disastrous step than this to kill the state power sector? Simply stated, the state power utilities have been selling power at a premium to industrial and commercial consumers and cross subsidizing agriculture and poor domestic consumers. The new electricity bill would like to allow any one to freely produce electricity and sell to anyone they like without intervention by the state utilities. They will certainly be able to sell their power generated at a lower price to industrial and commercial

consumers. Then who will the state utilities sell their power to? How will they cross subsidise some of the weaker consumers whose sustenance is so critical for the economy?

In the end these reforms are likely to land each borrowing state and the country as a whole in to greater and greater debt, unable to pay even the interests and the lead the country once again into bondage. The Orissa and Enron experience are a portent of things to come …… In 1976 the World Bank disbursed U. S. $610 mn to India. After deducting principal and interest payments the net transfers amounted to US$492 mn; by 1986 the figures were US$1297mn and US$676mn respectively; by 1996 the tables were turned-the disbursements amounted to US$ 1,337mn.After making allowances for principal and interest payments there was a net transfer of US$287mn.In 1997the respective figures were US$1337mn and net transfer to WB US$455mn. In other words we are already in a debt trap as far as the WB is concerned. (see Annexure III)

*5. Going beyond rhetoric, the following steps need to be taken. To bolster dry land farming.

a) Attractive price incentives for dry crops and if found necessary state procurement of the crop

b) Research efforts should go into producing high yield dry crops such as millets under rainfed conditions.

c) Educational campaigns should be carried out on the merits of consumption of dry land crops, and government should encourage their consumption through the public distribution system.

d) Farmers should be encouraged to grow horticulture crops and medicinal plants in a certain proportion of their dry lands maintaining a healthy balance between perennials and annuals and assuring the farmer a reasonable standard of living.

e) Watershed management and joint forest management should be encouraged in earnest ness learning lessons from the failures of the past and not degenerate to schemes of political patronage and pools of corruption as most of them are wont to these days. The successful implementation of such schemes would boost the water table in the area apart from providing employment to local poor.

f) Efforts should be on a war footing to restore traditional water harvesting systems such as tanks and their institutional arrangements with modifications to suit the present times.

g) Legislation should be passed and steps taken to ensure that sinking of borewells follows norms (maintaining sufficient distance from existing bore and open wells etc.) considering the availability of groundwater and restrictions on growing certain water intensive crops in arid regions where ground water is being used. Sharing of ground water should be encouraged with imaginative schemes.

ANNEXURE – 1

A.Wholesale Prices of Major Crops in Andhra Pradesh 1995 – 2000
(The prices quoted are averages of prices of all grades of crops as reported in the newspapers).

Crops	Price per quintal in Rupees	
	1995 (Average of the Whole year)	2000 (As on August 20)
Paddy	450	400
Groundnut	1170	1100
Onion	380	295
Cotton	1800	1800
Chillies	3100	2350
Jaggery	900	933

B.Per Acre Cost of Cultivation in Chittoor District for three major crops expenditure in rupees

Item	Sugarcane	Paddy	Groundnut
Seed*1	3200	1000	900
Ploughing*2	1200	1800	900
Growth & Transplantation*3	1000	1200	-
Deweeding*5	2400	1200	2400
Fertilizers*5	2000	3000	2500
Pesticides*6	400	400	400
Harvesting (making jaggery)*7	10500	1500	1200
Transport*8	300	300	300
Well sinking*9	7500	7500	7500
Motor repair & maintenance*10	500	500	500
Electricity charges: At old rates*11 At new rates	125 (1000)	125 (1000)	125 (1000)
Management*12	3600	1800	900
Rent on land*13	10000	5000	500
TOTAL	42725	25325	18125

Income in Rupees

Item	Sugarcane	Paddy	Groundnut
Jaggery*14	29250	12000	18000
Straw*15	-	3600	-
TOTAL	29250	15600	18000

	Sugarcane	Paddy	Groundnut
Income – Expenditure =	-13475	-9725	+125

Notes:

*1. Seed for sugarcane calculated at Rs.800 per ton for 4 tons; for paddy at Rs.8 to 10 per kg for 60 kgs + Rs.400 for nursery preparation = Rs.1000; for groundnut at Rs.20 per kg for 45 kgs = Rs.900.

*2. Tractor charges at Rs.200 per hour for six hours for sugarcane = Rs.1200; for 9 hours for paddy = Rs.1800; for 4 hours for groundnut = Rs.800 + Rs.100 for seeding with bullocks = Rs.900.

*3. Growth and transplantation: for sugarcane 20 mandays at Rs.50 per mandays = Rs.1000; for paddy 30 womandays at Rs.40 per womanday + Rs.1200.

*4. Deweeding: for sugarcane at Rs.40 for 30 womandays twice in the season = Rs.2400; for paddy 15 womandays at Rs.40, twice = Rs.1200; for groundnut 30 womandays X Rs.40 X 2 times = Rs.2400.

*5. Fertilisers: for sugarcane at Rs.500 for 4 bags = Rs..2000; for paddy 3 bags – Rs.500 X 3 = 1500 + organic manure of 3 tractor loads at Rs.500 per load = Rs.1500; (organic manure is not put for sugarcane because it is usually grown after paddy and the manure which is already there in paddy field is considered sufficient); for groundnut 3 bags at Rs.500 = Rs.1500 = 2 tractor loads of organic manure at Rs.500 per load = Rs.1000.

*6. Pesticides: negligible for all the crops – applied only if necessary at Rs.400 per crop.

*7. Harvesting: sugarcane at Rs.200 per quintal for 45 quintals + Rs.1500 for making jaggery; paddy 30 mandays at Rs.50 = 1500; ground nut at Rs.40 for 30 womandays = 1200.

*8. Transport: negligible at Rs.300 for all the 3 crops.

*9. Well sinking: a new bore well assumed to last 5 years costs Rs.1 lakh; after 5 years another bore has to be sunk, at Rs.50,000 but the same pumpset can be used again, therefore Rs.1,50,000 for 10 years; for one year Rs.15,000; each well assumed to service 2 acres, therefore Rs.7500 per acre.

*10. Motor repairs: Rs.1000 per year per pumpset. Each motor assumed to service 2 acres, therefore Rs.500.

*11. Electricity charges for 5 hp pumpset at the old rate of Rs.50 p.hp serving 2 acres = Rs.125 at the new rate of Rs.400 p.hp = Rs.2000 servicing 2 acres = Rs.1000.

*12. Management: at Rs.300 per month – for sugarcane for 12 months = Rs.3,600; for paddy for 6 months Rs.1800; for groundnut for 3 months 300 X 3 = Rs.900.

*13. Rent on land: at 10% of the value of land at Rs.1 lakh per acre for sugarcane for 12 months = Rs.10,000; for paddy for 6 months = Rs.5000 for groundnut the value of led estimated at Rs.20000 per acre – therefore 10% for 3 months = Rs.500.

*14. Jaggery at Rs.650 per quintal for 45 quintals = Rs.29,250; paddy at Rs.400 per bag of 75 kgs X 30 bags = Rs.12000; groundnut at Rs.450 per bag of 40 kgs for 40 bags = Rs.18,000.

*15. Straw of sugarcane and groundnut are not traded; straw of paddy at Rs.1200 per tractor load for 3 tractor loads = Rs.3600.

Farmers' costing

Farmers do not cost items no. *9, *11 and *12 while costing their enterprises. They often discount their own labour too. Therefore, there is an apparent "profit" of Rs.7,525 for sugarcane, Rs.4,775 for paddy, Rs.6,975 for groundnut.

ANNEXURE – II

BOREWELLS SUNK IN PALAGUTTAPALLY PANCHAYAT OF PAKALA MANDAL, CHITTOOR DISTRICT IN AP BETWEEN 1-8- 2001 AND 30-9-2001

Farmers	Number of Borewells Sunk	Successful	Failed	Average Depth	Expenditure in Rupees	Source of Funds
Marginal Farmers	1	1	---	300	18,000	Private Loan
Small Farmers	5	2	3	285	80,000	1 Bank Loan, rest Private Loans + Own Money
Medium Farmers	19	9	10	297	3,03,000	Own Money + Private Loans
Large Farmers	2	1	1	270	32,000	Own Money
Total	27	13	14	288	4,21,000	

Average cost per borewell: Rs. 15,600.