Contribution of Large Dams in Food Production, Food Security in India

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> Historically, the GR represented a choice to breed seed varieties that produce high yields under optimum conditions. It was a choice *not* to start by developing seeds better able to withstand drought or pests. It was a choice *not* to concentrate first on improving traditional methods of increasing yields, such as mixed cropping. It was a choice *not* to develop technology that was productive, labour intensive, and independent of foreign input supply. It was a choice *not* to concentrate on reinforcing the balanced, traditional diets of grain plus legumes.
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> FM Lappe and J Collins, *Food First*, London, Abacus, 1980: 114
> Quoted in Shiva, 1989: 134

The latest review of India's irrigation sector notes that ascertaining precise contribution of irrigation is difficult (World Bank, 1998: 2). "This is in part because there are no official Indian statistical data that gives the break down of agricultural production under irrigated or rainfed conditions. Nevertheless, various estimates point to a contribution from irrigated agriculture to overall agricultural production of about two - thirds, and under some estimates an even higher contribution", the report noted. This 1998 review went on to say that as per their estimates, in 1992-93 irrigated agriculture would have contributed 78% of total food production and 95% of non-food production, using one - third of the gross cropped land. These were strange figures, not substantiated in the report, but contradicts World Bank's own estimate in its 1991 India Irrigation Sector Review that estimated irrigated agriculture's contribution to be about 55% (World Bank, 1991b: 5). This matches with the Planning Commission (GOI, 1999) figure of 58% of food production coming from irrigated area.

India's foodgrains production has increased from 50.82 MT in 1950-51 to almost 202.5 MT in 1998-99. This is no mean achievement. An impression is sought to be created by many that this achievement is due to large dams. In this section we will try and see what is the contribution of large dams based irrigation in this.

For this exercise, we look at the period between 1950-51 and 1996-97, for which we have figures available about foodgrains production and area irrigated by various sources. Foodgrains production in these two years was 50.82 MT and 199.32 MT respectively. (Food Production in 1967-68, at the inception of the GR period, was 95 MT already (Singh, 1997: 80).) The latter figure is the highest achieved foodgrains production till that year, the production in the following year dropping to 193.12MT. Thus, additional foodgrains production in the period is 148.50 MT. However, there are many contributors in this achievement.

As can be seen in Annex 3A, the GIA in India in 1951 was 22.6 M Ha (20.9 M Ha was net irrigated area), comprising of 9.71 M Ha (8.3 M Ha net) by M and M Projects, 6.4 M Ha by minor surface waters and 6.5 M Ha by groundwater.

Here it is useful to note that a very large proportion of the irrigation by M & M projects at the time of independence was not from storage based structures but was based on

diversion structures like barrages. Such irrigation included 0.6 M Ha from Sirhind canal, 0.33 M Ha from Upper Bari doab, 1.35 M Ha from Son canal, 0.68 M Ha from Yamuna canals and 0.7 M Ha from upper Ganges canal. (Vaidyanathan 1999: 51) Total irrigation from diversion based systems was about 80% of the M & M irrigation. (See Annex 3C) Needless to add, the social and environment impacts of barrage based structures are much less than those from big dam projects.

At the end of 1996-97, 80.75 M Ha gross land was irrigated, out of which 28.44 M Ha was irrigated through M & M schemes and 52.31 M Ha through minor irrigation, including surface water (10.71 M Ha) and groundwater (41.60 M Ha) schemes.

However, there are discrepancies in the figures irrigated areas of 1996-97 given out by the Union Ministry of Water Resources and CWC, as against the figures given by Directorate of Economics and Statistics, Ministry of Agriculture (MOA). For example, the difference between GIAs claimed in 1984-85 by CWC (58.82 M Ha) and MOA (54.1 M Ha) (World Bank, 1991) is substantial at 8.02 % of the CWC figure. Such discrepancies are not very unusual in India's water resources sector (for a detailed discussion on irrigation data related issues, see Sengupta, 1993: 19-29).

In Annexure 3A, the last column gives the figures of actual irrigated area as per LUS. It can be seen that the difference between the irrigation utilisation figures and the area actually irrigated as per LUS is growing from almost nil to 12.5 % by 1996-97. While there are problems with both the figures, namely irrigation utilisation as per the Planning Commission and those as per LUS provided by agriculture ministry, (for a detailed discussion on this, see Vaidyanathan, 1999) it is generally accepted that since agriculture ministry is the actual user of irrigation, their figures are likely to reflect the situation in a more accurate way.

There are many reasons for these gaps. Since the planning commission estimates utilisation separately for surface and groundwater, there is the possibility of overestimating the total irrigated area due to double counting. In the Eighth Five Year Plan, the Planning Commission accepted that such double counting is actually happening and that "the estimates of potential reported in the Plan documents are not strictly comparable with those reported under land use and cropping statistic (Dhawan, 1993: 54-55; Vaidyanathan, 1999: 59).

However, since the LUS do not give separate figures for groundwater and surface water, we will have to apply the correction for all sources proportionately. Applying that correction to the 1996-97 figures given by CWC, more realistic estimate of total gross irrigation in 1996-97 would be 70.64 M Ha and gross irrigation by M & M projects would come to 24.88 M Ha. Similarly, the area irrigated by groundwater and minor surface water projects would come to 36.6 M Ha and 9.4 M Ha respectively.

Thus in 46 years since 1950-51, M & M irrigation projects have added 15.17 M Ha to GIA. This, incidentally, comes to 21.48% of GIA of the country in 1996-97.

The productivity of canal irrigated areas is not the same as productivity of groundwater irrigated areas. Land irrigated from groundwater has notably higher productivity than from canals, as Table 4 shows.

Table
Land Productivity Per Net Irrigated Hectare by Sources of Irrigation
(Ton/Ha in Foodgrains Energy Equivalent Units)

State	Wells (private)	Canal Irrigation	Tanks
AP	5.7 (67.6)	3.4	2.0
Tamil Nadu	6.5 (150)	2.6	2.3
Punjab	5.5 (71.9)	3.2	-
Haryana	5.7 (137.5)	2.4	-
MP	2.8 (40)	2.0	1.5
Karnataka	4.2 (20)	3.5	2.3

Source: The World Bank, 1991 Vol. II: 7

Note: Figures in bracket in second column are % by which productivity in well - irrigated areas is higher than canal irrigated areas.

Many documents have noted the higher productivity of groundwater irrigated areas (World Bank 1998c: 2-4, GOI 1999, Vaidyanathan 1999). The main reason for this is that in case of groundwater irrigation, the water is available whenever farmer wants (and when fuel (electricity/ diesel) is available). As a result, groundwater irrigation also encourages complementary investments in fertilisers, pesticides and HYV. Unpredictability of canal supplies and its ill impacts are also noted by many.

Dhawan (1993: 100) notes that groundwater irrigated 2.21 M Ha in Punjab produced 14 MT foodgrains in 1984-85 at about 6.5 tons per net irrigated ha. The corresponding estimate for output from 1.4 M Ha canals irrigated area may be placed at 4.9 MT at 3.5 tons per ha.

In Tamil Nadu, when one reckons with the higher land productivity under well irrigation, nearly two thirds of the state agricultural output turns out to be from groundwater irrigated lands. At 6.5 tons foodgrains equivalent units per ha, the well irrigated lands produced about 6.95 MT in late seventies (Dhawan, 1993: 102).

Thus, even if we assume average figures, groundwater irrigated lands have at least 70% higher productivity than canal irrigated areas, 15.17 M Ha of canal irrigated land would be equivalent to 8.92 M Ha of groundwater irrigated area. Similarly, the productivity of groundwater irrigated areas is about 135% higher than the productivity of tank irrigation. Thus, 9.4 M Ha of tank irrigated area would be equivalent of 4.23 M Ha of groundwater irrigated area. Thus, in terms of groundwater equivalent terms, the total irrigated area in 1996-97 was 53.64 M ha, of which the M & M canals constructed since independence contributed only 16.63 %.

GOI (1999: 476-7) has said that 56% of agricultural production and 60% of foodgrains production comes from irrigated areas. Thus, the contribution to food production today from large dams based canal irrigation created since 1950 comes to (16.63 X 0.6 =) 9.98%. Thus, *gross* contribution from canal irrigated areas to food production is 19.89 MT, less than ten % of food production. The assumption we have made above that large dams based canal irrigated areas would have contributed to foodgrains production in proportion of their proportion in irrigated areas is not unjustified if we look at some available data.

An argument that some researchers (for example, see Dhawan 1993: 74) have made that a lot of groundwater irrigation in actuality is possible due to seepage from canals based on large dams raises many issues. Firstly, there are no scientific studies quantifying the contribution of large dams based canal irrigation to groundwater seepage. (Vaidyanathan 1999: 95) Secondly, the large dams were not constructed to first store water flowing in the river (which itself was recharging huge areas), then convey it through canals over long distances at considerable expense and then encouraging seepage in those areas so that wells would be dug and that water would be lifted to irrigate farms in and around command area. If that was the aim than local rainwater - harvesting measures is a much more cost effective, quicker, less destructive and much more sustainable and sensible way of achieving those objectives.

In India, there is little research about the relation between rivers and aquifers. (World Bank, 1995c; World Bank, 1998c) Adjacent areas in Punjab, Haryana, Rajasthan and Gujarat are known to have water logging conditions in one area and water table falling due to groundwater overdraft in adjacent area. (World Bank, 1998c) This puts big question mark over the claim that a lot of groundwater used comes from canal seepage.

Thus, the claim made by a number of supporters of large projects that India has achieved food production of today *due to* large dams based irrigation is quite erroneous looking at the facts. The *gross* contribution, this calculation shows, is less than 10%.

A part of this 10% contribution from canals of M & M projects is actually from barrage based projects constructed after independence, as against those from storage based projects. Sharada Sahayak canal is one example of this. We will ignore this since information is not available as to how many of the M & M based projects were barrage based and what is their contribution in canal irrigation.

Secondly, to arrive at *net* contribution made by canal irrigation from M & M projects, we should subtract the production these lands would have yielded anyway.

Thirdly, Lands lost to canal and drainage infrastructure schemes typically represent 2-5% of the irrigated command area created. With schemes involving reservoirs, a further 3-8% of land is lost. Total land lost annually to reservoir inundation is estimated at 50,000 ha (World Bank, 1991: 78).

Thus going by World Bank (1991a: 41-2) estimates, land equal to at least 5-13% of irrigated areas of these projects is lost for either submergence (3-8%) or canals and other infrastructure (2-5%). For example, in case of SSP, while submergence would take up land equal to about 2.1% of area (39,000 ha) to be irrigated (1.8 M Ha), the total canal infrastructure is to take up 1,86,000 Ha (land equal to 10.3% of projected command area of the project). Thus utilisation of this additional 24.88 M Ha of irrigation potential would have taken out of production at least 1.99 M Ha of land, at 8% of additional irrigation utilised. This figure of 1.21 M Ha too seems to be an underestimate, as going by another of the World Bank estimate of land lost due to reservoir inundation at 50,000 Ha per annum, over a period of fifty years, reservoir inundation alone would have taken out of production 2.5 M Ha. Though not all lands going under submergence is cultivable, a substantial part is. As far as land taken away for canals is concerned, almost all of it is cultivable land lying in the potential command of the project.

In post independence India, due to domination of large dam centered irrigation projects, there has been utter neglect of local rainwater harvesting systems. Thus, the area under tank irrigation has gone *down* from 4.8 M Ha in 1962-63 to 3.1 M Ha in 1986-87. Other sources give even higher amount of loss in area irrigated by minor surface schemes. Thus this loss of 1.7 M Ha of actual irrigated area too must go in the account of large irrigation dam projects. Actual figure thus lost from irrigated area is likely to be much larger, but for lack of reliable data, we will assume this loss to be only 1.7 M ha.

Another loss we have incurred in the process of achieving this M & M projects based irrigation is in terms of lands going out of production due to waterlogging and salinisation.

What is important to remember is that while thus adding less than 10.0% of additional foodgrains production, we have lost an opportunity of developing our water resources over a much larger area, much more equitably, sustainably, in a much more participatory and cost effective manner. The social, environmental and even economic costs incurred would have been much bwer. The additional foodgrains production that would have been possible, if we had taken the alternative path, would have been much larger, it can be safely said. Unfortunately, it is very difficult to come up with figures of what alternative path would have produced, as it was just not tried.

In conclusion, it is clear that canal irrigation areas have made only marginal (less than 10%) gross contribution to food production in India since independence. If we subtract the losses we have incurred in the process of achieving this production from this achievement, the figure would be even less than 5%.

Success in the Northwest

The success story in the Northwest was made possible by the major development of surface irrigation in the 19th and early 20th centuries. Other important factors for this success story including the intensive use of other inputs like HYV seeds, fertiliser usage, better infrastructure availability and most importantly, state support for massive groundwater development. It can be seen from the figures above that nearly 60% of area covered by irrigation in this belt was irrigated by groundwater. And groundwater here is at least 70% more productive than canal irrigation.

- That area is already experiencing plataueing in general and decline in foodgrains production growth rates in specific areas.
- The large project based WRD has left over 65% of cultivators high and dry.
- 22.7% of the potential created (30.5 M Ha) by M & M projects remained unutilised in 1984-85. The gap in minor and groundwater schemes was only 6%.
- Total irrigation benefits to tribal sub plan areas (133 districts of the country) is 0.37 M Ha, which is less than half percent of total area brought under irrigation. As against this, the tribals constitute 6.9 % of country's population. (1984-85 figures.)
- A total of 99 districts in 13 states of the country have been identified as drought prone. These districts cover a total geographical area of 108 M Ha (33%) against the country's geographical area of 329 M Ha and cultivable area of 77 M Ha (42%) against the country's cultivable area of 184 M Ha.

- Some of the large projects have not been able to achieve designed live storage in seventy five percent of the year and some even ninety percent of the years. (The World Bank, 1991.)
- By 1988-89, current expenditures on operations and maintenance on M & M irrigation projects exceeded revenues from water charges by Rs 23.5 billion annually. Rural electricity subsidies, primarily for pumping water from tubewells, accounted for another Rs. 14.6 billion per year. Subsidies to irrigation grew by 10% per annum in the 1980s and rural electricity subsidies grew by 15% per annum.
- In India as a whole, an average of six families is displaced per 100 families provided with surface irrigation.

Cropping Patterns

The rapid spread of HYV rice and wheat that took place in GR areas like Punjab was accompanied by change in cropping patterns as Table 5 shows.

Table
Changes in Cropping Patterns in Punjab
(% of cropped area)

	1966-67	1971-72	1976-77	1981-82	1985-86
Wheat	31.09	40.81	41.84	42.05	43.90
Rice	5.50	7.86	10.81	18.31	23.73
Pulses	13.38	6.71	6.28	4.69	3.48
Oilseeds	6.24	5.57	3.98	3.25	2.93

Source: Shiva, 1989: 131

Here it should be noted that wheat and rice are the main crops being grown in additional irrigated area added at national level. For example, from 1960-63 to 1980-83 69% of the additional GIA was utilised for foodgrains, 52% of this was constituted by wheat, 16% by rice and only 1% by other foodgrains crops. As far as pulses are concerned, the irrigated area *dropped* from 2.015 M Ha in 1960-63 to 1.288 M Ha in 1960-83. Even total (irrigated and unirrigated) area under pulses *dropped* from 24.023 M Ha in 1960-63 to 23.044 M Ha in 1980-83. The World Bank irrigation sector review also noted that irrigated agriculture is less diversified than unirrigated agriculture (World Bank, 1991b: 9).

It is also notable (World Bank, 1991b: 11) that share of area under foodgrains in the total GIA has been consistently dropping from 78.9% in 1960-61 to 73.8% in 1984-85.

The Stability Factor

The stability factor or the perceived stability factor played an important role in the kind of projects the post independence decision-makers were looking for. Hence, the National Planning Committee of 1938 (which was the precursor of Planning Commission of post independence era), headed by Jawaharlal Nehru, emphasised the use of 'stable' irrigation in the form of storage systems under medium and major projects, in other words, they spoke of large dams. Minor irrigation technologies like tanks, wells, etc. were not given priority due to their 'uncertain' nature (Singh, 1997: 59-60).

In the short term, this stability factor may look to favour the M & M based irrigation, the long term stability, or sustainability factor is against it as we shall see latter in this chapter.

Even in short term, a number of papers in early eighties noted that M & M irrigation did not necessarily impart stability to agriculture. This is because while more capital intensive inputs used in irrigated agriculture may mean good yields in favourable years, but are riskier than traditional practices in bad years. This is seen to be so in Bihar, MP and AP. While national level data show stabilising effects of irrigation, desegregated picture with respect to different sources of irrigation in different regions is not available (World Bank, 1991b: 8).

Contribution in Food Security

> It is often presumed that famines have been eliminated in independent India through a revolutionary increase in food production. There certainly has been some rise in food production per capita since Independence (and the 'GR' has been effective in the production of wheat in particular), but the increase in food production per head has not been very large. Indeed, the average per capita food availability in India today is not substantially greater than in the late 19th century (a decline over the first half of this century having been balanced by an increase after independence). The causes of success of Indian famine prevention policy have to be sought elsewhere – in the process of entitlement protection through various measures of income generation and price stability, and the compulsion generated by adversarial politics that ensures early public intervention.
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> Amartya Sen and Jean Dreze (Sen, 1995: 28-9)[i]

Govt. of India claims that the fact that the country has not witnessed famine and acute starvation on a massive scale in the last decades is the most eloquent testimony for the success of Government efforts for eradication of famines (GOI, 1999: 529).

It is now increasingly argued that at macro level, there is no foodgrains constraint in India. In fact, the Report of the Working Group on Foodgrains Requirements by 2000 AD expressed optimism that India has an exportable surplus of foodgrains to the tune of 20 MT (around 10% of foodgrains production) and that this is likely to go further up by the year 2000 (Shah, 1998: 45).

Food security is to be interpreted to mean adequate availability of basic food items particularly, foodgrains in the country as a whole and also availability of purchasing power to meet the food requirements at the household level (GOI, 1999: 441).

According to Govt., the essential elements of food security are: (a) adequate availability of food, (b) efficient distribution through trade and / or public distribution system (PDS), and (c) availability of adequate purchasing power in the hands of the people. (GOI 1999: 531) This reduction of the food security into three separate steps has lead to its failure. What is missed out is that all three are linked and in addition it is assumed that there is perfect market mechanism in place, which is just not there. Lopsided availability of credit and insurance, transport bottlenecks, inadequate storage capacities, inadequate distribution of food corporation of India centres, almost total lack of credible regulatory mechanisms, total lack of transparency & accountability in the functioning of PDS and

abysmal poverty are only some of the market imperfections. And then for markets human compassion or food insecurities are not relevant issues. Particularly in a thickly populated country like India, where food production is a means of livelihood for a large section of peasant cultivators and agricultural labourers, food production would have to be decentralised.

In fact, in a path - breaking study based on 1961-2 data, it was shown that the per capita calorie intake in a state was determined by the level of per capita foodgrains output from that state. The failure of the market mechanism in food meant that having a higher per capita income did not translate into a higher per capita foodgrains consumption. And also that a higher national availability of food did not translate into higher local availability or consumption. Recently this finding has been confirmed using data for the period 1973-89. It appears that the income levels of the poor in the deficit states are still too low to attract food from surplus states via the market, despite the almost complete halting of compulsory procurement in deficit states (Shah, 1998: 45).

Thus, Planning Commission accepts that there is a need to disperse the foodgrains production base in the deficit regions in order to ensure physical access to food for all at affordable prices. The association between regional self - sufficiency in production and the level of regional prices is quite strong. This means that the consumers in the deficit regions have to pay substantially higher prices for foodgrains than those in the surplus regions. The data from the National Sample Survey (NSS) 43rd round on consumer expenditure show that the consumers in the rural areas of many deficit states paid significantly higher unit prices than their counterparts in the surplus regions. For example, the price of cereals in rural areas in 1987-88 in surplus states like Punjab, Haryana and UP was between Rs. 2.15 to Rs. 2.35, the price in deficit and poor states like Bihar, Assam and West Bengal it was between Rs. 3.4 and Rs. 3.7. For the Poor consumers in the deficit regions higher prices of foodgrains may imply lower consumption of food and consequent poor intake of nutrition.

To overcome these problems, food security strategy will have to expand food production in deficit regions, the planning commission accepts. (GOI 1999: 537) Direct implication this would that the irrigation source will also have to be decentralised across the country. However, we see no evidence of any attempt or appropriate resource allocations to achieve this objective.

The strategy of dispersal of production base has several other spin off benefits, the planning commission accepts. First, hitherto deficit regions will increasingly contribute to incremental production, since yield rates in the traditional surplus regions have plateued. Second, large transaction costs involved in transporting foodgrains from a few surplus pockets to all corners of the country can be avoided. Administrative costs in this venture typically constitute about 20% of the pooled economic cost of foodgrains. Third advantage is the widely dispersed employment and income effects, implicit in such a strategy (GOI, 1999: 538).

The Ninth Five-Year Plan goes on to admit:

⇒ The population still lacks balanced food.

⇒ There has been a fall in the per capita consumption of pulses. It is not only important improve pulse production but also make them available at affordable cost.

⇒ The production and consumption of vegetables and fruits continue to remain low.

⇒ Poverty and lack of purchasing power have been identified as two major factors responsible for low dietary intake.
⇒ Studies indicate that supply of subsidised food given through PDS has not resulted in improvement in household level food security. *Self-sufficiency of foodgrains at national level has not got translated into household level food security for the poor*.

It is thus clear that the increase in food production itself has not ensured food security for the poor, as admitted by the Government. The PDS that existed till recently has been widely criticised for its failure to serve the population below the poverty line, its urban bias, iniquitous distribution, poor coverage, lack of transparency and accountability (GOI, 1999: 539).

The government hopes that the new targeted PDS will ensure better household food security for families living below poverty line (GOI, 1999: 529). However, there is little convincing evidence that the Targeted Public Distribution System will succeed where PDS failed. Primarily because there is no mechanism to take care of the problems with PDS listed in earlier paragraph.

The problem is with the whole attitude of looking at the production, distribution and supply systems separately. It is assumed that if macro level production is ensured, and if it is supplied to consumption points, food security will be ensured. It is forgotten that the production processes are closely linked with employment generation and purchasing/ retaining capacity of the poor to get access to necessary food. The issue of control of production/ distribution processes also assumes crucial importance here.

Assumption that macro level production sufficiency will help reach food security is at the heart of support for large dams based irrigation systems. The failure of that assumption has lead to impoverishment and food insecurity for millions in India.

As Sen and Dreze conclude (Sen 1995: 93) from their study of drought of Bihar (1966-67) and Maharashtra (1970-3) that the growth of food production alone would have fallen far short of ensuring the prevention of famines in India in the last few decades. There is little evidence of increasing rural incomes and employment in unirrigated areas, which still cover around two thirds of the total cropped area. These regions have also experienced huge ecological problems of deforestation, soil erosion and falling water tables against a background of rapidly growing population. Neither rapid economic growth, nor rapid growth in agriculture, not even rapid growth in food production is by themselves an adequate safeguard against famines. The key to famine prevention is the public policy for recreating lost entitlements, note Sen and Dreze. (Sen 1995: 29) Unfortunately, the disappearance of large scale famines in India has indeed coexisted with the reselient persistence of mass poverty and hunger (Sen, 1995: 155).

Even in the heart of GR region of Punjab, the food abundance for the market has not been translated into nutrition for the girl child within the house. A study done in 1978 in Ludhiana district of Punjab shows that the percentage of female children who were undernourished was higher than that of undernourished male children within the same economic group (Shiva, 1989: 117).

The increasing food surplus, according to prominent economist VKRV Rao, is a myth because it is created by lack of purchasing power. Dr. C Gopalan, India's leading

nutritionist, has also stressed that our buffer stocks are apparently more an indication of poverty of our masses than of real food surplus.

With the grain silos overflowing, the country's foodgrains kitty had swelled to a peak of 35 MT in 1995 (Sharma, 1997: 19).

⇒ As late as in Aug. 1996, an opposition leaders alleged that nearly 500 tribal children in Dharni and Chikaldhara sub - divisions of Amravati district, Maharashtra, had died of malnutrition in the months of May and June (Sharma, 1997: 29).
⇒ In 1996, India's National Human Rights Commission reported that most of the cases they investigated after allegations of starvation deaths in Kalahandi district in Orissa that year had turned out to be cases of starvation deaths.
⇒ Spectre of famine hounted Bihar's Palamu district in 1991-92 so severely that the Prime Minister had to air dash to the region to look into the issue (Sharma, 1997: 30-31).
⇒ The UNICEF has said that at least 5,000 children die *every day* in India from diseases that are the direct result of malnutrition (Singh, 1997: 128).
⇒ The actual requirement of foodgrains that needs to be distributed among the poor in India, based on the minimum nutritional norms projected by Indian Council of Medical Research, should exceed 52 MT every year. Does it not mean that all these years we have been deliberately pushing down the per capita foodgrains availability among the poor (Singh, 1997: 151)?
⇒ A recent study concludes that in the eastern states and MP, the poorest two decile groups of the population do not get any PDS support worth mentioning (Shah, 1998: 45).

One of the important factors for food security for the poorer people is production of coarse cereals. But the GR paradigm has obvious bias against this "inferior" kind of food. With an average yield of 923 kg per ha, India's productivity in coarse grains is about 43% of the average in developing countries; productivity in India has declined over the years (Sharma, 1997: 66).

Similar is the treatment meted out to pulses as is evident in the steady decline in the availability and production of pulses. Per capita availability of pulses have declined from 70 grams in 1956 to 37 grams in 1991-3. Growing pulses in India is important as 80% of population depends on it for the intake of proteins (Sharma, 1997: 67).

There is thus increasing evidence that shows that it is the local food production that has the greatest chance of assuring food security. However, GOI's policy on food self sufficiency says, "Foodgrains self - sufficiency refers only to the country as a whole and there is no need for self sufficiency at the State or regional level" (GOI, 1999: 449).

Expansion in agricultural output as a result of irrigation has also helped keep food prices down. Between 1970 and 1986, for example, food grains prices in India fell by about 20% relative to the price index for all commodities (World Bank, 1991a: 5). The contribution for such impacts, of course come from all sources of irrigation and is not limited to M & M projects. The problem with the M & M kind of projects is that they create islands of prosperity among the sea of poverty. This is not going to assure food security as above analysis shows.

PS:

1. Above is part of Himanshu Thakkar's larger paper on India Irrigation Sector Review, done for the WCD.
2. The figure of 10% contribution arrived at in this paper is a slightly different approach that what was done in submission to WCD for south Asia Public Hearing.
3. Prof. Nirmal Sengupta of Madras Institute of Development Studies have also concluded in his paper for the India country World Commission on Dams that "Assuming that most, not all, major and medium irrigation projects are dam based, the contribution of large dams to increased foodgrains production is less than 10%". Prof Sengupta's analysis, done from another approach, thus largely corroborates to the findings of this paper on this issue.
4. It is due the artificial separation of food production and food security that today (March 2000) we have our foodgrains stocks at 32 million tonnes, when we need no more than 20 million tonnes in storage as per govt. norms. Implying all the unnecessary expenses and wastes. This in a year when the foodgrains production has actually gone down by 4 million tonnes from the previous year. And at the end of a decade when unemployment and poverty in rural areas has increased.
5. This being part of the larger paper on India's irrigation Options, the references here are not listed separately. The references are given in the larger paper.

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[i] Sen and Dreze go on to give credit for famine removal to two factors. One is the formation and strict implementation of the famine code of 1885. The second is the role of media and adversarial politics that came to India after Independence in 1947.