# SSP: Mounting Costs, Minimal Benefits

**Mounting Financial Costs** According to the working group report on Water Resources for the 11th Five Year Plan, the total cost of the Sardar Sarovar Project (SSP) has already become a colossal figure at Rs 45673.86 crores. It is not clear if this cost is only that of irrigation component or it is total project cost. In either case, this figure is more than the cost that Narmada Bachao Andolan had predicted at Rs 44 000 crores in early 1990s. Then, the project proponents had laughed at the NBA projection. Now it seems NBA's projection has turned out to be an under estimate! It is interesting to see how the costs have been mounting in recent years.

**According to the working group report on Water Resources for the 11th Five Year Plan, the total cost of the Sardar Sarovar Project (SSP) has already become a colossal figure at Rs 45673.86 crores. This is likely to go upto Rs 70 000 crores. The current official figure is below the NBA estimate of Rs 44000 crores, done in early 1990s.**

| Sr No | Year | Document | Cost, Rs Crores |
|---|---|---|---|
| 1 | 1988 | Clearance letter from Planning Commission | 6406 |
| 2 | 2002 | 10th Plan Document (1991-92 prices) | 13180 |
| 3 | 2005 | 10th Plan Mid Term Appraisal | 30823 |
| 4 | 2007 | 11th Plan working Group report | 45674 |

It is certain that this latest figure is would also turn out to be an underestimate and the actual project cost may go above Rs 70 000 crores. This is because, the working group report for the 11th Plan accepts that the project will certainly go on beyond the 11th Plan, that is beyond 2012. In fact, out of the likely spill over cost of Rs 18159.24 crores, the working group has recommended allocation of Rs 12711.47 crores during the 11th Plan. And the working group has not found itself in a position to predict how much irrigation potential will be added with this expenditure, and in fact it left the figure at zero for potential added from all the ongoing Major and Medium irrigation projects from Gujarat, including SSP!

**CWC: "As per the decision taken in the 78th meeting of the Narmada Control Authority held on 3.5.2007 the back water studies is being carried out afresh considering the completion / construction of number of projects upstream of Sardar Sarovar Dam and the back water affect in the upstream tributaries also. A sub-committee has been formed consisting of the members of all beneficiary states and central govt agencies."**

The Working Group also stated that expenditure on the project by the end of the 9th Plan (March 2002) was 12663.76 crores and another Rs 14850.66 crores is expected to be spent on SSP by the end of tenth plan (March 2007).

**Power benefits delayed, time and cost over run** In response to an application under RTI (Right to Information) Act, the Central Electricity Authority (CEA) responded in January 2007 that the cost of power component of SSP was Rs 1551.86 crores at 1988-89 price level and it went up to 5502 crores as per latest estimates. (The response of Sardar Sarovar Narmada Nigam Ltd in this regard was misleading as they said that the cost of power component at 2005-06 level is Rs 1970.02 crores.) The reasons given by the Sardar Sarovar Narmada Nigam Ltd for the cost escalation are, "the increase in the cost of material at the time of its purchase and the change in the exchange rate of Japanese Yen Vs Rupees as the contract was amended in 1999 after the withdrawal of the World Bank assistance."

The CEA also agreed that there was delay in commissioning of various units of the River Bed Power House (RBPH) and Canal Head Power House (CHPH). The original and the actual dates of commissioning are given in the following table, as informed by CEA.

| Unit No | RBPH | | CHPH | |
|---|---|---|---|---|
| | Original date | Actual date | Original date | Actual date |
| 1 | 1994-95 | 01.02.05 | 1994-95 | 04.10.04 |
| 2 | 1994-95 | 30.04.05 | 1994-95 | 16.08.04 |
| 3 | 1995-96 | 30.08.05 | 1994-95 | 31.08.04 |
| 4 | 1995-96 | 13.10.05 | 1995-96 | 03.09.04 |
| 5 | 1995-96 | 07.03.06 | 1995-96 | 15.12.04 |
| 6 | 1995-96 | 20.06.06 | | |

Here it is important to note that the dam height reached the level of 110.64 m on June 30, 2004. This is the height at which both RBPH and CHPH units can start generating power. Had all the units been installed by June 2004, they could have started generating power, but as is apparent from above table, none of the CHPH or RBPH units were ready as on June 30, 2004. In fact the last unit of CHPH was commissioned 5.5 months after this date and the first unit of RBPH was commissioned seven months after that date. This meant huge loss of power to the nation and there should have been an enquiry why this delay occurred. But no enquiry was done, nor was anyone held responsible for this. It seems power generation is not a priority for SSP.

Incidentally, here it should be noted that in response to RTI application, the dates of original commissioning

schedule given by the Sardar Sarovar Narmada Nigam Ltd and Sardar Sarovar Construction Advisory committee for RBPH were those of 2004 to 2006, clearly an incorrect information was given by them. Why they had to give such misleading information is not clear.

**Mounting Displacement** According to Central Water Commission (CWC), "The maximum back water level for Maximum Water Level (140.21 m) behind Sardar Sarovar Dam till it merges with normal water flow is EL 159.243 m and for Full Reservoir Level (138.68 m) till it merges with normal water flow is 156.667 m. This was computed for every 10 000 ft interval from Sardar Sarovar Dam". However, this back water computation was done in 1983-84, as per the award of the Narmada Water Disputes Tribunal. They have accepted that this assessment won't include full back water impact.

The CWC has accepted in response dated August 17, 2007 to an application under the RTI Act that the full backwater impacts of the Sardar Sarovar Dam have not yet been assessed, "The computation was worked out for the construction stages of Sardar Sarovar Dam and the flooding in the upstream tributaries of the Narmada River in the submergence zone was **not** considered in the earlier back water computations. As per the decision taken in the 78th meeting of the Narmada Control Authority held on 3.5.2007 the back water studies is being carried out afresh considering the completion / construction of number of projects upstream of Sardar Sarovar Dam and the back water affect in the upstream tributaries also. A sub-committee has been formed consisting of the members of all beneficiary states and central government agencies."

When this assessment is completed, the number of people to be displaced by this project will mount further even as the governments have been unable to provide the legally mandatory minimum resettlement package to those already affected.

**Minimal Power Benefits** In the Table below (see next column) power generation figures from the SSP and Indira Sagar Project (ISP, Madhya Pradesh), both on the Narmada River, are given since the month in which power generation started from these projects. We have included the figures of power generated at ISP as it gives an indication of how much water may have been released from ISP in respective months, as that would become available at downstream SSP. In fact, one of the design functions of ISP to is to provide regulated releases for the SSP.

All power generation figures are from Monthly Generation reports of the government of India's Central Electricity Authority (www.cea.nic.in). Let us see some trends visible from these figures.

1. Power generation at CHPH has been lower in Sept to Dec 2005 compared to corresponding months in 2004, because there was more water available to pass through CHPH in 2004 as RBPH was not yet commissioned. In 2005, with some units of the RBPH having been commissioned, only the required quantity of water was allowed to pass through CHPH.

**Month wise Power Generation at SSP & ISP**

MU (MW)

| Month/ year | Sardar Sarovar Project | | | Indira Sagar (IC) |
|---|---|---|---|---|
| | RBPH (IC) | CHPH (IC) | Total (IC) | |
| 0104 | 0 | 0 | 0 | 55 (250) |
| 0204 | 0 | 0 | 0 | 71 (375) |
| 0304 | 0 | 0 | 0 | 66 (375) |
| **2003-2004** | **0** | **0** | **0** | **192** |
| 0404 | 0 | 0 (450) | 0 (450) | 29 (500) |
| 0504 | 0 | 0 (450) | 0 (450) | 23 (500) |
| 0604 | 0 | 0 (450) | 0 (450) | 76 (500) |
| 0704 | 0 | 0 (450) | 0 (450) | 95 (625) |
| 0804 | 0 | 4 (150) | 4 (150) | 326 (625) |
| 0904 | 0 | 33 (200) | 33 (200) | 280 (625) |
| 1004 | 0 | 38 (200) | 38 (200) | 100 (750) |
| 1104 | 0 | 26.62 (200) | 26.62 (200) | 114.46 (750) |
| 1204 | 0 | 26.14 (200) | 26.14 (200) | 90.01 (875) |
| 0105 | 20.97 (200) | 0 (200) | 20.97 (400) | 89.35 (875) |
| 0205 | 53.87 (200) | 12.55 (200) | 66.42 (400) | 74.17 (875) |
| 0305 | 35.88 (200) | 10.01 (200) | 45.89 (400) | 46.93 (875) |
| **2004-05** | **110.72** | **149.98** | **260.70** | **1348.76** |
| 0405 | 17.92 (400) | 1.69 (250) | 19.61 (650) | 25.58 (1000) |
| 0505 | 17.02 (400) | 2.73 | 19.75 (650) | 23.34 |
| 0605 | 103.82 (400) | 10.05 | 113.87 (650) | 112.92 |
| 0705 | 217.69 (400) | 18.95 | 236.64 (650) | 489.95 |
| 0805 | 200.20 (600) | 22.30 | 222.50 (850) | 483.90 |
| 0905 | 245.40 (600) | 29.93 | 275.33 (850) | 379.62 |
| 1005 | 304.57 (600) | 16.35 | 320.92 (850) | 267.72 |
| 1105 | 209.91 (800) | 17.52 | 227.43 (1050) | 190.19 |
| 1205 | 143.49 (800) | 20.51 | 164.00 (1050) | 190.84 |
| 0106 | 147.94 (800) | 19.54 | 167.48 (1050) | 167.66 |
| 0206 | 114.5 (1000) | 16.92 | 131.42 (1250) | 133.37 |
| 0306 | 30.40 (1000) | 32.26 | 62.66 (1250) | 98.88 |
| **2005-06** | **1752.86** | **208.65** | **1961.51** | **2575.97** |
| 0406 | 0 | 12.05 | 12.05 | 115.12 |
| 0506 | 75.3 | 6.94 | 82.24 | 103.29 |
| 0606 | 200.43 (1200) | 8.85 | 209.28 (1450) | 137.81 |
| 0706 | 278.22 | 22.31 | 300.53 | 127.54 |
| 0806 | 563.13 | 15.00 | 578.13 | 467.63 |
| 0906 | 602.03 | 22.12 | 624.15 | 227.59 |
| 1006 | 505.20 | 19.31 | 524.51 | 260.78 |
| 1106 | 459.64 | 22.16 | 481.80 | 393.66 |
| 1206 | 365.81 | 21.28 | 387.09 | 324.90 |
| 0107 | 193.39 | 28.86 | 222.25 | 261.37 |
| 0207 | 79.15 | 25.53 | 104.68 | 94.33 |
| 0307 | 49.74 | 24.68 | 74.42 | 91.67 |
| **2006-07** | **3372.04** | **229.09** | **3601.13** | **2605.69** |
| 0407 | 126.74 | 24.50 | 151.24 | 91.67 |
| 0507 | 72.65 | 12.93 | 85.58 | 101.87 |
| 0607 | 214098 | 9.77 | 224.75 | 135.34 |
| 0707 | 796.60 | 34.95 | 831.55 | 529.42 |
| 0807 | 788.86 | 50.83 | 839.69 | 441.52 |
| 0907 | 587.00 | 15.85 | 602.85 | 178.12 |
| 1007 | 329.51 | 19.52 | 349.03 | 250.52 |
| 1107 | 338 | 21.87 | 359.87 | 283.12 |

IC: Installed Capacity mentioned till the station reaches full design capacity; MU: Million Units; generation figures for Nov '07 are tentative

2. Power generation at CHPH has been lower in June, August & Sept in 2006 and March 2007 compared to corresponding months in previous year. What this means is that less water was allowed to go through

canals in 2006-07 compared to corresponding months previous year, which is strange, since with increased irrigated area in 2006-07, in fact more water should have been allowed to go through the canals. This shows that a lot of the water that flowed into canals in 2005-06 (and also 2004-05) was not used for irrigation or water supply but possibly for unplanned use (e.g. allowing water into rivers or filling lakes).

3. Power generation at CHPH has been lower in Sept 2007 compared to corresponding month in 2006. This is indeed strange as irrigation water demand should be high in September and in 2007 more area should have been under irrigation. Similarly, power generation at RBPH has been lower in Sept, Oct and Nov 2007 compared to corresponding months in the previous year. This seems to be due to reduced power generation also at ISP in the upstream in these months.

**It is apparent from the information supplied by the CEA that none of the CHPH or RBPH units were ready as on June 30, 2004 when the dam height was reached to start generating power. In fact the last unit of CHPH was commissioned 5.5 months after this date and the first unit of RBPH was commissioned seven months after that date. This meant huge loss of power to the nation. It seems power generation is not a priority for SSP.**

4. Power generation at RBHP and also ISP peaked in July 2007. Power generation at CHPH peaked in August 2007. Power generation at RBPH was 3372.04 MU in 2006-07 and is likely to go up further in 2007-08. Power generation at ISP in 2006-07 is marginally (about 1%) higher than that in the previous year, but is likely to go up in 2007-08, going by the trends so far.

5. Power generation at CHPH in 2006-07 was marginally (<10%) higher than that in the previous year, which indicates that the irrigation in 2006-07 has not gone up significantly compared to that in the previous year.

**According to Gujarat Government's Socio Economic Reviews of various years (the latest one available is for 2005-06), in each of the last three years for which such reports are available, the benefits from water conservation measures (including check dams) are far greater than those from the SSP. Critics of SSP have been proved right by the figures from Gujarat Government!**

6. One can see from above that since August 2004, the CHPH at SSP has produced power in every single month, except January 2005. In January 2005, CHPH could not generate power due to breach in SSP main canal and attended repairs. The RBPH did produce 20.97 MU power in that month. This means that every month since August 2004, the level of water in SSP reservoir has been above 110.2 m and there has been sufficient water in the river upstream of the dam for power generation.

7. This is further substantiated by the figures in the last column in the above table, where the power generation at the upstream Indira Sagar Project on Narmada in MP is tabulated. Here again we can see that ISP has been producing power every single month since January 2004 when power generation at ISP was commissioned. It should be noted here that ISP has a greater storage capacity and releases water into the river after power generation, most of which is available at the downstream SSP. Thus regulated, predictable water has been available at SSP every month (actually every day), for release into the canals and to be used for irrigation or water supply in Gujarat since August 2004 at least, when the first unit of CHPH was commissioned.

8. Moreover, there is a huge water storage of 3665 million cubic meter at 110.64 m and 2600 million cubic meter at 100 m. SSP has been using that water since 2000-01, first by pumping water from existing reservoir into the canal, then since August 2002 through Irrigation By Pass Tunnel (IBPT) and since August 2004 through CHPH and this water has been used for water supply and irrigation, besides allowing the water to flow into rivers like Sabarmati and into lakes in Gujarat.

9. In 2005-6, CHPH produced 208.65 MU power. This means that if on average the reservoir level remained around 11.64 m (it could have gone up slightly some times in Monsoon and could have gone down slightly in summer) and if power generation efficiency is assumed as 90% (that is 90% of the potential energy is converted into power) than we see that at least 3.8 MAF water had flowed into SSP canal during 2005-06 even if no water had flown through IBPT. (If water had also flown through IBPT, than the amount of water that entered the canals would have been even higher.) In fact the efficiency is more likely to be about 80%, in which case, at least 4.28 MAF water had flown into canals during the year. This is even more than the 3.5 MAF water claimed by Gujarat when the clearance was given to increase the height of the dam to 110.64 m. And this water was available almost on daily basis. However, Gujarat has been unable to put even 10% of this water to use as is clear from the area irrigated in 2005-6 (57 000 ha) and water supply provided during 2005-6 (2044 villages and 57 towns).

10. Dam height reached 110.64 m in June 2004 and 119 m in June 2006, 121.62 m in Oct 2006.

**Irrigation Benefits: Check dams beat the SSP**

According to the quarterly reports published by Sardar

Sarovar Narmada Nigam Limited, as required under the law, the Command Area Development (CAD) work completed at SSP, which gives one indication of the irrigation achieved at command areas has been as follows.

| Sr No | Date | CAD completed, ha |
|---|---|---|
| 1 | 31.12.2005 | 97000 |
| 2 | 31.03.2007 | 140 740 |
| 3 | 30.06.2007 | 276 562 |
| 4 | 30.09.2007 | 279 308 |

The 11th Plan working group claims that potential created by the end of 9th plan (March 2002) was 1.3075 lakh ha. It has projected that by the end of 10th plan (March 2007), an additional potential of 3.3468 lakh ha would have been created from this project.

The figures from the above table show that both these claims are gross exaggerations, as the area for which Command Area Development Work were completed by March 2002 and March 2007 were much lower than the figure claimed by respective plans for irrigation potential created. It is high time the working group and the Planning Commission does some checking of the claims made by the Gujarat Government to them.

**What this means is that Gujarat could get 10.139 MAF water at SSP during 2005 and 15.642 MAF during 2006. Gujarat and Rajasthan's total share at SSP is 9.5 MAF water from Narmada as per the Narmada Water Disputes Tribunal Award. What this means is that Gujarat got more than its due share at SSP, even at current height of the dam and that too well distributed through out the year. Then what is the need to increase the height of the dam?**

According to Gujarat Government's Socio Economic Reviews of various years (the latest one available is for 2005-06), in each of the last three years for which such reports are available, the benefits from water conservation measures (including check dams) are far greater than those from the SSP, as can be seen from the table below.

| Benefit by | Maximum utilisation, lakh ha | |
|---|---|---|
| | SSP | Water conservation programme |
| 2003-04 (by June '03) | 0.25 | 2.15 |
| 2004-05 (by June '04) | 0.25 | 3.5 |
| 2005-06 (by June '05) | 1.08 | 3.5 |

The critics of the SSP have all along been saying that if water conservation measures are adopted all across the state, they will provide greater benefits than SSP, at a lesser social, environmental and financial costs and at a faster pace. It is clear that the critics of the SSP have been proved right on this count too.

**Water Available at SSP** Following an application under RTI Act, the Sardar Sarovar Narmada Nigam replied that 3.659 MAF (Million Acre Feet) water flowed through CHPH in 2005 and 3.56 MAF water flowed through CHPH in 2006. Similarly, 6.48 MAF water flowed through RBPH during 2005 and 12.082 MAF water flowed through RBHP during 2006. What this means is that Gujarat could get 10.139 MAF water at SSP during 2005 and 15.642 MAF during 2006. Gujarat and Rajasthan's total share at SSP is 9.5 MAF water from Narmada as per the Narmada Water Disputes Tribunal Award. What this means is that Gujarat got more than its due share at SSP, even at current height of the dam and that too well distributed through out the year. Gujarat (and by implication Rajasthan) could not use the available water only because the canal systems have not yet been constructed to make it possible for Gujarat o use that water.

**Proposal to Redesign SSP** In such a situation, a crucial question arises, if Gujarat has any case for asking for increasing the height of the dam from the current level of 121.92 m to the final design level of 138.68 m? (This increase will be affected through installation of 30 spill way gates of two different sizes.) As we have seen above, Gujarat is able to get its rightful share even as per NWDT award (even if we forget for the moment that amount of water available in the Narmada river is about 16% less than that assumed by NWDT. ) at the current height. Similarly, all the power units are functioning at the current height. Once Gujarat and Rajasthan (and also the upstream state of Madhya Pradesh) develop the system to make full use of its share of water, there will be no surplus water available for power generation at RBPH. It could function as a pump storage unit, provided the downstream Garudeshwar weir is constructed (there is no activity on ground on this currently, as a visit to the site confirmed recently), but for that there I no need for increase in height of the dam. The spill way gates are required for safety of the dam, but an assessment can be made to find options and implications for this. By not increasing height of the dam from the current level, about 50% of the proposed submergence area can be saved, as also the cost of increasing the height is saved. Most of the affected people of Madhya Pradesh will not have to be displaced.

It is clear that there are huge benefits in looking into this proposal of not allowing any further increase in height of the dam beyond the current level. As shown above, this will have not impact on the benefits or water availability. The state governments of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan as also the union government can show great leadership and sensitivity towards the displaced people and environment by making such an assessment in a credible manner and also implementing it. Will they?

**Need to reassess all ongoing big irrigation schemes** There is another important reason why such redesign proposals needs to be considered for all ongoing irrigation projects of the country. Since the Fifth fiver year plan the governments have said at the time of formulation of a new five year plan, that there has been unjustified proliferation of big irrigation schemes, draining the limited financial and other resources of the state and the society. Recent evidence from government figures show that the big irrigation projects have added zero additional irrigation over the last twelve years. It is high time that the government shows political will to take steps to weed out the unviable and unjustifiable scheme even among ongoing schemes. In this process, the schemes for which substantial expenses have been incurred and which cannot be scrapped all together, there is the option of reassessing the schemes to reduce its scope as proposed for SSP. Economic, hydrological, social and environmental prudence demands that this be done urgently.

**It is high time that the government shows political will to take steps to weed out the unviable and unjustifiable scheme even among ongoing schemes. In this process, the schemes for which substantial expenses have been incurred and which cannot be scrapped all together, there is the option of reassessing the schemes to reduce its scope as proposed for SSP. Economic, hydrological, social and environmental prudence demands that this be done urgently.**

Considering all factors highlighted here (and some more), it is clear that there is no case for increasing the height of the SSP beyond the current height. The government of India should immediately initiate steps to ensure that the SSP is stalled at the current height.

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## SSP NEWS

**Corruption exposed at public hearing** Thousands of affected persons thronged Jhanda Chowk on Dec 15, '07 in Badwani, to inform the public hearing panel members such as Shri Annasaheb Hazare, noted social activist against corruption, Shri Arvind Kejriwal, Right to Information activist and Magsaysay Award winner, Shri M.S. Mushrif, Inspector General of Police (former) Maharashtra and Shri Anand Kotadia, senior social activist, not just about the total lack of rehabilitation but the rampant corruption that mars the rehabilitation process and the strong nexus between the dalals and rehabilitation officials. People also clearly demonstrated how, due to corruption, the entire process of rehabilitation was now reduced to a money laundering exercise with the principles of ensuring their being better-off even after displacement being thrown to the winds. At the end of the Public Hearing and visits to submergence villages and R&R sites, the Panel declared, as their interim finding, that indeed corruption is rampant due to the collusion between dalals and officials, and further that clearly, affected persons were still in their villages and not rehabilitated yet. The panelists then proceeded to visit Kharya Bhadal (M.P.) where they had close interactions with representatives of the submergence villages in Alirajpur tehsil (M.P.) and Akrani tehsil (Maharashtra).

**Slow pace of Investigation** The special group set up by the Madhya Pradesh government to investigate into the issues connected with the fraudulent registry to claim compensation in the name of Sardar Sarovar project affected persons is moving very slowly in spite of repeated reminders by the Chief Minister and this is turning out to be to the benefit of the corrupt officials and the middlemen. Due to the involvement of Patwaris, some of the lands have changed names even as the original land owners remain in the dark.

**NVDA officials and dalals try new tricks** The officials of the Narmada Valley Development Authority, government of Madhya Pradesh and the middlemen who were involved in pocketing compensation for the Sardar Sarovar Project affected people by some 750 fraudulent registry of land purchase and against whom investigations are going on are now trying new tricks. They are getting the affected people sign an affidavit that it was the mistake of affected people and that the affected people will buy real land in a year and register the same. This way the officials and the middlemen are trying to prepare grounds for their escape from the clutches of law. The affected people have written to the Chairman of Narmada Control Authority, complaining against this. (*Dainik Bhaskar* 11x07, 201107, NBA 201207)

**SSP drinking water scheme a flop: Congress** The leaders of the Congress have said that the Sardar Sarovar Project based drinking water project in Gujarat was a flop and the scheme invited strictures from the Public Account Committee. The opposition party from Gujarat accused the state government of financial irregularities with contracts worth Rs 668 crores being awarded to incompetent contractors. The trouble is, Congress was quite non serious in raising these issues and it failed to raise real people's issues through out its five year tenure as opposition party. That was one of the reasons why it got defeated in the assembly elections, the results of which were announced on Dec 23, 2007. (The Times of India 141207, SANDRP)