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REPORT OF THE FIVE MEMBER GROUP SET UP BY THE MINISTRY OF WATER RESOURCES TO DISCUSS VARIOUS ISSUES RELATING TO THE SARDAR SAROVAR PROJECT

VOL 1 - REPORT

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I. INTRODUCTION

1.1 Background to the Constitution of the Group

1.1.1. This Report has to begin with a brief reference to the discussions held on 29 and 30 June 1993 between the Government and the representatives of the Narmada Bachao Andolan (NBA) on issues relating to the Sardar Sarovar Project, because it was at the end of those meetings that it was decided to set up a Group to continue the discussions. In pursuance of that decision the Ministry of Water Resources set up the present Group under its Office Memorandum of 3 August 1993 (copy enclosed at *Appendix I (1)*). The Office Memorandum stated that the Government of India “hereby constitutes a Five-Member Group to continue the discussions initiated during the end of June 1993 on all issues relating to the Sardar Sarovar Project.” The Group was expected to hold discussions with different opinion groups and to report within a time-frame to be decided by the Group itself. A preliminary meeting of the Group was held on 5 August 1993. At that meeting Secretary, Water Resources, gave a detailed briefing to the Group regarding the project, and also provided a list of the issues which had been raised at the meetings of 29 and 30 June 1993 [*Appendix I (2)*].

1.1.2. However, the NBA was continuing with its agitation against the project and had announced a *jal samarpan* undertaking, i.e., a decision to remain, along with project-affected persons, in the area expected to be submerged following the monsoon of 1993 and allow themselves to be drowned in the waters rather than move from that area. NBA did not find the Office Memorandum of 3 August 1993 acceptable because (as was explained to the Group later) it did not refer to a review of the project, prescribed no time limit for the completion of the work of the Five-Member Group, and did not indicate whether the report of the Group would be made public. For these reasons, representatives of the NBA were not present at the preliminary meeting held on 5 August 1993. The Group was extremely concerned at these developments and decided to issue an appeal to the NBA to give up the *Jal samarpan* and to come and put forward their points to the Group. A copy of the appeal issued by the Group to NBA is at *Appendix I (3)*. (The appeal was signed only by four members because one member, namely, Prof. V. C. Kulandaiswamy was abroad at the time and was not present at the meeting). Meanwhile, the Government were also considering the points raised by the NBA and issued an amended Office Memorandum on 5 August 1993, a copy of which will be found at *Appendix I (4)*. The amended O. M. stated that the Group would “continue the review discussions initiated during the end of June 1993 on all issues related with the Sardar Sarovar Project”; it prescribed a time-limit of three months for the submission of a report by the Group; it also stated that the report would be released to the public within one month. In response to the appeal made by the Five-Member Group, and also taking into account the wording of the revised Office Memorandum of 5 August 1993, the NBA indicated its willingness to suspend the *jal samarpan* programme and to present their points on the Sardar Sarovar Project to the Five-Member Group. The Group invited NBA and the four State Governments (through their Chief Secretaries) to meet the Group at its first formal meeting on 12 August 1993 [copy of letter at *Appendix I (5)*].

1.2 Terms of Reference

1.2.1 The terms of reference of the Group were not spelt out in detail in the Office Memorandum of 5 August 1993, as is customary when the Government sets up Commissions or Committees or Groups. The only indication was (as already mentioned) that the Group was “to continue the review discussions initiated during the end of the June 1993 of all issues related with the Sardar Sarovar Project.” As mentioned earlier, a list of those issues was also made available to the Group. Subsequently, however, the Union Minister of Water Resources and Parliamentary Affairs made a statement in the Lok Sabha on 10 August 1993 in reply to a Calling Attention Motion. A copy of that Statement is at *Appendix I (6)*. The Statement observed, *Inter alia*, that “according to Clause 16 of the final order of the Tribunal, the parameters of shares of utilizable waters by the States, the FRL, MWL of the Reservoir and the FSL of Navagam canal are made subject to review at any time after a period of 45 years from the date of publication of the decision of the Tribunal in the official Gazette.” It added that “according to sub-clause 6 of Clause 11 relating to submergence, land acquisition and rehabilitation, alteration, amendment and modification of any of the provisions of Clause 11 is permitted by agreement between all the party States.” The Statement proceeded to refer to the discussions initiated at the end of June 1993 on all issues relating to the Sardar Sarovar Project, the constitution of the Five Member Group by the Office Memorandum of 3 August 1993, and its amendment by the Office Memorandum dated 5 August 1993; and concluded by stating that the Group had already started functioning and was required to give a report within a period of three months.

1.2.2 The Group was not entirely clear as to the bearing that the Minister's Lok Sabha Statement would have on the terms of reference of the Group, and sought a clarification on this point from the Ministry of Water Resources. In his reply, Secretary (Water Resources) observed as follows :

“_____ according to the Award of the Narmada Water Disputes Tribunal the parameters of the Sardar Sarovar Dam like Height, Full Reservoir Level, Maximum Water Level and Full Supply Level of the canal along with other specified provisions of the award will neither be reviewed nor changed till 2025 A. D. that is 45 years after the notification of the Award.

The discussion on various issues related with the Sardar Sarovar Project (SSP) were initiated in the end of June 1993 in this clear context. The Five Member Group has to continue these discussions in the same context with all concerned opinion groups as per the MOWR O. M. dated 5. 8. 1993.

The project has been planned, designed, approved and is being implemented by the four party States in accordance with the NWDI award. Discussions being held by the Group will, therefore, possibly focus on such issues which can lead to improvement on implementation and benefits planned for Sardar Sarovar Project.”

A copy of Secretary (WR)'s letter dated 19 August 1993 is at *Appendix I (7)*.

1.2.3 A statement similar to his Lok Sabha Statement was made by the Minister of Water Resources in the Rajya Sabha on 27 August 1993 [*Copy at Appendix I (8)*] in which there was the following additional paragraph :

“It is hoped that some useful suggestions about R & R and environmental concerns may be received which will help speedy implementation of the project. There is no danger anticipated to the project.”

1.2.4 Later on, a further letter dated 30 September 1993 was received from Secretary, Water Resources in which he stated :

“_____ It is not, I repeat NOT a REVIEW GROUP _____ Similarly, the project is not under Review _____”.

1.2.5 Those six documents, namely, the Office Memorandum of 5 August 1993, the list of the issues which had been raised in the meetings of 29 and 30 June 1993, the Minister's statements in the Lok Sabha and later in the Rajya Sabha, and the two letters from Secretary, Water Resources Dated 19 August and 30 September respectively, together indicated the Government's view of the scope of the Group's work. One further document was the statement regarding the Group made by the Government in the counter-affidavit filed by it in the Gujarat High Court in response to a writ petition regarding the constitution of the Group to which a reference is made later in this report (see paragraph 1. 4). In that statement the Government observed as follows :

The Government has considered setting up of this Group as a sounding board or a listening post for the Government, as discussions are considered to be an important component of democratic process for getting representative views on various issues. It is hoped that some useful suggestions on resettlement and rehabilitation and environmental concerns may be received and that the same would help speedy and effective implementation of the project.”

1.3 Meetings of the Groups

1.3.1 At the first meeting with the NBA on 12 August 1993, having regard to the very limited time available and the impossibility of covering all the issues which had been raised by the NBA within this period, the Group requested the NBA to submit a selective list of issues of high priority which could be taken up within the time available.

1.3.2 However, at the next meeting it was found that the list provided by the Narmada Bachao Andolan was in fact not selective but comprehensive in its coverage. Moreover, an official copy of the Minister's Lok Sabha Statement and the clarificatory letter dated 19 August 1993 from Secretary, Water Resources, referred to earlier had by then been received. The Group explained the position to the NBA and re-requested them to focus on the matters mentioned in Secretary (Water Resources)'s letter namely “implementation and benefits. “

1.3.3 The NBA representatives stated that what they desired was a review of the project; that it was because this point of theirs had been met in the OM of 5 August 1993 that they had agreed to participate in the proceedings of the Group; and that they had fundamental doubts regarding the soundness of the project. However, having regard to the position explained by the Group, they agreed to present their points on the various benefits claimed for the project and on the implementation aspects, particularly those of displacement, resettlement and rehabilitation, the environmental impact of the project, and the financing of the project. They argued that their criticisms regarding these matters would be so far-reaching as to raise questions regarding some of the very basics of the project itself. They expressed the hope that the Group would be willing to accept the logical results of their criticisms, if it found that those criticisms were justified. The Group suggested that without raising such hypothetical questions the NBA should proceed with its points on the various aspects of implementation and benefits, leaving it to the Group to draw its own conclusion and decide for itself on what it should say in its report, keeping in mind its terms of reference.

1.3.4 The NBA then made its presentations on the various benefits claimed for the project such as drinking water, irrigation and hydro-electric power, as also on environmental issues, questions of displacement, resettlement and rehabilitation, and other aspects of implementation including the financing of the project, in a series of meetings. They also brought a number of project-affected persons, and these spoke about their problems and difficulties.

1.3.5 NBA also proposed a list of experts to be invited to present their views to the Group. In addition, the Group also prepared its own list of opinion groups, experts and knowledgeable persons whose views it would like to have. The Group asked for opinions and suggestions in writing from a number of persons, but in view of the severe time constraint, it was obliged to limit the number of persons invited to come for personal discussions. A list of those to whom the Group's letter was sent, a list of those who declined for various reasons, a list of those who sent written comments and a list of those who actually came and gave their views in person to the Group, are given in *Appendix I (9)*. Independently of this, the Group received communications from a very large number of persons and also organisations in India and abroad commenting on diverse aspects of the project and offering comments and suggestions. A list of these communications is given in *Appendix I (10)*.

1.3.6 The Office Memorandum of the Ministry of Water Resources leaves it to the Group to decide whether field visits are necessary. However, because of the time-constraint and for certain other reasons which will be explained in the next chapter, the Group was unable to undertake any field visits.

1.4 Petition before the Gujarat High Court

At this stage, mention must be made of one important development which took place. The Narmada Abhiyan and others filed a writ petition before the Gujarat High Court challenging the constitution of the Group and its proceedings on the ground that in terms of the Tribunal's Award, no review of the project could be undertaken before A. D. 2025; that the Central Government was not competent to constitute such a Group; and so on. The Gujarat High Court fixed 14 October 1993 as the date of hearing for considering the admissibility of the petition, on the understanding, given to it by the Government of India's Counsel, that the Group would not be submitting its report before 27 October 1993. The hearing got postponed to 26 October 1993, but on that date the Gujarat Government wanted time to file an affidavit of its own and so the Court fixed 14 December 1993 as the date for the hearing and ordered that the report of the Group, if submitted to the Government, should not be made public, but should be kept in a sealed cover by Secretary (WR) until the Court had taken a final decision on the petition. Copies of the Court's Order's of 30 September and 26 October 1993 are at *Appendices I(11) and (12)*. Subsequently, further dates were fixed for the hearing, but there were further postponements and the Court has not yet given a decision on the petition.

1.6 (sic) Time-Limit for the Report

The Group's initial intention was to complete its Report within the three-month period given to it, and it planned its hearings accordingly. However, for a number of reasons, including the enormous amount of material submitted to it for study, the constraints and limitations which are explained in Chapter II, and some uncertainty resulting from the fact that in terms of the Gujarat High Court's direction, the Report, even if submitted, would have to be kept secret, the Group was unable to complete its Report within the three-month period. It sought and obtained extensions of time, and the last communication of the Ministry of Water Resource dated 2 March 1994 gave it time till 15 April 1994 for the submission of its Report [*Appendix I (13)*].

1.7 Acknowledgements

The Group did not have a Member-Secretary or Secretary or a regular Secretariat. Under instructions from the Ministry of Water Resources, it was assisted for sometime by Shri Inder Mohan of Water and Power Consultancy Services India Ltd. (WAPCOS). Unfortunately, his assistance, which is gratefully acknowledged, came to an end when he had to take up an assignment at Hyderabad. There after, the Group was provided with similar assistance by Shri D. C. Mathur, also of WAPCOS. The Group also drew heavily on the personal staff of its convener in the Planning Commission. The Groups received some limited measure of logistical support and stenographic assistance from the local office of the Narmada Control Authority, evidently under the instructions of the Ministry of Water Resources. The Group would also like to express its gratitude to all those persons, organizations, institutions, voluntary agencies, groups, and so on, who took the trouble of sending letters, or memoranda to us and/or appearing before us.

II. CONSTRAINTS AND LIMITATIONS

2.1 Interpretation of the TOR

2.1.1 The Group had to function under several constraints and limitations. The first of these was an ambiguity in regard to its scope. The only term of reference indicated in the Office Memorandum setting up the Group was “to continue the review discussions initiated during the end of June 1993 on all issues related with the Sardar Sarovar Project.” As mentioned earlier, certain clarifications were given subsequently. The clarifications were to the effect that the Group was not a Review Group constituted to go into the basic features of the Project, but a body set up to carry on the review discussions initiated during June 1993; and that it should confine its examination to issues of implementation and benefits and offer suggestions for improvement: The Group being a creation of the MOWR was bound by the clarifications and guidelines given by the latter. However, the Group found itself in a difficult position because of an inherent ambiguity in the clarifications. Nevertheless, having regard to (a) the importance of the subject, and (b) the fact that in its appeal of 5 August 1993 to the Narmada Bachao Andolan to give up its *jal samarpan* programme and come for discussions, it had promised the NBA that careful consideration would be given to all points put forward by them, the Group decided that it would try and do its best, under the given circumstances. The Report of the Group has to be seen against this background.

2.2 Non-Participation by State Governments

2.2.1 The Group undertook its task with an understanding of its mandate as set forth above. The catchment areas of Narmada and the waterspread of SSP cover three states, i. e., Madhya Pradesh, Maharashtra and Gujarat. When it comes to benefits, Rajasthan also gets included. Implementation in general and issues like rehabilitation, environment and benefits in particular need elaborate and detailed discussions with the representatives of the State Governments concerned. Doubts and queries that may be raised regarding these aspects can be answered only by the State Governments. From the point of view of environmental measures, rehabilitation and benefits, Madhya Pradesh and Gujarat have a major role to play. Of the total area of catchment measuring 98796 sq. km., Madhya Pradesh accounts for 85859 sq km. Of the total number of 40245 families affected 33014 are from M. P. Gujarat has undertaken to settle project affected families from M. P. and Maharashtra if they choose to settle down in Gujarat. It is a major beneficiary and has considerable responsibility in the issues coming under the consideration of the Group. But the Government of Gujarat has taken the categorical stand that the issues involved in SSP have been clearly settled and that no review is provided for till 45 years after the publication of the decision of the Tribunal in the official Gazette. In a letter to the Convener (copy at *Appendix 77, (i)*), the Chief Secretary to the Government of Gujarat stated :

“As you may be aware, the consistent stand of the Government of Gujarat is that it will not participate in any deliberations regarding Sardar Sarovar Project covering clearly settled issues and related matters. Further, the Award of the Narmada Water Disputes Tribunal is binding on all the concerned parties and it does not provide for any review at any time till 45 years from the date of publication of the decision of the Tribunal in the Official Gazette.”

2.2.2 Not only the Government, but even the non-government organisations in Gujarat declined the invitation to appear before the Group. The Group's correspondence with ARCH-VAHINI will be found at *Appendix II (2)*. The Group was also desirous of having the benefit of the views of Dr. Y. K. Alagh, Vice-Chancellor of Jawahar Lal Nehru University and the Chairman of the Narmada Planning Group, but he declined our invitation on the ground that as a former Member of the Planning Commission, he found it "very difficult to accept the position that large development projects should be reviewed at the request of distinguished social workers and others, outside the normal review process of the Planning Commission." He added; "I believe, if this practice is followed, development planning in India would be seriously hampered." A copy of his letter dated 27 September 1993 is at *Appendix II (3)*.

2.2.3 The approach of the Government of M. P. was not very different though not so forthright and categorical as in the case of Gujarat. Initially the Government expressed a doubt whether the State Government would come into the picture at all since the MOWR's Office Memorandum envisaged discussions with 'opinion groups' only. Attempts were made to explain to the Government of Madhya Pradesh that the Group did not regard that Government as an opinion group, but needed the assistance of the Central Governments and the State Government concerned in undertaking a proper examination of the points raised by the NBA and others regarding the Sardar Sarovar Project. The Ministry of Water Resources also clarified to the Government of Madhya Pradesh that it could assist the Group. However, in its D. O. letter No. 1138/2/143/27/93-1 dated 12.10.1993 [Copy at *Appendix I (4)*] the Government of M. P. expressed its inability to appear before the Group. The Secretary, Narmada Valley Development Department, stated :

"I have been asked to inform the Group that the State Government's representatives would not be appearing before it, keeping in view the fact that we are not an opinion group but a sovereign body representing all shades of opinion, a point which was appreciated by the group. We are in any case, bound by the provisions of the Narmada Waters Disputes Tribunal (NWDT) award.

However, if the Group wanted any specific details about resettlement and rehabilitation aspects, the Government would provide the information."

This communication from the Government of Madhya Pradesh came rather late and there was not enough time at that stage for sending questions and receiving replies. Moreover, any such correspondence would have been no substitute for detailed discussions with the State Government in a meeting. (For a later development, please see the Postscript to this Report).

2.2.4 The stand taken by the Government of Rajasthan was that no review of SSP could take place at this stage, as can be seen from the following extract from the letter written by the Government of Rajasthan to the Secretary, MOWR (*Appendix II (5)*).

"The State Government feels that the question of review of Sardar Sarovar Project does not arise at this stage in terms of stipulation in the Award of Narmada Waters Disputes Tribunal that review can take place only after a lapse of 45 years.

Rajasthan has been allocated a meagre quantity of 0.5 MAF of Narmada Waters to meet a part of its demand for desert area of Barmer and Jalore districts. Therefore, Rajasthan cannot accept review of the project which involve lowering of the height of Sardar Sarovar Dam since this will affect adversely the Irrigation and drinking needs of the aforesaid areas which lie in the western desert region where the rainfall is scanty and erratic and there is no other source of water."

2.2.5 The Government of Maharashtra responded positively and its representatives who met the Group explained the measures taken for the re-habilitation of the project-affected persons.

2.2.6 Without the cooperation of the State Governments, who are responsible for implementing the project, it is virtually impossible for the Group to obtain information regarding the details of implementation of the project and the programme of action for the fulfilment of the conditions stipulated at the time of clearance of the project. The Group would have greatly liked to obtain from the State Governments their considered responses to the various criticisms which had been put forward by the Narmada Bachao Andolan and others. In the absence of this the Group had to examine those points to the best of its own ability with the help of published material and such other information and comments as were available from other sources, particularly material provided by the Government of India.

2.2.7 A thorough examination of the points raised by the NBA and others in regard to the problems of displacement of people by the project and their resettlement and rehabilitation would in the normal course have necessitated field visits. The NBA strongly pleaded for field visits and some persons from Madhya Pradesh who claimed to have been adversely affected invited the Group to visit their areas. Quite apart from this the Group itself would have greatly liked to undertake such visits. However, without the active assistance of the Governments of Gujarat and Madhya Pradesh the Group could not possibly have undertaken useful field visits. Under these circumstances any visit by it only to a few selected places in Maharashtra would have given a very partial picture. For these reason, apart from the limitations of time, the Group decided not to undertake field visits.

2.2.8 In view of the controversy regarding the project, the Group was anxious to listen to both critics and supporters of the project. This was made somewhat difficult by the positions taken by the Gujarat and Madhya Pradesh Governments, and even by non-governmental organizations in Gujarat. However, the material submitted to the Group and the presentations made before it, and the numerous communications received by it from many individuals and organizations both in India and abroad, together with the material made available by the Ministry of Water Resources, gave the group a reasonably wide spectrum of views and suggestions and supporting information.

2.3 Limitations of Time and Organisation

Lastly, it must be mentioned that this Group was not set up as a Commission of Inquiry, nor has it undertaken any independent survey or research. It was also not an agency charged with the responsibility of enquiring into specific cases, of hardship, alleged harassment, etc : it was not a grievance-redressal mechanism. Moreover, the magnitude of the project and the enormous complexities of the issues involved would have posed a formidable challenge even to a full-time multi-disciplinary body of experts assisted by a full-time professional secretariat. The present Group was not a full-time body, and it had no regular secretariat. The Group had therefore to confine itself to a study of the points presented and the relevant material made available to it, a sifting of the evidence so provided, and the formulation, in broad and general terms, of such reasonable conclusions as might emerge from such a study.

III. BENEFITS

3.1 Introductory

3.1.1 The main benefits claimed for the project are the provision of irrigation, for 1.8 million hectares (including areas in Saurashtra and Kutch), assurance of drinking water for parts of Saurashtra and Kutch, and the generation of hydroelectric power, including the balancing of the regional system through peaking facilities. The critics of the project argue that these benefits have been greatly exaggerated and are unlikely to materialise, and that therefore the costs (financial, social, environmental) of the project, which can be justified only by the benefits expected to accrue from the investment, would lose that justification. As the questioning of the benefits thus calls into question the project itself, it needs to be very carefully considered. Though we have had the benefit of many detailed presentations made and documents provided to us, we propose to discuss the issues as far as possible in broad and non-technical terms (so as to make the report readily intelligible to the general reader), but with some rigour, with a view to arriving at a finding whether a sufficient basis has been established for the doubts expressed, and if so, whether a more detailed and thorough examination is warranted.

3.2 Hydrology

3.2.1 We must first deal with one question which has a bearing on all the claimed benefits, namely, the doubt cast on the hydrological aspect the Narmada Water Dispute Tribunal (NWDT) assessed the usable quantity of water in the Narmada at the Sardar Sarovar site at 28 million acre feet (MAF), and they allocated this to the basin States and to Rajasthan. It is on the basis of this allocation which provides 9 MAF to Gujarat that the Sardar Sarovar Project has been planned, and it is on this basis that the irrigation, drinking water and hydroelectric power benefits are envisaged. One of the criticisms made about the project is that this assessment of the availability of

water was wrong. This point has been made by NBA and by some of the others who appeared before us or sent us written comments. It has been argued that the availability is not 28 MAF but around 23 MAF; that Gujarat's share will get correspondingly reduced; and that therefore the irrigation, drinking water and hydroelectric power benefits claimed in the project would also be correspondingly reduced.

3.2.2 Hydrology is a very important aspect of project planning. It has been the tradition in this country to plan major irrigation or multipurpose river valley projects on the basis of what is known as "75 per cent dependable yield", i. e., the quantum of yield (annual flow) in the river which is likely to be reached or exceeded in 3 out of 4 years. There may be a case for planning projects on yields of a lower order of dependability, say 50 per cent (i. e., that which is likely to be achieved in 2 out of 4 years), or even less, but that has not been the practice. The question, therefore, is whether the 75 per cent depend-able yield in the Narmada at the SSP site is indeed 28 MAF.

3.2.3 Without going into the details of the Khosla Committee's Report and the Tribunal's assessment, the point at issue can be briefly stated as follows. The actual observations of flows from 1948 to 1970 gave a 75 per cent dependable yield of only 22.6 MAF. A longer time series was considered desirable, but discharge data were not available for the earlier years; rainfall data however were available. The procedure followed (known as 'hindcasting') was to establish a relationship between rainfall arid run-off from the actual observations of 1948 to 1970, apply that relationship to the earlier rainfall data and derive the run-off figures for the years 1891-92 to 1947-48. On this basis the Tribunal arrived at a 75 per cent dependable yield of 27.2 MAF. Making adjustments for evaporation losses and gain from regeneration and carry-over, the usable quantity of water was assessed as 28 MAF at the project site. The tribunal data stopped with 1970; observations have since become available for several more years. The data for 1948 to 1988 now give a 75 percent dependable yield of 22.9 MAF. In other words, the actually observed flows, whether for 20 years as at the time of the Tribunal's assessment or for 40 years as now available, are only around 23 MAF. It is only by 'hindcasting' for past years from 1891 onwards in the manner mentioned above that a higher figure can be arrived at.

3.2.4 Doubts have been expressed about this procedure and about the adequacy and reliability of the rainfall data available for past years. The figure of 28 MAF was acceptable to the Khosla Committee, the Tribunal and its assessors; in other words, some of the best technical experts of the time were agreed on the figure, and it was accepted by a judicial body. We must, therefore, presume that the procedure was a reasonable one at that stage. Even today the Central Water Commission continues to support the figure of 28 MAF. In a note submitted to the Narmada Control Authority in 1991 [*Appendix HI (1)*] the Central Water Commission acknowledges that observed data whether from 1948-49 to 1969-70 or from 1948-49 to 1987-88 give only a 75 per cent dependable annual yield of around 23 MAF, and that it is only the addition of the 'hindcast' data from 1891-92 to 1947-48 that increase that number. Even so the combination of 'hindcast' data for 1891-92 to 1947-48 and the observed data from 1948 to 1988 gives a 75 per cent dependable yield of only 24.8 MAF. Having recorded these numbers, the CWC justifies the adoption of a figure of 27-28 MAF as the basis for water-use planning with two arguments. The first is the introduction of a concept of 'probability of exceedance'. The CWC has worked out a table of an expected range of annual yield at 90 per cent probability of exceedance. This gives a range of 27.9 to 31.1 MAF based on observed data from 1948-49 to 1987-88, as against the annual yield of 22.9 MAF at 75 per cent depend-ability in the conventional sense. The second argument is a purely qualitative one and is best reproduced in CWC's own words : "Hydrology as a discipline, is different from most of the engineering disciplines. Natural phenomena, with which hydrology is concerned, though have underlying physical processes, are complex and not amenable, to deterministic approach: They do not lend themselves to rigorous analysis not offer unique solutions as are possible in engineering mechanics. Since water resources development activity cannot be delayed for want of data of adequate quality and quantity, best judgement assessment has to be resorted to. In the field of hydrology one has to devise methods to suit the data available and come out with solutions. Accepting a solution in turn needs judgement with due consideration to sociological, economic and political situations. At our request the CWC has given us a further note of response to NBA's comments [*Appendix III (2)*]. In this they reject NBA's criticisms and reiterate the position taken by them in their earlier note.

3.2.5 Some of the experts who appeared before us such as Shri C. C. Patel, Shri M. G. Padhya and Shri M. A. Chitale, all of whom had formerly held the positions of Chairman of the Central Water Commission and/or Secretary to the Government of India, Ministry of Water Resources, were of the view that the hydrological basis of the project was sound, and that there was no case for changing the yield figure of 28 MAF adopted by the Tribunal. On the other hand, there were others such as Shri Matin Ahmed, (a former Chief Engineer of M. P.), Shri R. C. Singh Deo (a former Minister of Irrigation in M.P. and former Vice-Chairman of Narmada Valley Development Authority), Shri M. N. Buch, a distinguished former administrator, and Shri B. B. Vohra who has written extensively on irrigation and groundwater development, who were of the view that the yield is only 23 MAF or less.

3.2.6 It will be seen that opinion is divided on the subject. However, what precisely are the implications of this controversy? Assuming that the doubts expressed are justified, it does not follow that only 23 MAF will flow down the river every year. 28 MAF or even much larger quantities may flow down in several years, but this may not have a 75% dependability; i.e., this may not happen in 3 out of 4 years, but may be the case in say 2 out of 4 years. In effect what this would mean is that the project could turn out to have been based on a lower order of dependability of flows than the conventional 75%. This by itself does not necessarily vitiate the project planning. Elsewhere in the world, projects are based on such lower orders of dependability, though this has not been the practice in this country. Moreover, for a long time to come upstream uses will not develop to the full extent, and so, much more water than the quantum allocated to Gujarat and Rajasthan will flow past the project site, though it will be a fluctuating flow without the benefit of regulating storages upstream. However, when the flow is 23 MAF, Gujarat's share will get reduced from 9 MAF to 7.4 MAF (in accordance with the Tribunal's own formula); and as and when upstream uses develop to the full extent, only this quantity (plus Rajasthan's share) will flow past the project site. Under those circumstances (which may not materialise for a long time), the quantum of flows with the live storage capacity available may be in-adequate for the full order of benefits envisaged.

3.2.7 In accordance with our terms of reference, as clarified by the Ministry of Water Resources, we have to take the basic features of the project as given. Questions relating to hydrology, which have a bearing on project design, are thus not within our purview. We have gone into the question of the quantum of flows in the river only from the point of view of the possible impact, if any, that a reduced quantum of flows may have on the planned benefits. Within the limited time available to us, and on the basis of material presented to us, we are unable to come to a firm conclusion of the question of hydrology, in the face of an evident conflict of views on the part of knowledgeable persons. *As we are anxious to see that the intended scale and spread of benefits is not jeopardised, we recommend that the Government should quickly have this issue examined and resolved once for all. We also recommend that if in fact the dependable quantum of flows is of a lower order than had been assumed earlier, the implications of this for the planned benefits, and the consequent steps that need to be taken (for example, a possible re-ordering of priorities among different uses, and a re-allocation among different regions), should also be examined quickly.*

3.3 Irrigation

3.3.1 At the outset, before going into specific points relating to irrigation, we must dispose of a general issue which in our view is a red herring. One of the standard justifications often put forward for any irrigation project (including the SSP) is that it will result in an increase in the production of food grains and will thus help in meeting the food needs of a growing population. On the other hand, a point made in criticism of the SSP is that the cropping patterns in the SSP command may favour cash crops rather than food grains. In our view both the justification and the criticism are somewhat misleading. In the first place, the distinction between 'food crops' and 'non-food crops' (or 'cash crops') is not a well-defined one. Even food grains such as paddy and wheat, if produced essentially on a commercial basis, could be regarded as cash crops; contrariwise, even some cash crops may meet essential human needs. Moreover, some areas in the country may specialise in growing food grains whereas others may go in for oil seeds, pulses, cotton, jute, sugarcane, sunflower, and so on; and this may well be in the larger national interest. If sugarcane is frowned upon in a water-short area, the reason is not that it is a cash crop but that it consumes too much water. Secondly, an irrigation project can only provide water for irrigated agriculture; it cannot determine what the farmers in the command will grow. Actual cropping patterns rarely conform to the assumptions made in a project. It has now come to be generally accepted that water should be supplied in predetermined quantities on a volumetric basis and charged for at prices that would discourage wasteful use, leaving it to the farmers to decide what they should do with the water. Cropping patterns will then be influenced by market forces and relative prices. A view now prevalent is that the liberalisation of industry should be followed by the liberalisation agriculture and that even the exports of agricultural produce should be freely allowed. Whether this will result in a shift from food grains to more profitable crops, whether food grains may then have to be imported, and whether such developments (if they occur) should be accepted, are larger issues of agricultural policy which can-not be discussed in the context of a specific irrigation project. What we are concerned with in this section is the provision of irrigation water, and in that context what is relevant is the relative water demands of different crops and not the distinction between food crops and cash crops. Having got that point out of the way, we may now proceed to consider issues relating to the irrigation benefit expected from the SSP.

3.3.2 The approach to irrigation proposed in the project is to provide a low delta of water so as to extend the benefit to a large area; take the water as far as possible through gravity using lift only where unavoidable; introduce methods of automatic and semi-automatic control such that water is provided when and where needed; improve operational efficiency; supply water in bulk and on a volumetric basis to water-users' groups and charge for the water at appropriate rates, so as to promote better water management and conservation, and discourage water-intensive crops; and ensure the conjunctive use of groundwater and surface water. Many of these ideas have been in the air for some time; they have been recommended by several Commissions and Committees which have gone into questions of irrigation management, users' participation and the pricing of irrigation water. The SSP pro-poses to adopt and operationalise these recommendations as far as possible.

3.3.3 The project is expected to provide irrigation to 1.8 million hectares. This includes 0.8 mha in North Gujarat, 0.386 mha in Saurashtra and 0.037 mha in Kutch. The extension of irrigation benefits to drought-prone areas in Gujarat (North Gujarat, Saurashtra and Kutch) has been claimed as one of the major benefits of the project.

3.3.4 The doubts expressed by critics of the project on the planned irrigation benefits are as follows:

The flows in the river at the project site will be only 23 MAF and not 28 MAF; the delay in the Narmada Sagar Project will also affect the availability of water in the SSP; reduced water availability will mean reduced benefits.

"*En route* flows" are now being taken into account; this had not been envisaged earlier.

The assumed irrigation efficiency of 60% is unrealistic; the seepage and operational losses will be higher than has been assumed.

The probability of water-intensive crops coming up in the head reaches is high, having regard to past experience and the fact that sugar factories are being licensed in the command area.

There is a strong possibility of valuable agricultural land in the command area being put out of use because of the emergence of water-logging and salinity conditions.

In the area downstream of the dam (including Vadodara, Bharuch, etc.) there will be substantial water needs for municipal and industrial purposes; big industrial complexes are coming up in this area; and if the needs of these areas are fully met, the water available for irrigation elsewhere will get reduced.

On these grounds the critics conclude that irrigation coverage in the project cannot be 1.8 million hectares; and further that the water will not reach Saurashtra and Kutch.

3.3.5 We have already dealt with the question of hydrology and pointed out that opinion is divided on the subject, and have accordingly recommended that the Government of India should have this question examined and settled once for all very quickly (paragraph 3. 2. 7 above).

3.3.6 The point that the utilisation of *en route* flows had not been envisaged earlier but is now being taken into account, does not seem to us a significant criticism. Regardless of whether or not this had been envisaged earlier, it seems to us that it makes sense to utilise such *en route* flows.

3.3.7 In regard to the question of irrigation efficiency, seepage loss, operation loss, etc., we have carefully considered the scepticism expressed by the critics as well as the explanations offered by the project authorities in their publications and by the Ministry of Water Resources in their comments on the points made by the NBA. We have also put the question to some of the experts who appeared before us. What is involved here is a question of judgement. The critics believe that a 60% efficiency is far higher anything than that has been achieved so far; that seepage and operational losses will be higher than the levels assumed; that the sophisticated control methods proposed are novel efforts in this country and may not operate as planned; that to the extent that there is a departure from the kind and extent of canal-lining envisaged earlier, the seepage loss will increase; that taking all this into account irrigation efficiency will be nearer 40% than 60% and that this would mean that the area covered will be less than the projected figure. The supporters of the project argue that the country cannot remain for ever at the efficiency levels of the past; that level *must be* improved; that irrigation efficiencies of more than 60% have in fact been reached in certain instances in Gujarat in Rabi 1991 (Aji-II 66.91%, Demi-II 68.03%, Uben 71.32%); that losses in the entire distribution system are based on details worked out for the pilot block of Kapurai distributory; that with the innovations proposed in the project irrigation efficiency is bound to increase; that though these are

pioneering efforts there is no reason to believe that they will not work; and indeed that they must be made to work, and that the scepticism expressed in this regard is not warranted. Some of these arguments have in turn been questioned by NBA.

3.3.8 *Having given careful consideration to both the criticisms and the answers we have come to the conclusion that an irrigation efficiency of 60% is achievable; but whether it is actually achieved will depend on the nature and quality of the lining of the canals, and on the manner in which the innovative measures of controlled distribution, pricing and water management which are envisaged are operated. We recommend that determined efforts should be made to achieve the irrigation efficiency level of 60%. The doubts expressed in this regard should be given due consideration and should spur the project management to greater efforts.*

3.3.9 *The doubts expressed on the score of the possible emergence of water-intensive cropping patterns in the head reaches also need to be taken very seriously. Past experience in other projects throughout the country clearly warrants such doubts. As the reservoir fills up and the head reaches of the system get completed, there is abundant availability of water; there is an understandable desire to use that water to maximum profit; water intensive-cropping patterns (paddy, sugarcane, etc.) develop; eventually when the full canal system gets completed there is an inadequacy of water because much of it has been commandeered by the head reach farmers; it becomes very difficult indeed to reduce water-use by them; and the result is that the tail-enders get little or no water. This has been the pattern of irrigation development in this country. Even in the SSP command it has been pointed out that sugar factories are being licensed in the head reaches. It may be argued that water has not been assured for sugarcane growing but it will undoubtedly be difficult to deny water for this purpose once the cropping pattern gets established. The answer given to these doubts, namely that there will be a sophisticated control system, bulk supply in volumetric terms, proper pricing, the provision of low delta, etc., is not without force, but it would not do to underestimate the difficulty of withdrawing water once a pattern of water-use gets established and vested interests develop; and these interests are usually able to acquire certain degree of political influence. It does not follow that these developments must be accepted as inevitable. What needs to be done is to devise effective measures to minimize this possibility.*

3.3.10 Several suggestions have been made in this regard. These include the following:

Starting the supply from the tail end first.

Operating the water distribution system (low delta, automatic control, bulk and volumetric supply, proper pricing) strictly, without allowing it to be compromised.

Creating a vested right for the tail-enders by declaring the water-shares of different areas in advance and giving it a good deal of publicity, thus allowing tail-enders also to acquire a certain degree of political strength.

Facilitating the eventual reduction of water to the head reaches by putting them on notice in advance and by providing a statutory backing through legislation for such withdrawal.

There is some merit in all these suggestions though the extent of their practicability may vary. *We would commend all of them for careful consideration by the Government.*

3.3.11 Suggestions regarding restrictions on cropping patterns were also made but (as already mentioned) these seem to be inconsistent with the general approach, now widely prevalent, that the Government need not prescribe cropping patterns and that it should confine itself to supplying water in bulk and at the proper price on a volumetric basis to association of farmers, leaving them to make the best use of the water. Moreover, any recommendation that sugar factories should not be licensed may lose much of its significance in the future with the progress of the current process of economic liberalisation and the possibility that the licensing requirement itself may disappear even for the sugar industry in the not too distant future. *What is necessary and important is that the proposed measures of low delta, controlled supply, etc., should be effectively operated and the discipline of the system maintained. If there is any weakening in this regard, and if unsound practices and illegitimate demands come to be accepted for whatever reasons, then the whole approach to irrigation in this project will get vitiated.*

3.3.12 The fears which have been expressed of possibilities of the water-logging and salinization of land in the command area are based on past experience of irrigation development in the country and are not groundless. The answer given is that the possibility has been foreseen and guarded against in the project. The following are the observations of the Ministry of Water Resources on this point:

“The reconnaissance level soil survey of the entire command area of SSP indicates that the drainage intensity is good in most of the regions except 3 regions (agro-climatic regions 4, 7 and 11) which cover hardly 20% of the total culturable command area. A well planned intensive drainage network is being planned for these regions.

Along with the irrigation network, the surface draining network in the command area has been planned. Natural drains are to be resectioned to cater to needs. Additional drains, where necessary, will be provided to take care of excess surface flow during monsoons. The system is planned to ensure drainage in a reasonable time not exceeding three days without damage to crops. Sub surface water table control includes limited water availability for irrigation by appropriate irrigation planning to encourage ground water development through private sector. If it does not come up to desired level, ground water development through public sector is proposed to be taken. Where the ground water is saline and cannot be used otherwise, ground water development through public sector is planned to control the water table to fall below a specified level from the ground surface. Vertical drainage through pumping from wells and horizontal drainage through deep open drains are also planned. With this planning, the system will take care of excess water, if any, which could cause water logging and salinity.

Several measures like rotational water supply, lining of the canals, extensive irrigation instead of intensive irrigation, conjunctive use etc. have already been introduced in some of the major command areas in Gujarat State itself and have proven record to check the water logging successfully.

It will thus be seen that all precautions have been taken in the planning, construction and operation of the project to ensure that the hazards of water logging and salinity do not occur even in seemingly vulnerable areas of the command. The project will be helpful in stalling the steady decline of the ground water in the North Gujarat area, thus correcting the environmental imbalance created over several decades in the past. Under the Sardar Sarovar Project possible recharge is accomplished along with controlled surface irrigation and the water that is naturally recharged is planned to be used by farmers in a conjunctive use framework resulting in sustainable ground water regimes and affordable cost.”

It will be seen that the planning of drainage, the resectioning of natural drains and the provision of additional drains where necessary are among the steps envisaged. *It is necessary to ensure that these plans are translated into realities. The Environmental Sub-group of the Narmada Development Authority will no doubt be monitoring this.* (As regards controlled distribution, low water allocation, etc., we have already recommended that this should be enforced).

NBA has made the point that various zones in the command area are known to be prone to water-logging and salinisation on the basis of preliminary soil surveys, and that further detailed command area investigations are yet to be completed. We regard these as cautions to be kept in mind and not as fundamental criticisms.

3.3.13 One important element in the precautions against the danger of water-logging and salinisation has to be specially noted, namely the proposed ‘conjunctive use’ of surface water and ground water. ‘Conjunctive use’ is a much talked about but little practised idea. It is an accepted part of Government policy and is enshrined in the National Water Policy; but it has not been operationalised. It has not been an integral part of project planning so far; but an attempt in this direction is being made in the SSP. The conjunctive use of surface water and groundwater is a component of the approach to irrigation in this project. This is expected to guard against the over-use of canal water, and at the same time ensure vertical drainage through groundwater pumping. This means that a large number of tube wells will have to be sunk in the command area. It is envisaged that this should be primarily a private sector effort, supplemented by public sector investment in tube wells as may be found necessary. It is necessary to ensure that this actually happens. The expectation is that low canal water allocation, volumetric supply, and so on, will compel farmers to supplement this by going in for tube wells. This may indeed happen; on the other hand it is also possible that there may be pressures to increase allocations of canal water, or even unauthorised appropriation of water. Suitable measures are needed to ensure that the intended number of private tube wells do come up in the command area. Further, if it is pro-posed to invest in a large number of public sector tube wells, this too needs detailed planning and the allocation of the necessary funds. It is also necessary to work out in detail the integrated supplies from the two sources (canal and public sector tube wells), and their relative pricing.

Areas proposed for Irrigation

	<i>Lakh ha.</i>
<i>North Gujarat</i>	
Ahmedabad	3.30
Banaskantha	3.13
Gandhi Nagar	0.10
Mehsana	1.50
	<hr/>
	8.03
<i>South Gujarat</i>	
Vadodra	3.40
Bharuch	0.98
Kheda	1.16
Panchmahal	0.10
	<hr/>
	5.64
<i>Saurashtra & Kachchh</i>	
Surendranagar	3.04
Bhavnagar	0.48
Rajkot	0.34
Kachchh	0.37
	<hr/>
	4.23
	<hr/>
	17.90
	<hr/>
	say 18 lakh ha.

The criticism is that adequate allocations have not been made to Saurashtra and kutch and that the lion's share of the water would go to areas which are already prosperous, namely Ahmedabad, Vadodara, Bharuch and Kheds. The reply given by the project authorities is to the effect that only a limited allocation of water (much less than had been demanded) has been given to Gujarat by the Tribunal; that this has to be used optimally with due regard to techno-economic considerations, and as far as possible by gravity flow; that it was never claimed that the whole of saurashtra and Kutch would be covered with irrigation from Narmada waters; and that within the available quantum of water, and subject to techno-economic considerations, whatever was possible has been allocated to Saurashtra and Kutch. A further point made is that even the areas which are considered prosperous (Ahmedabad, Vadodara, Bharuch and so on) are watershort, and that about 75 per cent of the command area as a whole is drought-prone.

3.3.15 (*sic*) As against this, judging from Memoranda submitted to us by the Kutch Development Forum and the oral presentation made to us by representatives of that Forum, there seems to be a sense of grievance in Kutch that the allocation of Narmada waters to that area is very meagre. We have also received communications from Saurashtra to the effect that the claim that SSP will confer large benefits on Saurashtra and Kutch is not justified and that these areas will receive only a very nominal benefit from the project.

3.3.16 Each stage Government is responsible for and accountable to the people in all areas within its boundaries. If any particular area or region has a grievance the normal democratic machinery will no doubt operate. The present Group is not a tribunal for allocating waters within a State. We are dealing with this question only because benefits to Saurashtra and Kutch have been put forward as being among the important justifications for the SSP, and representations have been made before us questioning this claim.

3.3.17 This is a complex issue. There are divergent views on the question of providing Narmada waters to Kutch for irrigation purposes. The Irrigation Commission, 1972 had observed as follows:

“We are quite clear in our minds that irrespective of what share of the Narmada waters might come to Gujarat, the first priority in the use of this water must be given to these areas (i. e. Saurashtra, Kutch and North Gujarat) where the rainfall is scanty and irregular, rather than to Broach and Baroda districts which have 762 mm of assured rainfall. The benefits from the use of this water in the areas of North Gujarat, Saurashtra and Kutch will be far greater than what would accrue in the two districts mentioned above. There will also be indirect benefits from the replenishment of sub-soil water which will help the farmers to raise more than one crop each year. As a long-term prospect we can envisage a beneficial change in the ecology of the area.”

On the other hand, the Narmada Waters Dispute Tribunal disallowed the Gujarat Government’s proposal to provide irrigation from Narmada waters to Kutch :

“————— As regards the Great and Little Ranns of Kutch and Banni Area also, we see no justification for Gujarat’s claim to irrigate these areas from Narmada. Gujarat has claimed 6.36 MAF of water for this area on the basis of CCA of 11.03 lakh acres and delta of 5.8 feet (at canal head). Gujarat made no claims for the Great Rann of Kutch and Banni area before the Khosla Committee. So far as the Little Rann is concerned, the Dutch Team was of the opinion that desalination was a great problem and the soil studies made by Gujarat did not furnish sufficient basis to show that desalination was possible (see Ex. G. 349). In any case, these areas are admittedly barren and sparsely populated. The soil conditions in this area are characterised by high salinity, a very low horizontal permeability, a vertical permeability of nearly nil, a high ground water table and an impervious layer near the groundwater surface. The whole area is also subject to high evaporation and low rainfall. There is no adequate evidence produced by Gujarat that these areas are capable of being reclaimed at reasonable cost. Neither the pot experiments conducted at the Soil Research Institute, Baroda nor the experiments conducted at Umrath on 36 acres of land could be extrapolated to this area. The pilot plot in Banni area on light soils has no doubt shown the possibility of growing crops but Gujarat has not investigated or furnished data from which design parameters for effective reclamation of the area could be derived. Even if it is assumed that the area could be reclaimed and developed with the quantity of water indicated by Gujarat, the project would be highly uneconomic. A delta of 3.8 feet at field head has been proposed for the area. Taking into consideration 50% towards transit loss, the delta at canal head will be 5.8 feet. We, therefore, accept the argument of Maharashtra and Madhya Pradesh that the claim of Gujarat for 6.36 MAF of water for irrigating 11 lakh acres in Ranns and Banni should be rejected.”

However, having made the allocation of 9 MAF to Gujarat, the Tribunal in its final order left it entirely to the State Government to decide how it should be sub-allocated to different areas within the State.

3.3.18 Like the Irrigation Commission the Gujarat Government seems to be of the view that Kutch needs water from outside and that this has to come from Narmada. The NBA has been arguing that Saurashtra and Kutch do not need Narmada waters and that their needs can be met through the proper harnessing of local water resources; the Gujarat Government clearly do not agree with this view. In its publication entitled ‘Benefits to Saurashtra and Kutch Areas in Gujarat’ (March 1992) the Narmada Control Authority has highlighted the important role of SSP in remedying the acute water deficiency in Saurashtra and Kutch :

“The surface and groundwater resources of Gujarat State, particularly in the regions of Saurashtra and Kutch are very meagre. The rainfall is erratic. Droughts in this area are frequent and apart from destruction of crops they severely impede the supply of drinking water to people and cattle. The droughts have occurred in continuous spells of 3-4 years. Drinking water was supplied to the people over long distances through rail wagons and water tankers. Many cattle perish for want of water and fodder and shifting. Inter-State Sardar Sarovar Multipurpose Project envisages provision of irrigation and drinking water facilities to these areas, and will be immensely beneficial to the chronically drought-affected and water-deprived regions of Saurashtra and Kutch.” (Foreword to the publication)..

“It is in the background of this dismal irrigation and drinking water scenario that Saurashtra and Kutch Branches of the Narmada Canal System have been planned.” (page 2).

3.3.19 In a letter dated 23 November 1993 Dr. C. C. Patel observes as follows :

“Coming now to Gujarat, there are 5 distinct zones. The South Gujarat, Central Gujarat, North Gujarat, Saurashtra and Kutch. Central and South Gujarat zones are reasonably well off so far as the water availability is concerned. Infact, the other infrastructural development in these zones have come up because of rapid agricultural and industrial development based on water intensive process.

However, the North Gujarat, Saurashtra and Kutch regions are drought prone and agriculture is a total gamble. The effect of drought is getting more and more severe because of depletion of ground water due to over draws. No Government in Gujarat can enjoy political stability if water is not provided to these three regions.

Without Narmada waters there is no hope of development of these three drought prone regions. Large scale migrations of cattle running into millions have taken place during drought period especially in the last drought of 1985-87. The scenario undoubtedly is getting from bad to worse. It is unimaginable what would happen if millions of people are forced to migrate from Saurashtra, Kutch and North Gujarat in search of food, shelter and water.”

3.3.20 However, the irrigation coverage proposed for Kutch from SSP is very limited. The Gujarat Government had proposed irrigation for 11.03 lakh acres in the Banni and the Ranns areas in their submission to the NWDT, but when the Tribunal allocated only 9 MAF they had to distribute this quantity to different areas in the State, and in doing so they drastically reduced the allocation to Kutch. This is justified on the following grounds in the document entitled ‘Facts’ brought out by the Sardar Sarovar Narmada Nigam Limited :

“No efforts have been spared to cover up the maximum commands with the availability of waters consistent with the topographical levels of the areas. With the modern technological approach even the land of Himalayan ranges can be irrigated by lift, but on consideration of techno-economical parameters priority is given to irrigation by gravity and then only surplus waters are diverted to the lift irrigation if unavoidable. With this limitation, all efforts have been made to cover the maximum areas in Gujarat.....”

At the same time, claims continue to be made that the SSP would confer significant benefits on Saurashtra and Kutch.

3.3.21 If indeed the Gujarat Government believes (as we think it does) that Saurashtra and Kutch need Narmada waters and that SSP can and should confer substantial benefits on these areas, then it seems desirable to consider whether the allocation to Saurashtra and Kutch, or at any rate at least to Kutch, can be increased. (It will be recalled that even on techno-economic grounds the Irrigation Commission had been of the view that the benefits from the use of this water in the areas of North Gujarat, Saurashtra and Kutch would be far greater than what would accrue in Bharuch and Vadodara. This is reinforced by the NCA’s own remarks about the enormous costs imposed by frequent droughts in these areas and the large sums which have to be spent periodically on relief measures). It has been mentioned in NCA’s publication referred to above that the Kutch Branch Canal will irrigate about 57,000 hectares in the coastal areas as per present planning (the figure of 37,000 hectares mentioned in the SSNNL’s publication ‘Facts’ has evidently been revised); and that extending this canal further to cover an area of about one lakh hectares for irrigation is under consideration. We do not know whether benefits to Kutch can be improved further.

3.3.22 If it is techno-economically not feasible to increase significantly the provision of Narmada waters to Kutch for irrigation then the question arises how best the needs of Kutch (and of Saurashtra) can be met. In the publication entitled ‘Sardar Sarovar Project : What It Is and What It Is Not’ (September 1991), Dr. C. C. Patel, the then Chair-man, SSP, observes as follows :

“As regards irrigation facilities to the areas left out of the Narmada command, the optimum development of water resources in these areas by all feasible schemes, including surface schemes, groundwater and check dams and harvesting of waters in the fields which would also recharge the groundwater and counteract salinity, are the only measures left.

It may, therefore, be reasonably expected that such measures would find adequate place and provisions in Gujarat’s 8th Five Year Plan, 1992-97; and indeed the preliminary statement of “Approach to Development” in the State’s 8th Plan document records “high priority” and promises “massive support” to such measures: “The diverse soil and water regions of Gujarat will be provided massive support through a high priority programme of watershed

development, tank construction and improvement of other traditional water development systems, completion of field channels and modernisation of lower level canal systems, improved ground water extraction and lift irrigation schemes” (paragraph 3.9). However, the actual outlays proposed do not seem to reflect this. The Plan document says that the limited provision is “on account of prevailing financial crisis and availability of very limited funds.” Given the priority that they attach to these schemes, the Gujarat Government will no doubt find ways and means of augmenting the financial allocations for them.

3.3.23 Having brought these facts to notice, we must leave it to the Gujarat Government to consider whether the provision for irrigation in Saurashtra and Kutch can be enlarged, either by increased allocations of Narmada waters, or by adequate plans and provisions for harnessing the local water resource potential, or by a combination of both measures.

3.3.24 We must now refer to certain ideas put forward to us in written communications and/or oral presentations by a number of eminent per-sons. Without reproducing the various proposals in detail, we shall indicate briefly the nature and thrust of each.

- (i) Dr. P. P. Patel, Reader in Geology, M. S. University of Baroda, gives primacy to the full development of local water resources, using canal waters only to supplement local shortages. He proposes an ‘approach reversal’ with development of groundwater preceding with follow-up by surface water. He has also suggested some modifications in the water distribution plans and priorities of SSP.
- (ii) Shri V. B. Eswaran, a distinguished former civil servant of the Gujarat Cadre who was Secretary (Expenditure) in the Government of India and then did valuable work as the Executive Director of the society for the Promotion of Wastelands Development (SPWD) for several years, suggests that instead of building a vast network of minors and distributaries, the main and branch canals from the SSP should be used to recharge groundwater aquifers and also fill a large number of local surface storages (deepening existing ones and constructing new ones for the purpose). Dr. A. Vaidyanathan, a distinguished economist and a former Member of the Planning Commission, and more recently the Chairman of a Committee set up by the Planning Commission to advise on the pricing of irrigation water, supports the idea of operating the main SSP storage in combination with local storages.
- (iii) Shri K. R. Datye, a former Maharashtra engineer and well-known consultant, has also advocated the idea of integrating the main storage and local storages as part of an elaborate alternative system of water and energy management and a new approach to agriculture. This includes a transition from a dichotomy between irrigated high-input agriculture and rainfed agriculture relying mostly on organic inputs to an integration of the two; a concept of regenerative agriculture and increased aggregate biomass productivity; a proper pricing policy to ensure better cost recovery from water users, which will result in greater efficiency in water use and the extension of benefits to areas not served at present; the integration of agriculture, forestry, horticulture, dryland and irrigated crop production, as also the integration of local water resources through watershed development and large canal projects, in a regenerative production system which uses external inputs to raise the primary productivity of an eco-system; a philosophy of ‘energy self-reliance’ (at all levels from small communities to regions) under which the coal replacement value of the locally produced biomass (and biomass products) and renewable energy exceeds the value of the external energy inputs needed for irrigation and agriculture development; and so on. Shri Datya en-visages the application of this approach not merely to new projects to be taken up in the future but also to existing projects through a redesigning and re-phasing of such projects. (There are some similarities between Shri Datye’s ideas and those of Dr. A. K. N. Reddy on decentralised energy generation, but the latter will be referred to later in the section on hydroelectric power.)

3.3.25 These ideas present alternatives to the approach to water distribution and management and irrigation development envisaged in the SSP. They seem to fall outside the scope of the terms of reference of this Group as set forth in the Office Memorandum of 5 August 1993 as clarified further in subsequent communications from the Government (to which a reference has been made earlier). At the same time, we cannot ignore the fact that the distinguished persons mentioned above have spent their valuable time and energies in making elaborate presentations before us and submitting detailed memoranda. The least that we can do is to pass on those papers [Appendices III (3), (4), (5) and (6)] to the Government with the recommendation that, coming as they do from knowledgeable persons, they should be given the most careful attention.

3.4 Drinking Water

3.4.1 A major benefit claimed for the SSP is the provision of drinking water to a large number of villages and urban centres. This like the extension of irrigation benefits to North Gujarat, Saurashtra and Kutch, has been much emphasised in recent years by the Government of Gujarat and the project authorities and has figured prominently in the publicity regarding the project in the media. The drinking water benefit is an essential part of what is meant by describing the project as Gujarat's 'lifeline'.

3.4.2 For the sake of convenience we are dealing with irrigation and drinking water separately, but some of the points made by the critics of the project apply to both aspects. Points relating to the quantum of flows, the level of irrigation efficiency, and the possible appropriation of water by the head reach farmers have already been dealt with. In this section we shall deal with only those criticisms which are specific to the drinking water component.

3.4.3 One criticism is that this is an 'after-thought'. The original proposals by the Government of Gujarat before the NWDT included a provision for municipal and industrial uses in Ahmedabad and other towns and cities but not for drinking water in the villages. The provision of drinking water does not figure as one of the important benefits of the project in the 'conditional clearance' given by the Ministry of Environment and Forests in 1987, or in the project details enumerated in the 'investment clearance' given by the Planning Commission in 1988. The criticism is that it was only later that the Government of Gujarat began stressing this element and kept enlarging it until it eventually became one of the most important justifications for the project. This by itself does not seem to us a serious criticism. There is nothing wrong with after-thoughts provided they are sound. Nor do we propose to go into the criticism that the numbers of villages and urban centres proposed to be provided with drinking water have been progressively going up in the past three or four years from 4720 villages and 131 towns to 7235 villages and 132 towns and finally to 8214 villages and 135 towns. We take, it that the present intention is to cover 8214 villages and 135 towns; we need consider merely the implementation aspects.

3.4.4 The original sub-allocation for municipal and industrial uses out of Gujarat's allocation of 9 MAF of Narmada waters was 1.06 MAF. The criticism is that this has not been increased despite progressive increases in coverage. This again is not an insuperable objection. If the government of Gujarat have decided that 8214 villages and 135 towns must be provided with drinking water, it should not be impossible for them to make a suitable re-allocation of Narmada waters within their overall share to ensure this. However, they will have to decide precisely in what manner they will do this. This becomes even more important, as they are also considering an increase in the irrigation provision for Kutch. An increase in the irrigation coverage for Kutch and the provision of drinking water to the large number of villages and towns indicated above may necessitate cuts in the allocations for other regions and uses. This does not seem to have been made clear.

3.4.5 The next question is what precisely 'the provision of drinking water' means. It is clearly not the intention that the SSP itself would instal and operate water-supply systems in all the 8214 villages and 135 urban centres which are to be covered. When it is stated that this project will provide drinking water to those villages and towns, what is meant is that the canal will carry the necessary water. Before this can actually become drinking water, there have to be offtake points, filtration and treatment to make the water potable, a delivery system (including pumping and pipelines), arrangements for pricing, billing and collections, and so on. There have to be agencies charged with the responsibility of doing all this, and the necessary funds have to be provided.

3.4.6 In the publication 'SSP - What It Is and What It Is Not' (September 1991) Dr. C. C. Patel refers to the discussions held by the Sardar Sarovar Narmada Nigam Limited with the Gujarat Water Supply and Sewerage Board (GWSSB) and the State Industries Department on the subject of formulating detailed plans for utilising 1.06 MAF of Narmada waters for drinking water and industrial use purposes, the principles and norms that were agreed upon for working out water requirements for domestic purposes, the fixing of major off take points for various areas, etc. The publication proceeds to observe :

"Detailed demand statements and tapping points will be prepared by the GWSSB so that a project report is ready within about a year. This project would have to be implemented so that by the time the Narmada Canals reach the needy areas, the water supply scheme is completed and kept ready to draw the required quantity of drinking and industrial water to various regions in North Gujarat, Saurashtra and Kachch."

The publication then goes on to consider water for industrial use and states certain principles. The entire discussion, both of drinking water and water for industrial use (i. e. paragraphs 5.2.2 and 5.2.3 of the said publication) is

repeated almost verbatim in the NCA's publication 'Drinking Water from Sardar Sarovar Project' (December 1991; the later publication also adds that the cost of the drinking water project "would run into several thousand crores".

3.4.7 In both the documents it was thus envisaged that a detailed project report on drinking water was to be ready in a year and implemented in time, so that by the time the canal reaches the areas, the drinking water supply system would be in a state of readiness to draw water. Similarly, the Industries Department was to finalise its plan for the use of Narmada waters for industrial purposes. According to NBA, the GWSSB has neither the detailed plans nor the funds needed for this massive water supply project. As the Gujarat Government did not participate in our deliberations, we do not have their clarifications on these points. As we point out later, Narmada water may reach the areas in question between 2000 and 2005 AD. The physical infrastructure needed to draw it and provide water for industrial use and drinking water to the villages and urban centres mentioned earlier will need to be in place and operational in time. This synchronization aspect is very important. In so far as funding is concerned, perhaps large-provisions will be needed in the 9th Plan rather than in the 8th Plan, but beginnings will have to be made in the 8th Plan period itself; in any case the detailed planning (which itself will need funds) will have to be done well in advance to ensure the commencement and completion of the work in time.

3.4.8 One important point needs to be noted in relation to drinking water, namely the annual shut-down period for maintenance purposes, the NCA publication referred to above puts this at "a month or so" whereas the SSNNL publication 'Planning for Prosperity' puts it at two and a half months (March 1 to May 15). Whatever the period, it is clear that the canal will be shut down for a fairly long spell for annual maintenance. Precisely how the drinking water needs of the 8214 villages and 135 towns will be met during this period needs to be indicated and necessary arrangements made.

3.4.9 Critics of the project contend that it will take at least 15 years for the first villages in Kutch, Saurashtra and North Gujarat to get drinking water from Narmada. (In other places this period is put at 25 years). In reply to this, the SSNNL publication 'Facts' has this to say (pp.51-52):

"As per the compressed schedule of the Sardar Sarovar Project, it has planned to cover Saurashtra and Kutch also within 10 years. At the same time, there is no ban to go ahead with the smaller water conservation projects which would also form part of the integrated approach wherein we go for all possible projects including major, multipurpose, medium, minor, tube wells, private tube wells, check dams, soil conservation projects simultaneously. There is also a special priority given by the Government of Gujarat to the projects other than SSP in the non-command areas of the SSP."

The Ministry of Water Resources in its response to the issues brought up by NBA says :

"Work on Saurashtra Branch Canal from Km. 0 to 46 has already started and it is proposed to complete the branch canal and sub-branch canal by 1998 and distribution system by 1999. Work on Kutch Branch Canal is scheduled to start in 1994 and to be completed in 1999. Water will reach take off points on these canals accordingly"

Putting these two together we get an indication that water may reach Saurashtra and Kutch around the year 2000 but if we take possibilities of time over-runs into account this may become 2005 or even later. In other words, we still need to consider how the drinking water needs of Saurashtra and Kutch will be met during the next ten to twelve years. Local water resource development (*in situ*, conservation, check dams, small local surface storages, percolation tanks, underground aquifers etc.,) seems to be the answer. There can be no doubt that these measures are extremely important. The publication 'Facts' also says so; so does the Gujarat Government's 8th Plan in the chapter on 'Approach to Development'. Here again what is needed is detailed planning and firm funding.

3.4.10 The NBA argues that as in any case alternative measures will be necessary to meet the drinking water needs of Saurashtra and Kutch for the next decade or more before the canal water reaches these areas, these measures may be capable of meeting those needs even thereafter; and that SSP is not needed for this purpose. This does not necessarily follow. Even Dr. P. P. Patel who gives primacy to the development of local water resources regards an external source (canal water) as a supplement. Others (Eswaran, Vaidyanathan, Datye) envisage the use of canal water to recharge groundwater aquifers and fill local surface storages. These ideas have already been referred to earlier (paragraph 3. 3. 24). The point that we pick up from the various comments cited above is that watershed development and local storages and conservation, the re-charging of groundwater aquifers, the filling of surface storages, etc., are very important, with or without canal water from the SSP, and that there have to be detailed plans, cost estimates and financial allocations for them.

3.4.11 *In the light of the foregoing, we would recommend as follows :-*

- (i) *A full list of all the 8214 villages and 135 urban centres to be provided with drinking water should be announced as quickly as possible. The quantity of water required as per the norms indicated should also be clearly specified.*
- (ii) *The project authorities should state clearly the water-saving measures and the use-wise and area-wise re-allocations through which they propose to find the supplies needed. (The quantity needed for drinking water will no doubt be small in comparison with irrigation needs, and the adjustment required may not present great difficulty, but a clear announcement of the reallocations seems desirable with a view to answering criticisms and allaying anxieties).*
- (iii) *The agency or agencies which would be responsible for managing the actual water supply system for each village and each urban centre under the overall control or guidance of the GWSSB should also be identified and announced as early as possible.*
- (iv) *The detailed physical planning of the water supply project (off takes from the canal, filtration and purification plants, pumping, pipelines, etc.) should be completed (if not already done), and should be published as early as possible. The financing arrangements for the entire scheme should be fully worked out and made public. The works themselves should be completed within a pre-announced time-frame.*
- (v) *The detailed plans, the necessary physical arrangements and the funding needed for meeting the drinking water needs of the villages and towns in question during the next ten to twelve years (i.e., before the canal waters reach them), as also during the period of annual maintenance shut-down of the canals thereafter, should be firmed up and published as early as possible.*
- (vi) *Water-shed development and local storages and conservation, the recharging of groundwater aquifers, filling up of surface storages, etc., are very important with or without canal water from the SSP, and the necessary detailed plans, cost estimates and financial allocations should be made clear as early as possible.*

3.5 Hydro-Electric Power

(3.5.1) Project Features

Among the important benefits claimed for SSP is hydro electric power. Two power-houses are envisaged, a River-Bed Power House (RBPH) and a Canal-Head Power-House (CHPH) with installed capacities of 1200 MW and 250 MW respectively. The firm energy from RBPH is expected to be 3635 million units per annum (equivalent to 415 MW continuous) in the initial years, gradually diminishing as full irrigation develops in Madhya Pradesh and Gujarat, and becoming zero after 45 years. The firm energy from CHPH is put at 213 million units per annum (equivalent to 24 MW continuous). Hydro-electric power in the SSP is essentially envisaged as a peaking facility and a means of balancing the Western Regional Grid and improving the hydel-thermal mix. However, the SSP power-houses are also expected to contribute a substantial seasonal energy generation of around 1621 million units per annum in the initial years reducing to 865 million units in the final phase of irrigation. The RBPH is being equipped with reversible turbines to operate as a pumped storage system which will use off-peak power to pump the water back into storage which will then be used to generate power during peak demand. The pumped storage mode will continue to operate even after full irrigation development: at that stage it will be solely a peaking facility.

(3.5.2) Criticisms

The criticism of the hydro-electric power part of the SSP made in the documents submitted to and the presentations made before the Group, are as follows: the figures of installed capacity give a misleading idea of benefits from the project as the firm generation will be much lower; the generation will in fact be even less than the indicated figures because the availability of flows in the river has been over-estimated, and the delay and uncertainties in respect of the Narmada Sagar Project will further affect the water availability; almost all the power generated will be used by

the project itself for its own purposes (such as lifting water to Saurashtra and Kutch branch canals, running the canal net-work including the automatic and semi-automatic control system, etc.), leaving virtually no net generation; the benefit-cost calculations are in-correct because the value of the benefits by way of power generation has been calculated at a higher rate : and even as a peaking facility the proposed pumped storage system cannot be justified because there are alternatives available which involve less environmental and social costs. These criticisms are briefly dealt with in the following para-graphs.

(3.5.3) Capacity Versus Firm Generation

It is true that the firm generation will be much lower than the installed capacity; that it will gradually diminish as the abstraction of water for irrigation increases; and that eventually the RBPH will continue only as a peaking facility. This is the way that the hydro-electric power aspect of the project has been deliberately planned. It is an essential characteristic of peaking facility that the installed capacity must be much higher than the actual continuous generation. Similarly, the fact that the availability of water for power generation will go down as abstractions of water for irrigation and other consumptive purposes in-crease was known from the start. If the full irrigation development is likely to take many years, it makes sense to use the available flows during this period for power generation. The proper way of looking at this aspect is to see it not a case of diminishing power generation but as a peaking facility being used in the early years for continuous generation. What is being installed is a *peaking* capacity of 1200 MW in the RBPH and 250 MW in the CHPH. If we look at the project in this manner, the criticism, of firm generation being lower or diminishing over the years will be seen to be wide of the mark. If a wrong impression has been created of the extent of power output from the project, that can be corrected. What is important is that the benefit-cost calculations should use the right numbers; and so far as we know, they do.

(3.5.4) Internal Consumption

Similarly, there is not much force in the criticism that most of the power generated will be used for the purposes of the project itself. If irrigation is to be provided to a vast area and drinking water to hundreds of villages and urban centres (as also water for industrial purposes); if the conjunctive use of ground-water and surface water is to be ensured; and if water is to be provided to Saurashtra and Kutch: all this will necessarily entail the use of energy. That energy requirement would have arisen even if this project has been a mere irrigation and water-supply project without a component of hydro-electric power; in that case, the project would have drawn the power for these uses from the Grid. Instead it will now use the power from its own hydro-power component. It is, therefore, incorrect to regard the use of power for this purpose as “internal” and come to the conclusion that there is no net generation. The correct way of looking at this is to regard the power produced by the project as contributed to the general pool, and drawn again from that general pool for certain uses, if we do so, this criticism disappears.

(3.5.5) Valuation

It is a perfectly valid point to say that power as a benefit and power as a cost should be valued at the same rate in the benefit-cost calculations. If any earlier appraisal had used a higher rate of valuation of power as a benefit and a lower rate as a cost, then that appraisal would need to be corrected. However, it does not seem necessary to re-examine the old evaluations from this point, as The Sardar Patel Institute of Economic and Social Research, Ahmedabad, has submitted a fresh economic appraisal of the project to the Narmada Planning Group in August 1993. We have had no opportunity of seeing this appraisal and cannot comment on it on this appraisal was presented at the Narmada Forum organised by the Centre for Development Economics (Delhi School of Economics) in collaboration with the Institute of Economic Growth on 21-23 December, 1993. This paper is described as a “preliminary paper for discussion, not to be quoted”. However, the important point is that this appraisal appears to use the same economic prices both for the electricity benefit and for the electricity cost and has nevertheless arrived at high internal rates of return. In other words, while the point regarding the use of different rates of valuation of power as a benefit and power as a cost is valid, it does not seem likely that it has had a significant impact on past benefit-cost analyses. It is not possible for this Group to go beyond that general observation at this stage. We shall have to wait till the appraisal made by the Sardar Patel Institute of Economic and Social Research, Ahmedabad, is made public.

(3.5.6) It is certainly true that if the availability of water is less this will have an impact on the hydro electric power benefits. In so far as the hydrology of the project is concerned, we have already dealt with this in an earlier chapter. As regards the delay in the construction of the Narmada Sagar Project, this will undoubtedly have an impact on the SSP, but this may be offset to some extent by delays in the development of upstream uses. In any

case, this does not warrant an adverse conclusion about the SSP. It would no doubt have been very desirable for the SSP and NSP to come up in a synchronized manner as recommended by the Tribunal, but if for some reason this has not happened and NSP has been delayed, the authorities in charge of the SSP will have to accept this and manage the project under those given circumstances. If the best situation fails to materialise, the second best situation will have to be accepted.

(3.5.7) Peaking Facility - Best Option ?

As regards pumped storage, the critics recognise that even if there is no net generation but merely a conversion of the peak surplus of power into in availability during peak demand *via* the pumped storage, such a peaking facility has its own value. The criticism then shifts to the question whether this is the best way of providing peaking power. The critics make the point that if one were to plan a pumped storage system one would choose, a place where a better head is available; and that SSP is not really required as a peaking facility for the Western Region as there are other alternatives available, such as the use of the gas that is being flared, the augmentation of capacity or the installation of pumped storage in other reservoirs in the Western Regions where the environmental and social costs have already been met, and so on. From these arguments, they come to the conclusion that the environmental and social costs of the SSP are not warranted by the economic benefits of a peaking facility. However, that argument might have some force if the SSP were being planned solely as a hydro-electric project, which is not the case. It is a project meant for storing and utilising a part of Gujarat's allocated share of Narmada waters for the purposes of extending irrigation facilities, providing water for municipal and industrial uses and drinking water to a large number of villages and urban centres, *and* generating hydro electric power. If in any case storage is needed for the utilisation of the allocated share of Narmada Waters for irrigation and drinking water purposes, then hydro-electric power can be regarded as an additional, benefit. As regards the other possibilities mentioned, namely the use of the gas that is being flared and the possibility of pumped storages being developed in other existing reservoirs in the Western Region, these need not be regarded as alternatives to the SSP. Given the expanding power requirements all those possibilities will need to be considered.

However, there is a special fact that needs to be noted, namely, that in SSP the irrigation part alone would require a dam height of only 436 feet and that 19 feet were added to this by the Tribunal to increase the power component, particularly with a view to providing benefits to Madhya Pradesh, which would have to bear much of the incidence of submergence. A point which has been made is that this incremental height has resulted in a very large addition to the extent of submergence and the consequent social and environmental costs; and that if this extra height could be given up and the dam height fixed at 436 feet, a large part of the adverse impact of the SSP could be obviated, and the power benefits lost made up through alternative source. This suggestion came earlier from the opponents of the projects, but it appears that such a view is now being voiced by the Madhya Pradesh Government. We have refrained from examining this point because it was made clear to us that the height of the dam as fixed by the Tribunal is not under review, and does not stand referred to us. This is a matter which needs to be resolved between the Gujarat and Madhya Pradesh Governments.

(3.5.8) Alternative Approach to Energy Planning

Among the presentations made to the Group was one by Dr. A.K.N. Reddy and Shri Girish Sant [*Appendix III (7)*]. They argue that the approach to energy is undergoing a basic change, and that from of a preoccupation with energy consumption as an indicator of development, there is a need to shift to a new paradigm of energy services, namely, development-focussed, end-use-oriented, service-directed, or DEFENDUS paradigm, to avert the impending crisis. From this point of view Dr. Reddy and Shri Sant are strongly in favour of a combination of demand management, energy-saving and low-cost decentralised options on the supply side. In their view, such an approach would bring down the magnitude of projections of demand and reduce the need for investments in mega-projects for centralised generation, these being regarded as projects of the last resort to supplement other measures on the demand and supply sides mentioned above. These ideas may call for a major change in our approach to energy planning, and go beyond our terms and reference. However the papers submitted by Dr. A. K. N. Reddy and Shri Girish Sant need to be considered. The Group would recommend that a careful examination of their ideas along, with the related ideas of Shri K. R. Datye referred to earlier (paragraphs 3. 3. 24 and 3. 3. 25 above), be undertaken by the appropriate authorities in the Government.

IV. ENVIRONMENTAL ASPECTS

4.1 Preamble

(4.1.1) The adverse environmental impacts of the SSP as perceived by environmental activists have been widely publicised internationally, and the project has become the subject of concern to such groups throughout the world. The project has been criticised for inadequate attention to environmental aspects. On the other hand, those who support the project claim that the environmental aspects have been extensively studied, and that the SSP is in fact one of the most elaborately studied projects ever. There is probably some truth in both contentions. Undoubtedly, a project involving the kinds and extent of intervention in nature which the SSP does, cannot but have a wide range of environmental consequences, not all of which can be fully foreseen; the apprehensions of the environmental groups are therefore not unwarranted. While the claim that extensive studies have been made of the environmental impact of the project is not without force, nevertheless, there may be room for further studies and for an examination of impacts not earlier foreseen. The present chapter will make no further reference to the general debate but will concern itself with specific environmental aspects, and in particular with the conditions imposed by the Ministry of Environment and Forests at the time of granting conditional clearance to the project in 1987.

(4.1.2) However, before entering into details, some general observations may be in order. The SSP and NSP were among the first large projects to come under intense scrutiny from the environmental point of view. Earlier irrigation and multi-purpose projects did not pass through this kind of examination. It must further be noted that though the formal 'acceptance' of the SSP by the Planning Commission for investment purposes came in October 1988, these two projects were virtually 'on-going' projects even earlier, with significant expenditures being incurred, bids being invited and a loan being negotiated with the World Bank: SSP and NSP were, in fact, regarded as *mandated* projects by virtue of the NWDT's Award, and treated virtually as cleared projects. It was the new requirement of environmental clearance and a clearance under the Forest Conservation Act that brought the projects under fresh and detailed scrutiny in the mid-eighties. It must also be borne in mind that there was hardly any opposition to these projects at the time. No one could have had any inkling then that these projects were going to become the subjects of controversy within a few years. The movement against the projects, arising partly from the growing environmental concerns and partly from the problems of resettlement and rehabilitation of PAPs, began to grow and gather strength in the course of 1987 and later.

(4.1.3) The fact of the matter is that these projects were caught in a change in the climate of opinion. The environmental concerns which were relatively new were rapidly growing in strength both within India and abroad. The Ministry of Environment and Forests was relatively young, and was still finding its feet and evolving procedures in the eighties. Its role had not yet been fully accepted by the other Ministries. It was only gradually, over a period of years, and because of the keen interest evinced by 'two successive Prime Ministers (Smt Indira Gandhi and Shri Rajiv Gandhi) that Ministry gradually came into its own. The notion of comprehensive, integrated project formulation, fully incorporating human, social and environmental concerns right from the earliest stages, was a new idea; and it cannot be said that it has become fully operative even today.

(4.1.4) The above background must be kept in mind while considering the environmental aspects of the SSP and the controversy surrounding the project.

4.2 The Thrust of the Criticisms

Copies of the two letters of the Ministry of Environment and Forests granting environmental clearance to the project and approval for the diversion of forest lands (Ministry of Environment & Forests, OM No. 3-87/80-IA dated 24-6-87 and 8-372/83/FC dated 8/9/87) will be found in *Appendices IV (1) and (2)*. The conditions imposed by the MOEF in these two letters were incorporated by reference in the Planning Commission's letter of acceptance of the project (No. 2 (194) 88 - I&CAD dated 5 October 1988, copy in *Appendix IV (3)*). The grant of conditional clearance to the project has been questioned by some critics. The principle of *pari passu* implementation of project construction and environment protection measures has also been sharply criticised. The critics of the project have further pointed out that the conditions prescribed in the clearance letters have not been met; that the *pari passu* principle has not been observed; that the monitoring machinery is weak and has not been able to ensure the strict observance of the conditions; that environmental concerns continue to be treated as external and secondary to the project; and that the internalisation and integration of the environmental aspects is still far from complete.

4.3 The question of conditional clearance

We do not propose to go into the question whether a 'conditional' clearance should have been given in 1987 or whether the Government should have waited for all the needed studies and action plans. We merely note that a clearance was in fact given in 1987 with a number of conditions attached. Further, assuming that the clearance had been postponed by three years in order to await the completion of a number of studies and assuming that all those studies and plans had been completed within those three years, it would still have had to be a conditional clearance in 1990. For one thing, those studies themselves would in all probability have pointed to the need for further studies; secondly, some unforeseen aspects might have necessitated fresh studies; and thirdly, the implementation of the action plans would have barely begun. At no stage could a project of this magnitude have been given a clearance without any conditions attached. It would always have conditions and to ensure their enforcement by setting up an overseeing machinery.

4.4 The *Pari Passu* Condition

Much of the criticism of the *pari passu* condition seems to be based on a misunderstanding. When a project is of the magnitude of the SSP and is going to take ten years or more for completion, all the environmental protection or remedial measures cannot possibly be completed in advance of the commencement of work on the physical construction of the project. Work on catchment treatment, compensatory afforestation, the development of escape-routes and alternative habitats for wild life, and so on, will take time and will necessarily have to proceed alongside of construction, as parts of project implementation; but certain measures will have to be completed before certain stages in the construction schedule are reached. What is important is that engineering and construction activities should not proceed apace leaving action on the environmental front behind. That was precisely the intention behind the *pari passu* condition. Unfortunately, the expression appears to have been misinterpreted by critics as implying a lack of urgency about environmental measures. On the other hand, those in charge of project construction have found the *pari passu* condition irksome because it tends to apply the brakes on construction works on the ground that action on the environmental front is lagging behind. However, that was precisely the manner in which the *pari passu* condition was intended to operate; that discipline would necessarily have to be accepted. This is in fact the necessary consequence of the internalisation of environmental concerns.

4.5 The Monitoring Machinery

(4.5.1) The Final Order of the Tribunal provided for the setting up of an inter-State administrative authority to be called the Narmada Control Authority for the purpose of securing compliance with and implementation of the decisions and directions of the Tribunal. Accordingly, the Central Government established the Narmada Control Authority, as also a Review Committee at the level of Ministers, in September 1980. The Notification was further amended in 1982, 83, 87, and 1990. The amendments of 1987 were necessitated because it was decided to expand the role of the NCA in respect of environmental and rehabilitation aspects. This was part of the understandings reached as a result of which the Government of India gave conditional clearance to the project in 1987. The composition and functions of the NCA and the Review Committee are given in *Appendix IV (4)*. When the question of conditional clearance was under consideration in 1986-87, the Ministry of Environment and Forest had urged that an effective monitoring mechanism should be set up and the Ministry of Water Resources was in agreement with this view. After considering certain alternatives, the Government of India decided that the existing NCA should be expanded in composition and in scope for this purpose. The reconstituted NCA included Secretary, Ministry of Environment and Forests as a member, and the monitoring of the environmental aspects of the project was made a part of the functions of the NCA. The NCA, in turn, set up an Environmental Sub-Group. The composition and functions of the Environmental Sub-Group are given in *Appendix IV (5)*.

(4.5.2) It must be noted that the Environmental Sub-Group is not a body which merely observes and reports, but a watchdog body which can recommend even the stoppage of work if it feels dissatisfied with the progress on the environment front. The recommendations of the Environmental Sub-Group will have to be considered by the NCA, and if there is any difference of opinion at that level, it will have to be referred to the Review Committee which has the Minister of Water Resources as the Chairman and includes the Minister of Environment and Forests as a member. It seems doubtful whether any more effective mechanism could have been devised or made, to work

within the framework of our existing political and administrative structures, particularly in the context of a federal system. Secretary (Environment & Forests) has, in fact, been given a special position in the NCA in as much as he can insist on matters being referred to the Review Committee, and at the Review Committee the Minister of Environment & Forests, can forcefully plead the environmental cause; he can also make the environmental point of view heard at the highest level. If despite all these arrangements the environmental point of view fails to be heard adequately, and if project construction tends to take an overriding precedence, that is a reflection of the relative political importance of these two points of view in our system. This can be remedied only in the long term through persuasion and education, and not immediately through institutional arrangements which run counter to the system.

(4.5.3) It is possible that the inclusion of Secretary, E & F as a Member of the NCA leads to some difficulties because of the combination of a regulatory role (as Secretary E & F) and active involvement in project implementation (as Member of the NCA); but such a combination is not uncommon, and is unavoidable if environmental concerns are to be internalised. In any case Secretary (Environment and Forests) himself did not suggest any changes in the institutional arrangements when he appeared before us. His essential plea was that the recommendations of the Environmental Sub-Group of NCA should be treated with the seriousness that they deserve, and that those in charge of the project as well as the NCA itself should not regard the environmental point of view as external to project construction or as something that comes in the way of implementation of the project. We have no hesitation in strongly endorsing that plea.

4.6 The Current Status of Action

(4.6.1) Turning to the question of fulfilment of the conditions prescribed in the Ministry of Environment & Forests clearance letters of 1987, these related to matters such as catchment treatment, compensatory afforestation, surveys of flora and fauna, the carrying capacity of the surrounding area, seismicity and health aspects. In respect of all these matters, the conditions essentially called for the completion of studies and action plans by the end of 1989. If those conditions had been fully met, action plans would have been ready and implementation would have been in progress by now. There is no doubt that the action plans are still incomplete and that implementation has been lagging.

(4.6.2) For reviewing the current status of action on the various aspects, we cannot do better than reproduce in full a note on the subject given to us by Secretary to the Government of India, Ministry of Environment & Forests. His letter dated 6 December 1993 and the note enclosed with it will be found in *Appendix IV (6)*.

4.7 Recommendations

While it is clear from that note that many of the studies, plans and activities are behind schedule, there has also been a slippage in project construction, and it appears that it is still possible to retrieve lost ground on the Environmental front through accelerated action. We would strongly recommend that this should be done. In particular we would draw attention to the following:

- (i) In so far as catchment area treatment is concerned, the condition imposed by the MOEF requires the treatment of erodable and highly erodable sub-watersheds adding up to an area of 7 lakh hectares. The project authorities have sought to make a distinction between “directly draining” and “freely draining parts of this, and this seems to have been accepted by the NCA. The “directly draining” area is said to be of the order of 1.45 lakh hectares. The project authorities want to take responsibility for the treatment of only this part as a legitimate charge on the project and feel that the treatment of the rest of the area should be the responsibility of Soil Conservation and Forest Departments. The MOEF seems to be willing to accept a phasing of the treatment, with “directly draining” areas being treated in Phase I and the rest in the Phase II, but want the entire area to be treated, regardless of who bears the cost. Their point is that it is in the interest of the project that this should be done, as it is only through such treatment that the erosion of the catchment area and the consequent increase in the rate of sedimentation of the reservoir can be arrested. They further point out that the arresting of erosion has acquired some urgency as the waters have started rising, and eroded material will get trapped and can no longer be flushed away. *We do not wish to enter*

into the controversy regarding the debiting of costs, but would argue that both “directly” draining and “freely” draining areas should be treated in the interest of the project in a phased manner as acceptable to the MOEF : indeed, there seems to be no disagreement on this between the MOWR and the MOEF. The pari passu condition in this regard has already been missed as the waters have started rising, and all that can now be expected is a time-bound Action Plan for avoiding further delays. However, there appears to be an inadequate appreciation of what catchment area treatment really involves. At least some parts of the catchment area would be private land, and even in government forest or revenue land there may be tribal communities or people practicing agriculture. Action by governmental agencies alone would not be adequate. Measures of catchment area treatment, such as soil conservation or afforestation or other forms of greening would have to be carried out with the cooperation and through the agency of the people of the area. What is needed is the watershed development approach of the kind which has been successful in some places such as Sukhomajri or Ralegon Sindhi. A wide range of location-specific measures such as agro-forestry, horticulture, grass growing, fodder cultivation, tree-farming, and so on, may have to be adopted in the light of their suitability and acceptability. Innovative methods, a practical approach and social motivation are called for. The time-bound Action Plan referred to above will have to encompass all this.

- (ii) *While compensatory afforestation seems to be making progress, the pace of plans and actions needs to be stepped up. On the whole we would leave it to the MOEF to monitor the progress of compensatory afforestation and have no special recommendations to make, except to commend here again the idea of people’s participation in the afforestation programme, as well as the promotion of irrigated forestry in the command area to the extent possible. However, there is a possibility that serious difficulties may arise in regard to compensatory afforestation in the future, if forest lands keep getting released for rehabilitation purposes necessitating more and more compensatory afforestation, until a point is reached when it ceases to be implementable. That possibility needs to be obviated.*
- (iii) *On flora and fauna we seem to face considerable uncertainty. There is little experience in this country in implementing remedial measures to minimize the impact of the creation of a reservoir on wild life, plant genes, bio-diversity, etc. With the best will in the world, it is going to be difficult enough to ensure that wild life use the escape routes or migratory corridors provided and to guide them into the planned sanctuaries. The least that we can do is to ensure that studies and action plans are ready in time and are put into operation in such a manner that valuable plant species are not lost and that wild life do not drown or get cut off by water in large numbers. As the waters have started rising, there is urgent need to attend to these matters before it is too late.*
- (iv) *In so far as fish (as a form of life) are concerned, fish ladders and elevators do not seem feasible in a project of this magnitude; given the kind of interference in the natural regime of the river that this project involves, some adverse impact on fish life seems inescapable. From the commercial point of view, i.e., from the point of view of fishing as an economic activity, it is argued that the temporary decline in the activity because of the creation of the dam will be more than made up in due course by the development of fisheries in the reservoir. While this may be true in total numbers, breeding for commercial purposes is likely to concentrate on certain varieties and it seems that there will be changes in the composition of the fish population. Moreover, the trapping of micro-nutrients by the reservoir will result in a decline in catches down-stream of the dam and will affect the lives of fisher folk who have been dependent on this livelihood. Efforts may be made to rehabilitate them through reservoir-fisheries, but that will be a different kind of fishing from what they have been accustomed to. It appears that both from the point of view of flora and fauna and from that of fisheries, the impact of the impoundment of water behind the dam cannot be fully determined and that remedial measures are difficult to design. We hope that the authorities concerned at the state and central levels are fully alive to the complexities of the matter.*
- (v) *Remedial action in regard to the public health consequences of water impoundment will have to be of two kinds, namely measures to prevent an increase in water-borne diseases and measures for the treatment of diseases when they occur. The general tendency is to attend to the provision of treatment facilities. However, it is understood that preventive measures are now receiving some attention. Some measures such as fluctuations in the water-level to hinder the growth of larvae are said to be*

under study. *We have no special recommendations to make in regard to this matter except to express the hope that it is receiving adequate attention on the part of the MOEF and the Ministry of Health.*

- (vi) It must also be noted that there may be a deterioration in water quality in the command area because of the use of fertilizers and pesticides in irrigated agriculture. So far as we know, this is not receiving much attention at the moment. *It may be appropriate to deal with the question of the treatment of agricultural effluents and the maintenance of water quality as a part of the command area development programme, but the conventional CAD approach does not include this. This is something that needs to be attended to.*
- (vii) Studies of the water-table and the possibility of water-logging and salinity conditions are said to have been done upto Mahi and to be in progress in the rest of the command. There is a general claim that water-logging and salinity problems will not arise in the command of the SSP because of the proposed automatic and semi-automatic control of canal supplies, the kinds of cropping patterns which are envisaged, and the promotion of the conjunctive use of surface water. *It appears to us that there is some danger of complacency here. It cannot be taken for granted that all these measures will work as planned and that water-logging and salinity problems of the kind experienced in other projects will not arise at all in the SSP command.* In an earlier chapter, we have emphasised the need to ensure the strict enforcement of the control systems, conjunctive use, etc., which are planned. *We would recommend that these aspects must be constantly kept under study and proper remedial measures devised. The project authorities need to be on the alert to these problems emerging in the SSP command and to be able to respond promptly when they do.*
- (viii) The downstream effects of the creation of the dam would include the possible impact of a reduction of flows (as well as of micro-nutrients in the flows) on economic activities such as those of fishermen, boatmen, agriculturists, etc., down-stream of the dam, as also possible shortages of water for domestic and industrial uses. A further impact would be the possible incursion of salinity in the coastal areas because of reduced flows in the river. *Some references have been made to remedial measures, but in general it appears to us the full impact of the creation of the dam on the down-stream side has not been adequately studied. This needs to be done as early as possible and detailed plans for countering those effects formulated on a top priority basis.*

V. DISPLACEMENT, RESETTLEMENT AND REHABILITATION

5.1 Introduction

We now come to the heart of the controversy surrounding the project. Much of the opposition to the project stems from an opposition to the uprooting of people and from a deep-rooted suspicion that remedial measures can never be adequate, that they are in any case unlikely to be effectively and humanly administered and that suffering and injustice are inevitable. This is a subject that understandably arouses strong feelings, which become even stronger when tribal communities and disadvantaged groups such as scheduled castes and scheduled tribes are involved; and those feelings lead to a fundamental objection to any displacement of people, and therefore to large projects in general. We propose to leave aside that debate for reasons already mentioned, take the project as given, and proceed to consider the various criticisms which have been made concerning its displacement, resettlement and rehabilitation aspects.

5.2 Policies

(5.2.1) The NWDT's Award marked a significant change over earlier awards in as much as it went beyond the allocation of waters into questions of displacement and rehabilitation; and it laid down norms and principles governing compensation and rehabilitation, which represented a vast improvement over earlier approaches. This has been widely acknowledged. The measures were further liberalised in response to the representations of voluntary

agencies, the points made by the World Bank during loan negotiations, the decisions of the Courts and so on. There has been a steady expansion of the scope of the term 'Project Affected Persons' (PAPs) as well as a progressive liberalisation of the elements of the compensation/rehabilitation package. The results are embodied in the resettlement and rehabilitation (R & R) policy statements of the three State Governments. It is not proposed to burden this Report with the details of those various policies. Relevant extracts from the NWD's Award and the R & R policies of the Gujarat, Madhya Pradesh and Maharashtra Governments will be found in [Appendices V (1), (2), (3) and (4)]. There are some variations in the R & R policies from State to State, but in general it can be said that all of them mark a significant advance over past principles and practices and are more generous than anything that was done in earlier projects, not merely in India but in most other countries as well.

(5.2.2) Apart from the actual measures of R & R, there are also important issues of planning, timing and consultation. The NWD's Award outlined a strict time schedule that must be followed for collecting data about the extent and nature of displacement, acquiring land and rehabilitating the affected people (XI: IV- 2); stated that in no event should any area of Madhya Pradesh and Maharashtra be submerged unless the rehabilitation process was complete [XI: IV-6 (ii)]; directed the Gujarat government to inform the other two States about the areas to be submerged, 18 months in advance [XI: V (iii)]; stipulated that oustees must be rehabilitated a year before the land was submerged [XI: IV (2) (iv)]; and directed the State Governments to prepare a master plan for R & R by 1981.

(5.2.3) The principle of according priority to rehabilitation was reiterated by the Supreme Court which ruled that rehabilitation must be completed at least six months before submergence, in its order in an interlocutory petition in the case of Dr. B. D. Sharma Vs the States of Gujarat, Madhya Pradesh and Maharashtra and the Union government in 1990. The Gujarat High Court in its judgement of April 1993 ruled that there should be no forcible eviction, no temporary submergence and no temporary removal of the oustees without completing rehabilitation as per the Award, the agreements with the World Bank, the Gujarat Government Resolutions and Supreme Court orders, the Court also ruled that submergence must not take place so long as the displaced persons are not properly rehabilitated. The Government of India's conditional clearance of the Project in 1987 also stated that the rehabilitation plans should be so drawn up as to be completed ahead of reservoir filling (Ministry of Environment and Forest letter No. 3-87/80-IA dated 24.6.87 already referred to [Appendix IV (I)]).

5.3 Numbers Affected

The area coming under submergence has been estimated by the project authorities as 37590 ha and the number of affected families as 40,245. (These numbers are larger than those which had been indicated in the Planning Commission's letter of October 5th, 1988 mentioned above). The Statewise distribution of the impact as estimated on 29.6.93 is reported as under :

S. No.	State	Villages Affected (Number)	Land Affected (ha)	PAPS (Families)
1.	Gujarat	19	7469	4500
2.	Maharashtra	33	9399	2738*
3.	Madhya Pradesh	193	20722	33014
		245	37590	40252

* Likely to increase to 3500.

It may be noted that the above is only an indication of the impact of submergence and not the other kinds of impacts of the project. This will be referred to later.

5.4 Organisational and Institutional Arrangements

(5.4.1) Reference has already been made in Chapter IV to the Narmada Control Authority, its reconstitution in 1987 and the Review Committee at the level of Ministers (Paragraph 4.5.1 and [Appendix IV (4)]. The NCA has constituted a Sub-Group for Resettlement and Rehabilitation under the Chairmanship of Secretary, Ministry of Welfare, Government of India. The composition and functions of this Sub-Group are given in Appendix V (5). Further, in pursuance of orders of the Supreme Court, the sub-group makes field visits once in a month to the project affected areas as well as submergence areas of SSP.

(5.4.2) The actual rehabilitation work is carried out through the Rehabilitation Directorate of the Sardar Sarovar Narmada Nigam Ltd. as well as State Government agencies in Gujarat, Madhya Pradesh and Maharashtra. In pursuance of the understanding with the World Bank independent monitoring agencies have also been appointed in each of the States: the Tata Institute of Social Sciences in Maharashtra, the Centre for Social Studies, Surat in Gujarat, and the Sociology Department of the University of Sagar in Madhya Pradesh.

(5.4.3) At our request, the Ministry of Welfare provided a status report on the progress of resettlement and rehabilitation work. Their letter dated 31 January 1994 with its enclosure is reproduced in Appendix V (6).

5.5 Conflicting Reports: The Group's Approach

(5.5.1) The Group was handicapped in its examination of this important matter by the refusal of the Gujarat Government as well as the Gujarat NGOs to participate in its proceedings. As explained earlier this also prevented the Group from undertaking visits to project-affected areas. Some of the material submitted to the Group was of a conflicting nature. Divergent accounts of certain matters were given in different documents (for instance, relating to the, Manibelli incidents). Similarly the claims made by officials concerned with rehabilitation and the criticism made by NBA were substantially at variance. Further, while the NBA went so far as to argue that rehabilitation was impossible and that the project must be stopped, certain other voluntary agencies felt that the human and satisfactory rehabilitation of PAPs was entirely possible with more active support from the State Governments and a greater role for NGOs. The criticisms made in the Report of the Tata Institute of Social Sciences were questioned in a rejoinder by the Maharashtra Government. Similarly the NBAs criticisms were countered in replies given by the MOWR as well as in a publication by ARCH-Vahini entitled 'Sardar Sarovar Project : An Intellectual Fashion'. Lastly, there is a lack of clarity in regard to the facts relating to the reported closure of the sluice-gates as well as the decision said to have been taken in this regard at the meeting held at the instance of the Government of India.

(5.5.2) The Group had no means of verifying the facts or establishing the relative accuracy of conflicting statements. Nor could the Group undertake to enquire into individual cases of hardship or instances of alleged harassment or injustice. Our treatment of the subject of re-settlement and rehabilitation will necessarily have to be in general terms and our aim will be to suggest remedial measures in terms of principles and institutional arrangements.

5.6 Major Criticisms

The following sub-paragraphs (5.6.1 to 5.6.3) give a broad and summary enumeration (without comment at this stage) of the criticisms which have been made:

(5.6.1) Inadequacies and Limitations in Policies and Planning:

- (i) There are groups and categories which have been affected by the project but which have not been brought within the definition of PAP, such as tradesmen, shop-keepers, artisans, craftsmen, horticulturists, fruit and vegetable growers, dairy farmers, small entrepreneurs, providers of diverse supplies and services, and so on. Large number of people will also be affected by the constructions of the canal network and these have not been taken into account as PAPs. The reduction of flows downstream of the dam will affect various categories such as fishermen, boatmen, and so on. The backwater effects and their impact on settlements also need to be taken into account. Even some of the environmental protection measures such as compensatory afforestation, catchment treatment and so on, and some the rehabilitation measures themselves such as the release of forest land for

rehabilitation, could lead to 'secondary displacement'. The full human and social impact of the project cannot be foreseen, and thus the numbers of PAPs may go on increasing, rendering rehabilitation virtually impossible.

- (ii) There is a differentiation in the rehabilitation packages from one group of PAP to another. The package applicable to those affected by submergence has not been fully extended to other categories. Further, certain groups which had been affected in the earlier stages of the project have not received a fair deal. Rehabilitation packages are also not identical among the three States. The Gujarat package is more generous than the Madhya Pradesh package, with the result that the choice offered to the PAPs to decide where they would wish to settle is not entirely fair.
- (iii) Though the principle of 'land for land' has been adopted, this is not really implementable because land to the extent required will not be available.

5.6.2 Deficiencies and Difficulties in Implementation:

- (i) A Master Plan was to have been prepared by 1981 as per the Tribunal's Award. The clearance of 1987 stipulated that plans should be prepared so as to ensure the completion of rehabilitation in advance of reservoir filling. However, no Master Plan is available as yet.
- (ii) The provisions of the Land Acquisition Act are not being fully followed.
- (iii) The Supreme Court's injunction that rehabilitation should be completed at least six months in advance of submergence has not been observed.
- (iv) The principle of community settlement has not been followed.
- (v) Settling PAPs in forest lands released for the purpose will create further problems and conflicts.
- (vi) The reports of the monitoring and evaluation agencies are not being given adequate consideration.
- (vii) There has been no effort to make the process participative, the people are not taken into confidence and it is extremely difficult for NGOs to get information.
- (viii) There have been instances in which the actual land allotted did not conform to the entitlement, or was different from the land originally shown; pattas are not issued in time; the quality of the land allotted is very poor; there are problems of water availability, inadequate availability of grazing grounds for cattle etc.; and so on. As a result there have been cases in which PAPs have returned their pattas and gone back to their original homes.
- (ix) The purchases of land for rehabilitation purposes in Gujarat are leading to the displacement of landless labourers and sharecroppers.

(5.6.3) Cases of Individual Hardship etc.

- (i) There are cases of individual hardship and complaints of injustice; the redressal of grievances is very poor. The bureaucratic machinery is indifferent to human suffering and there have been instances of police excesses.
- (ii) There have been forcible evictions of PAPs, and threats and pressures to make them quit.

5.7 A commentary on the criticisms

The following is a brief and general commentary on the above mentioned criticisms:

(5.7.1) The statement that "rehabilitation is impossible" is a counsel of despair which cannot be accepted. It is no doubt an enormously difficult task but it cannot be treated as 'impossible' on that account.

(5.7.2) The point that 'PAPs' should not mean only those affected by submergence and those engaged in agricultural pursuits but should cover every person or group directly or indirectly affected by the project in any manner whatsoever is valid. A comprehensive enumeration needs to be made covering all the affected categories, and in all the areas, illustratively indicated in item (i) of sub-paragraph 5. 6. 1 above.

(5.7.3) It does not follow that the rehabilitation package should be identical for all categories. A differentiation between different categories may be warranted: packages should be suitably designed with reference to the specific problems and needs of each category. For instance, the problems and needs of fisherfolk downstream of the dam will be different from those of boatmen, and both these will be different from those of farmers in the submergence area.

(5.7.4) It cannot be denied that a comprehensive Master Plan should have been ready a long time ago. Whatever the reasons for the delay, the Master Plan needs to be completed with a sense of urgency at least now, remedying the deficiencies mentioned earlier, and with a detailed time schedule.

(5.7.5) The compensation/resettlement/rehabilitation packages, need not be identical as between States. The circumstances of the State Governments vary, and we can only expect each State Government to do its best. The Maharashtra Government's package has some distinct features and that Government claims that its package is the most favourable. Without going into such comparisons, it seems to us that there is no need to standardise the packages of the three State Governments. If the package offered by Gujarat is more favourable and this weights the free choice offered to the PAPs in favour of settlement in Gujarat; that is not necessarily undesirable, as the availability of land is relatively less difficult in Gujarat than in M. P. or Maharashtra.

(5.7.6) It seems to us that those who are adversely affected and thus bear the social costs of the project should be entitled to a claim on the benefits of the project; and that the resettlement and rehabilitation of PAPs should be based on a recognition of this principle. This may involve among other things the grant of a prior right to PAPs in the allotment of land in the command area of the project. There are no doubt some difficulties in adopting this principle, but these should not be insuperable. Suitable legislation on the subject based on and extending the Maharashtra legislation, needs to be considered.

(5.7.7) However, the point that land-based rehabilitation may not be fully implementable for want of land is not without force. The Gujarat Government has been saying that there is no difficulty in this regard. However, the fact that the availability of land is a limiting factor cannot be ignored. The conclusion is not that rehabilitation is impossible, but that other forms of rehabilitation need to be considered.

(5.7.8) The criticisms of slippages in the time schedule and non-observance of the principle of rehabilitation in advance of submergence need to be carefully looked into. In justification of the reported decision to close the sluices, it has been stated that rehabilitation is complete in respect of PAPs likely to be affected by the rise in the water-level resulting from such closure. This is a question of fact for the Rehabilitation Sub-Group of NCA to check. However, as mentioned earlier, the impact of the project goes beyond submergence: there are other kinds of project impacts, and rehabilitation should cover all those categories as well.

(5.7.9) There is a tendency to argue that the only difficulty in the way of completing the rehabilitation linked with the closure of sluices was the non-availability of land, and that with the release of 1500 hectares of forest land this problem has been solved. This fails to taken into account the further problems and conflicts which might possibly arise out of the resettlement of PAPs in such forest land, and the impact that this could have on tribal communities already living in those areas. The apprehensions that this may create a secondary displacement necessitating further release of forest land, which may in turn create problems in future, setting up a continuous chain of releases of forest land, cannot be dismissed lightly.

(5.7.10) In regard to complaints of bureaucratic callousness or delays, police excesses, individual grievances, harsh treatment, and so on, we are in no position to comment, for the reason already mentioned. How-ever, regardless of the relative accuracy of criticisms and rebuttals, it seems to us very possible that there is a measure of truth in at least some of the complaints and grievances; that there are some exaggerations; and that there are some instances in which governmental actions needed for rehabilitation work have been hindered by those engaged in agitations and demonstrations. We are also aware that there are dedicated individuals and organisations, both in Government and among NGOs, who are devoting themselves conscientiously to the work of facilitating rehabilitation and attending to individual complaints, and ensuring that the administrative processes are carried out in a humane manner; it would be wrong to ignore such efforts and dishearten the people concerned, what is needed is a credible machinery in each State to look into complaints and grievances and deliver prompt redressal.

(5.7.11) A point made to us is that some of the voluntary organisations engaged in the activity of assisting PAPs and facilitating rehabilitation processes are handicapped by inadequate information and poor cooperation by the government machinery. It appears (though we cannot speak with first hand knowledge on this) that there is a good working relationship between ARCH-Vahini and the project authorities and government agencies in Gujarat. Much more of this is needed, and this example needs to be replicated in Madhya Pradesh and Maharashtra.

5.8 Recommendations

In the light of the above discussion we would make the following recommendations:

- (5.8.1) *Given the reality of the project, every effort must be made to count the human and social costs of the project as fully as possible, and to provide remedial measures. For this purpose, there should be a complete census of all categories, groups, communities and individuals, affected in any manner whatsoever, including canal affected persons, communities downstream of the dam, groups and individuals providing supplies and services to others and so on, so that the data-base needed for planning is comprehensive. A number of category-specific rehabilitation packages should be worked out.*
- (5.8.2) *There should be a careful re-examination of the approach to and concepts of resettlement and rehabilitation in the light of the actual difficulties which have been experienced with special reference to limitations on land-availability; difficulties resulting from the dispersal of close-knit groups or from resettlements far away from original homes; problems arising from the release of forest land for rehabilitation; secondary displacements which can arise from some of the environmental protection measures; and so on. Land-based rehabilitation should be extensively supplemented by other forms of rehabilitation such as the imparting of a variety of skills, assistance both financial and other for trade and self-employment, encouragement of entrepreneurship, and so on.*
- (5.8.3) *The responsibility for the resettlement and rehabilitation of the PAPs should be not merely that of the Government but also partly that of the beneficiaries of the project. The principle that a share in the benefits should be provided as a prior right to those who bear the social costs of the project, should be introduced through appropriate legislation. (If necessary, this should include restrictions on land sales in the command area). This principle should be adopted not only in the SSP but in all future projects.*
- (5.8.4) *With reference to the foregoing a Master Plan, with detailed time-schedules, should be got ready within the next six months.*
- (5.8.5) *There should be strict adherence to the NWDT and Supreme Court injunctions regarding rehabilitation well in advance of displacement. This will no doubt be monitored by the Rehabilitation Sub-Group of the Narmada control Authority. The effective functioning of the Sub-Group should be ensured, and the NCA and the State and Central Governments should give the greatest importance to the observations and recommendations of the Sub-Group.*
- (5.8.6) *The administration of the rehabilitation package should be done in a humane manner. There should be special orientation Programmes for every level of the bureaucracy and the police system engaged in this process.*
- (5.8.7) *Each State should establish an Ombudsman to whom PAPs and NGOs can take their grievances for redressal. The persons selected for this function should be such as command respect and are widely acceptable.*
- (5.8.8) *At all times the people should be kept informed of the steps contemplated. The flow of information should be full and timely. The government machinery should cooperate to the fullest with good and experienced voluntary agencies and ensure that these are not handicapped either by want of information or by a negative attitude on the part of the bureaucracy. Such voluntary agencies should be treated not as external to the Government but as extensions or arms of the Government for the satisfactory implementation of rehabilitation.*

POSTSCRIPT

7.1 It was mentioned earlier that the M. P. Government had expressed their inability to appear before the Group for certain reasons. (para 2.2.3) above. At a later stage, after the Group had concluded its hearings and was in the process of finalizing its report, a communication was received from the M. P. Government that they had reconsidered the matter and would like to make a presentation to the Group highlighting their views on various issues relating to the SSP. Copies of two letters bearing the date 22 March 1994 and couched in virtually identical terms from the Secretary, NVDA, Bhopal will be found in *Appendix VI (1)*. Though the Group's work had practically come to an end by then and the report was in the final stages, the Groups scheduled a meeting with the M. P. government on 1 April 1994. At this hearing, the representatives of the M. P. Government made mainly three points:

- (i) The height of the dam should be reduced from 455 ft to 436 ft. This would not affect Gujarat's interests in any way. Gujarat's and Rajasthan's shares of Narmada waters would be assured; the irrigation benefits would not be reduced. A height of 436 ft was adequate for these purposes. The Tribunal had added an extra 19 ft essentially for increasing the power benefits of which MP was the main beneficiary. The M. P. Government was willing to forgo this benefit, as this would be more than offset by a sharp reduction in the submergence area, and consequently in the financial and social costs involved in the adverse environmental and human impacts of the project.
- (ii) There was doubts whether the flows at the project site would be 28 MAF as assumed by the Tribunal or only 23 MAF. Run-off data were now available for a much longer period than had been available to the Tribunal. These need to be taken into account. It was desirable to get this issue looked at by an independent observer.
- (iii) The resettlement and rehabilitation plan was likely to be constrained by the limitations on the availability of land. The Gujarat Government was no doubt buying land, but this would become more and more difficult, and there may be serious problems when the displacement reaches very large figures in 1996-97. The Gujarat Government may then be obliged to resettle PAPs further downstream, perhaps even as far as 200 miles away. PAPs from M. P. may not wish to go so far from their original homes. This needs to be looked into.

7.2 At our request the MP Government agreed to follow up their oral presentations with a written submission.

7.3 We have considered very carefully the points put forward by the M. P. Government, but find that we have already dealt with these matters at the relevant places in this Report. The question of the height of the dam has been referred to in paragraph 3. 5. 7, that of hydrology in paragraph 3. 2, and the problem of limitations on the availability of land in paragraphs 5. 7. 7 and 5. 8. 2. We have nothing to add to those observations. However, we are reproducing the M. P. Government's written submission as *Appendix VI (2)* for the consideration of the Ministry of Water Resources.

Sd/-
(DR. VASANT GOWARIKAR)

Sd/-
(RAMASWAMY R IYER)

Sd/-
(L. C. JAIN)

Sd/-
(DR. V. C. KULANDAISWAMY)

Sd/-
(DR. JAYANT PATIL)

Dated 21 April 1994, New Delhi
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