

ENVIRONMENTAL STUDIES

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SARDAR SAROVAR & NARMADA SAGAR PROJECTS

NARMADA CONTROL AUTHORITY

I N D O R E

# STUDIES ON ENVIRONMENTAL ASPECTS OF SSP / NSP

Sl. No.	ENVIRONMENTAL ASPECTS	AGENCY TO WHICH STUDY ENTRUSTED OR LIKELY TO BE ENTRUSTED.	TIME FRAME FOR COMPLETION OF STUDY WORK.
(1)	(2)	(3)	(4)

## 01) CATCHMENT AREA TREATMENT

All India Survey & Land Use Survey organisation, New Delhi, was entrusted the work for prioritisation of the Catchment into HIGH & VERY HIGH priority categories for all the three States.

Final report is received during March '91.

## 02) COMMAND AREA DEVELOPMENT GOVERNMENT OF GUJARAT:

Soil survey & ground water surface studies have been completed upto Mahi crossing & for studies beyond Mahi crossing Consultants have been engaged already, as given below:

### Details of studies undertaken:

i) Pre-feasibility level drainage study.

a) Upto Mahi.

b) Beyond Mahi.

### Status of Studies

Completed by Core Consultants Pvt Ltd, Ahmedabad, in association with Sir M. Maedonard Parvaers Cambridge, United Kingdom in 1982. Master plan for surface & sub surface drain<sup>on</sup> furnished.

Study entrusted to CES, Water Resources & Development and Management Consultancy, New Delhi, in August '89. First interim report received in 08-06-90.

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(1)	(2)	(3)	(4)
		ii) Studies related to drainage and conjunctive use of ground water in the command area beyond Mahi upto Rajasthan border.	Study entrusted to Gujarat Water Resources Development Corp., Ltd, Gandhinagar, in July'89, cost of the study is Rs.117.85 lacs, scheduled to be completed in a period of three years.
		iii) Study regarding the likely effects of introduction of Canal water in the basin.	
		a) For the area upto Mahi.	Mathematical modelling of ground water system in Mahi-Narmada-Deib Area was carried out by operation Research Group, Vadodara during 1981-85. Probable water lagged area both in space & time, pumpage & energy needed were predicted.
		b) For the area between rivers Shedhi & Sabarmati.	The study has been entrusted to CES Water Resources Development & Management Consultancy Pvt Ltd, New Delhi, on 04-08-89. Total cost is Rs.7.5 lacs, scheduled to be completed in twentyfive months. Inspection Report has been received.
		c) Between Sabarmati & Manas.	Study entrusted to Organisations Research Group, Vadodara, in July'89 Cost of study is Rs.10.83 lacs and is to be completed in twentyfive months. Inspection report has been received.
		d) Fram river Banas upto border of Rajasthan.	Study entrusted to Dalai Consultant. Inspection report received.

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iv) Drainage Study

The study is assigned to CES, New Delhi, and is scheduled to be completed within eighteen months.

v) Study of silting aspects in the main canal.

Committee headed by Dr.N.G.K.Murthy, has been constituted. The committee has already met & study is in progress.

vi) Investigation surveying planning for micro level Canal net work system.

Awarded to 23 Consulting firms.

vii) Drafting up implementation Schedule for canal network.

The work schedules prepared in consultation with Shri J.K.Sharma, MIS Consultant.

GOVERNMENT OF  
RAJASTHAN:

A report on studies of environmental & Ecological aspects & Remedial Measures for Narmada Canal Project, Rajasthan portion is prepared by the CE, Irrigation Jaipur, Rajasthan.

FLORA & FAUNA and  
CARRYING CAPACITY:

MADHYA PRADESH

01) Compensatory conservation measures for Floral & Faunal element & their components to mitigate adverse environmental impacts.

Studies entrusted to State Forest Research Institute, Jabalpur, Studies commenced in April'90 and are expected to be completed by April'93.

Total remuneration for study Rs.20.334 lacs. Rs.5.00 lacs released in 04/90.

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(1)	(2)	(3)	(4)
		<p>02) Human use pressures on vegetation identification of alternate resources, Development of compensatory eco-development project.</p> <p>03) Carrying capacity of Forest and grass land in neighbourhood of submergence areas.</p> <p>04) Habitat usage by major bird communities in the submergence and impact areas.</p> <p>05) Survey of nearby forest areas for identifying suitable habitat condition for the Wild Life displaced from the submergence area.</p> <p>06) Identifying suitable terrestrial &amp; aquatic areas including islands for degradation as protected areas.</p> <p>07) Identifying gene pools likely to be affected and suggest pragmatic measures for their protection &amp; conservation.</p>	

MAHARASHTRA

Terms of reference of studies being finalised by Government of Maharashtra.

Draft terms of reference for carrying out the studies by Pune University is being finalised by Government of Maharashtra. Details have been finalised by Forest, Irrigation and Environment Departments and is pending with Finance/Planning Departments. The study will take two years.

(1)	(2)	(3)	(4)
<u>GUJARAT:</u>	The study is termed "Eco-Environment & Wild Life studies in submergence areas.	Study entrusted with the Department of Botany MS University, Baroda, Expected to be completed by 1991-92.	
	01) Developing an eco-system classification for the left bank and right bank of the river.	Completed as per the interim report for period ending January 1990. Partial data presented as per interim report for the period ending January, 1990. The study will be continued.	
	02) Determination of Forest Biomass in each of the eco-system areas.		
	03) Determining the productivity of the eco-system areas.	Primary production potential of forests of different eco-system prepared.	
	04) Study of floristic composition of different sites.	Analysis carried out in 36 sites among 120 sites selected on right and left banks of river and adjoining 20 kms area. Details presented in the interim report for the period ending June, 1990.	
	05) Study of Invertebrate Fauna of Narmada Valley.	List of insects pests, vectors, pollinators, etc., furnished in the interim report (June'90)	
	06) Study of vertebrate Fauna of Narmada Valley.	List of Fishes reptilian fauna, mammalian fauna furnished in the interim report June, 1990.	
	07) Public awareness study and eco-enhancement efforts.	Preliminary report presented in the interim report for period ending June'90.	
	08) Preparation of detailed Maps of submergence to determine first density classes, forage sources and water holes for the maintenance of Wild Life.	Study and work in progress.	
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(1)	(2)	(3)	(4)
		09) Identification and collection of representative plant and animal samples and to assess significantly adverse impacts on these species from project related activity.	Study and work in progress.
		10) Collection, preservation and photographic documentation of samples following standard taxonomic procedures.	Study and work in progress.
		11) Identification of plant or animal species considered at risk and their insitu and ex-situ methods of conservation/ preservation and proposition and particular attention will be paid to locally grown varieties of crop plants, Wild grasses and legumes. Medicinal and other economically important species will be specifically covered.	Study and work in progress.
		12) Identification of <del>food</del> chains & studies on seasonal changes in the dietary habits to facilitate prediction of faunal changes due to creation of a large reservoir.	Study and work in progress.
		13) Identification of linkages between various insects, birds, bats and tree populations in terms of pollination and seed dispersal mechanisms as crucial in projecting future afforestation plans and sustenance of forest eco-system.	Study and work in progress.

(1)	(2)	(3)	(4)
		14) Examining the ecological behaviour & inter-dependence of key aquatic and terrestrial species, particularly in respect of seasonal variations in foraging, habitat preference and adaptability to change.	Study and work in progress.
		15) Identifying the generalists likely to be affected by the project & suggesting pragmatic measures for their conservation in situ and ex-situ.	Study and work in progress.
		16) Biomass studies will be conducted in different forest density classes and will be compared with forests in the North & South of the reservoir area with a view to assessing the carrying capacity of the various forest density classes in terms of human and other mammalian populations. Present mammalian census report will be studied with a view to facilitating future predictions and probable migration routes on the basis of forest cover, forage and water holes availability.	Study and work in progress.
		17) Demarcation of corridors for migration of animals, preparation of receiving areas, habitat manipulation, exclusion of competitors predators, etc.	Study and work in progress.
		18) Detailing a plan for animal migration and where needed, capture and transportation of animals.	Study and work in progress.

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(1)	(2)	(3)	(4)
		19) Ecological enhancement and development of a neo-eco system.	Study and work in progress.
		20) Working out appropriate strategies, biological, engineering and legal to enforce controls for better surveillance, monitoring and regulation of the eco-system.	Study and work in progress.
		(B) <u>Wild Life Management Study for Sardar Sarovar Submergence area:</u>	
		Overall expenditure for the study Rs.15.99 lacs.	A study group with a Principal Investigator (of the rank of Conservator of Forest) and subordinate staff to complete the study by April'1992. There should be periodical interaction with the Wild Life Institute of Dehradun.
		01) Survey of the present status of Wild Life in the submerged area.	Study in progress.
		02) Identification of endangered species and their conservation.	Study in progress.
		03) Impact of the dam construction and filling up the reservoir on the Wild Life of the area.	Study in progress.

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04) Migration of animals and its management aspects.

Study in progress.

05) Demarcation of corridors for Migration of animals, preparation of receiving areas, habitat manipulations exclusion of competitors, predators, etc.

Study in progress.

06) Detailing a plan for animal migration and where needed capture and transportation of animals.

Study in progress.

RIM STABILITY  
ANALYSIS:

GSI, Nagpur Division is carrying out Rim Stability Analysis for Madhya Pradesh, Maharashtra and Gujarat.

Rim Stability Analysis has been completed by the GSI, whereas, work for Madhya Pradesh and Maharashtra areas is in progress.

Studies on Seismicity have been completed by the School of Earthquake Engineering, Roorkee, Report is available with the Government of Gujarat.

FISHERIES:

MADHYA PRADESH:

01) Post impoundment limnological studies of Bargi Reservoir.

Being carried out by Jabalpur University. Study in progress.

02) Post impoundment limnological studies of;  
Tawa, Barna and Kalor Reservoir.

Study by Bhopal University in progress.

03) Pre impoundment study in river Narmada in nine locations.

Being carried out by Ujjain University. Study in progress.

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MAHARASHTRA:

DETAILS NOT AVAILABLE

GUJARAT:

Hydrological studies.

3 years' studies undertaken by CICFRI in 1989. The study will be completed in 1991. The study covers primarily the estuarine areas.

NOTE :- Studies on the upstream portion for development of riverine fishery and exploitation of reservoir for the commercial, exotic and game fish are with the State Fisheries Department..

NARMADA CONTROL AUTHORITY :

The Narmada Control Authority, has commissioned a study for possible fisheries development in the entire Narmada Basin excluding Bargi reservoir to the confluence of the Narmada in the Arabian Sea including estuarine areas. The Central Inland Capture Fisheries Research Institute, Barrackpore have been assigned the study. Their preliminary report is received in January, 1991 and final report is expected to be finalised during the meeting.

ANTHROPOLOGICAL STUDIES:

Studies on tribal Art & Handicraft entrusted to Madhya Pradesh Advisory, Kala Parishad, besides RMS <sup>study</sup> retrieval of bio cultural material in Narmada Basin.

NARMADA SAGAR PROJECT  
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S1. No.	Environmental Aspects	Agency to which survey work/study entrusted or likely to be entrusted	
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1.	<u>Phased Catchment Area Treatment</u>	1) AIS&LUS	Survey work in all the sub-catchment (37.10 lakh ha.) has been completed & reports for 5 sub-catchment is published Preparation of maps and reports for balance area are in progress.
		ii) Agricultural Finance Corporation. (AFC)	Study report for Datuni Pilot project has been completed and submitted by AFC.
2.	<u>Command Area Development</u>	1) Deptt. of Civil Engineering I.I.Sc Bangalore in 1985 Study is completed & report is available.	Ground Water Modelling for the composite command of Narmada Sagar & Omkareshwar Reservoirs.
		ii) Consulting Engineering Services, New Delhi in 1984.	Studies on surface & sub-surface drainage in command areas of Narmada Sagar & Omkareshwar Project.
3.	<u>Flora &amp; Fauna</u>	- Wild Life Institute, Dehradun.	MOU has been finalised. Period of study is 3 years.
		- Zoological Survey of India, Calcutta.	Has submitted the report quite some time back.

1	2	3
4.	<u>Wild Life retrieval &amp; Conservation</u>	Friends of Nature Society, Bhopal.
		Work is in progress.
5.	<u>Carrying capacity of surrounding areas.</u>	Wild Life Institute, Dehradun.
6.	<u>Seismicity and Rim-stability.</u>	CW&PRS, Pune Reservoir competency studies have been completed by GSI.
		Study completed and reports prepared.
7.	<u>Fisheries Development.</u>	i) Rani Durgavati University, Jabalpur (Upper Narmada).  ii) Barkatulla University, Bhopal. (Middle Narmada).  iii) Vikram University, Ujjain, (Lower Narmada).
8.	<u>Environmental Impact Study:</u>	By EPCO, Madhya Pradesh, study is completed & report is available.