National Level Three Day Programme on Best Practices in Water Resources Sector
26-28 October, 2017 at APHRDI, Bapatla

Narmada Control Authority
- Transforming Conflict into Cooperation amongst riparian States

by
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Government of India
Narmada River

- Fifth Largest River Of India
- Largest West Flowing River
- River Length - 1312 km (from Amarkantak to Arabian Sea)
- Catchment Area - 98,000 km²
- Mean Annual Rainfall - 1,180 mm
- Average Annual Run-Off - 41,000 MCM (33.21 MAF)
NARMADA RIVER BASIN
- 30 Major Projects, 135 Medium Projects and over 3000 Minor Schemes
Narmada Water Disputes Tribunal

- Constituted by Govt. of India under Section 4 of the Inter-State Water Disputes Act, 1956 through notification no. SO 4054 dated 6th October, 1969, to adjudicate the water dispute between the States of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan over the use, distribution and control of the waters of the inter-state river Narmada.

- On 16 August 1978, the Tribunal declared its Award under Section 5(2) read with Section 5(4) of the Inter-State Water Disputes Act, 1956. Thereafter, references were filed by the Union of India and the States of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan respectively under Section 5(3) of the Inter-State Water Disputes Act, 1956. These references were heard by the Tribunal and on 7 December 1979 gave its final order. The same was published in the extraordinary Gazette by the Government of India on 12 December 1979.

- Decisions of the Tribunal are final and binding on the party States, viz., Gujarat, Madhya Pradesh, Maharashtra and Rajasthan.
NARMADA WATER DISPUTES TRIBUNAL (NWDT) AWARD

ALLOCATED SHARE OF NARMADA WATER & POWER

UTILISABLE WATER 28 MAF (34,537.44 MCM) AT 75% DEPENDABILITY

- MADHYA PRADESH: 65.2% (18.25 MAF)
- GUJARAT: 32.1% (9.00 MAF)
- MAHARASHTRA: 0.9% (0.25 MAF)
- RAJASTHAN: 1.80% (0.50 MAF)

SHARE OF POWER FROM SSP

- MADHYA PRADESH: 57%
- MAHARASHTRA: 27%
- GUJARAT: 16%
IN ADDITION, NWDT ALSO GAVE IMPORTANT DECISIONS ON:

(i) Sharing of excess water and distress – on proportional basis of allocations (MP:Guj:Mah:Raj::73:36:1:2)

(ii) Sharing of Costs and Benefits -

<table>
<thead>
<tr>
<th>Unit</th>
<th>Madhya Pradesh</th>
<th>Gujarat</th>
<th>Rajasthan</th>
<th>Maharashtra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit-I: 56.1 Power, 43.9 Irrigation) (Power Sharing between MP: Maharashtra: Gujarat 57:27:16)</td>
<td>31.977% (57% of 56.1% of Unit-I)</td>
<td>50.565% (Power: 16% of 56.1% of Unit-I + Irrigation: 18/19 of 43.9 % of Unit-I)</td>
<td>2.311% (1/19 of 43.9% of Unit-I Irrigation)</td>
<td>15.147% 27% of 56.1 % of Unit-I</td>
</tr>
<tr>
<td>Unit-II (Main Canal sharable on cusec mile basis)</td>
<td>Nil</td>
<td>88.977%</td>
<td>11.023%</td>
<td>Nil</td>
</tr>
<tr>
<td>Unit – III (Hydro Power)</td>
<td>57%</td>
<td>16%</td>
<td>Nil</td>
<td>27%</td>
</tr>
<tr>
<td>Group IV (Branches &amp; Distributaries)</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(iii) Regulated releases to be made by M.P. – 8.12 MAF, i.e., 0.677 MAF (834.65 MCM) every month ex Maheshwar (right now Omkareshwar Dam)

(iv) Payments to be made by Gujarat to MP for such regulated releases – 17.63% of construction cost of Narmada Sagar (now renamed as Indira Sagar Project)

(v) Detail provisions for rehabilitation of PAFs of SSP

| Land Allotment | Every displaced family from whom more than 25% of its land holding is acquired shall be entitled to and be allotted irrigable land to the extent of land acquired form it subject to the prescribed ceiling in the State concerned and a minimum of 2 hectares (5 acres) per family. Every major sons (also daughters in Maharashtra) will be treated as separate family. Special Rehabilitation Package in lieu of land in Madhya Pradesh. |
| House plot | Free of cost allotment of house plot to each oustee family, including major sons, measuring 18.29 x 27.43 m (60’x90’); 12.19m x 18.29m (40’x60’) for urban areas |
| Other grants | Resettlement / rehabilitation grant @ Rs.750/- per family inclusive of transportation charges. Grant-in-aid upto Rs.500/-, enhanced liberally by the party States. |
| Land/House Compensation | As per Land Acquisition Act |
| Civic Amenities | Primary school (3 rooms) for every 100 families, One Panchayat Ghar, One dispensary, One seed store, One children's park, One village pond and One religious place of worship for every 500 families; Drinking water well with trough and One tree platform for every 50 families; Roads, Electrification, water supply, sanitary arrangements, etc. |
(vi) Setting up of Machinery for implementing the decisions of the Tribunal

NARMADA CONTROL AUTHORITY (NCA)
(Chairman – Secretary (WR,RD&GR), Govt. of India)

SARDAR SAROVAR CONSTRUCTION ADVISORY COMMITTEE (SSCAC)
(Chairman – Secretary (WR,RD&GR), Govt. of India)
- To be dissolved after three years of the completion of construction of Units I (Dam) and III (Power House) of SSP. Residual functions by NCA.

REVIEW COMMITTEE (FOR NCA AND SSCAC)
(Chairman – Hon’ble Union Minister of Water Resources, River Development & Ganga Rejuvenation)

Notified as NARMADA WATER SCHEME under section 6A of Inter State Water Disputes Act, 1956 by then Ministry of Water Resources, Govt. of India

(vii) Periods of operation of certain important clauses of the Final Order

NWDT decisions are subject to review at any time after a period of 45 years (i.e., Dec., 2024) from the date of publication of the Decision of the Tribunal in the Official Gazette
MAIN FUNCTIONS:

- Storage, apportionment, regulation and control of the Narmada Waters
- Sharing of power benefits from Sardar Sarovar Project
- Regulated releases by Madhya Pradesh
- Acquisition by the concerned State for Sardar Sarovar Project for lands and properties likely to be submerged under Sardar Sarovar - now completed
- Compensation and Resettlement & Rehabilitation of oustees - now completed
- Sharing of costs
- Giving permission to raise the Sardar Sarovar Dam height beyond 90M from time to time, after clearances from the Resettlement & Rehabilitation Sub-Group (including Grievance Redressal Authorities) and the Environment Sub-Group as per direction of Hon’ble Supreme Court - now completed
NCA - SUB-GROUPS/SUB-COMMITTEES

- **Resettlement & Rehabilitation Sub-Group** *
  Chairman: Secretary, Government of India, Ministry of Social Justice & Empowerment

- **Environment Sub-Group** **
  Chairman: Secretary, Government of India, Ministry of Environment, Forest & Climate Change

- **Environment Committee**
  Chairman: Member [E&R], Narmada Control Authority

- **Narmada Main Canal Sub-Committee**
  Chairman: Executive Member, Narmada Control Authority

- **Hydromet Sub-group**
  Chairman: Executive Member, Narmada Control Authority

- **Power Sub-Committee**
  Chairman: Member [Power], Narmada Control Authority

- **Sardar Sarovar Reservoir Regulation Committee**
  Chairman: Executive Member, Narmada Control Authority

- **NCA Secretariat Organisational Review Committee**
  Convenor: Executive Member, Narmada Control Authority

- **Task Force on R&R**
  Com (SSPA), GoG; Com (Reh/Field), GoMP; Pr. Secy (R&R), GoM; Member(E&R), NCA

**These two sub groups are important in the mechanism suggested by the Hon’ble Supreme Court for granting permission to raise height of Sardar Sarovar Project.**
COMPOSITION

- CHAIRMAN
  HON’BLE UNION MINISTER OF WR, RD & GR

- MEMBER(S)
  UNION MINISTER (E,F &CC)
  CHIEF MINISTER(s) OF MADHYA PRADESH, GUJARAT, MAHARASHTRA AND RAJASTHAN

- CONVENOR
  SECRETARY, MINISTRY OF WR, RD & GR

FUNCTIONS

- REVIEW OF DECISIONS OF NCA AND SSCAC SUO-MOTO OR ON APPLICATION BY STATE OR SECRETARY TO GOI, MOE&F.
- IN URGENT CASES CHAIRMAN MAY STAY DECISION OF NCA/SSCAC ON REQUEST OF (a) A STATE OR (b) SECRETARY (E&F).
- THE REVIEW COMMITTEE MAY REVIEW THE DECISION OF THE AUTHORITY, AT WHICH THE CHAIRMAN AND ALL THE MEMBER ARE PRESENT.
- THE DECISION OF THE REVIEW COMMITTEE WILL BE BY CONSENSUS FAILING WHICH BY MAJORITY OF VOTES OF MEMBERS INCLUDING THE CHAIRMAN. IF SERIOUS DIFFERENCES ARISE, THE SAME MAY BE REFERRED TO THE HON’BLE PRIME MINISTER, WHOSE DECISION SHALL BE FINAL AND BINDING.

Last meeting held on 13th April, 2006
## SALIENT FEATURES OF IMPORTANT PROJECTS IN NARMADA BASIN

<table>
<thead>
<tr>
<th>Features</th>
<th>Indira Sagar (Multipurpose)</th>
<th>Omkareshwar (Multipurpose)</th>
<th>Maheshwar (Hydel)</th>
<th>Sardar Sarovar (Multipurpose)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height (m)</strong></td>
<td>92</td>
<td>73</td>
<td>35</td>
<td>163</td>
</tr>
<tr>
<td><strong>Length (m)</strong></td>
<td>653</td>
<td>949</td>
<td>1048</td>
<td>1210</td>
</tr>
<tr>
<td><strong>FRL</strong></td>
<td>262.13</td>
<td>196.60</td>
<td>162.76</td>
<td>138.68</td>
</tr>
<tr>
<td><strong>MDDL</strong></td>
<td>243.23</td>
<td>193.54</td>
<td>162.20</td>
<td>110.64</td>
</tr>
<tr>
<td><strong>Gross Storage (BCM /MAF)</strong></td>
<td>12.22 (9.9)</td>
<td>0.987(0.80)</td>
<td>0.483(0.40)</td>
<td>9.5(7.70)</td>
</tr>
<tr>
<td><strong>Live Storage (BCM/ MAF)</strong></td>
<td>9.97(7.9)</td>
<td>0.299(0.242)</td>
<td>0.028(0.023)</td>
<td>5.8(4.73)</td>
</tr>
<tr>
<td><strong>Annual Irrigation (Lakh Ha.)</strong></td>
<td>1.69</td>
<td>2.83</td>
<td>-</td>
<td>18.45 (Guj) + 2.46 (Raj.)</td>
</tr>
<tr>
<td><strong>Installed Power Capacity (MW)</strong></td>
<td>8 x 125</td>
<td>8 x 65</td>
<td>10x40</td>
<td>5x200 + 5x50</td>
</tr>
<tr>
<td><strong>Status (excluding command area development)</strong></td>
<td>Completed</td>
<td>Completed Water upto El. 190m</td>
<td>Ongoing (Private Company – SMHPCL)</td>
<td>Completed</td>
</tr>
</tbody>
</table>

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*Note: Estimated Cost excludes certain development.*
Sardar Sarovar Project

An inter State Multi-purpose Project

Party States – Gujarat, Madhya Pradesh, Maharashtra & Rajasthan

Benefits – Irrigation – 18.45 lakh ha (Gujarat)
- 2.46 lakh ha (Rajasthan)
- Power
  - 1200 MW (RBPH) + 250 MW (CHPH)
- Drinking Water – 131 Urban Centers & 9633 Villages (Guj.)
  - 2 Urban Centers & 1107 Villages (Raj.)

Narmada Water Disputes Tribunal (NWDT) Award (1979)
- Salient Features of Sardar Sarovar Project (SSP)
- Allocation of water & power from SSP
- Regulation of Sardar Sarovar Reservoir
- Apportionment of costs
4. The NCA has been expanded and its terms of reference have been amplified to ensure that environmental safeguard measures are planned and implemented in depth and in its pace of implementation pari passu with the progress of work on the project.

5. After taking into account all relevant facts the Narmada Sagar Project, Madhya Pradesh and the Sardar Sarovar Project, Gujarat are hereby accorded environmental clearance subject to the following conditions:

i. The Narmada Control Authority (NCA) will ensure the environmental safeguard measures are planned and implemented pari passu with progress of work on projects.

ii. The detailed survey/studies assured will be carried out as per the schedule proposed and details made available to the Department for assessment.

iii. The Catchment Area Treatment Programme and the Rehabilitation Plans be so drawn as to be completed ahead of reservoir filling.

iv. The Department should be kept informed of progress on various works periodically.
Narmada Bachao Andolan filed a Writ Petition No. 319 of 1994 before Hon’ble Supreme Court against Sardar Sarovar Project.

Hon’ble Supreme Court in its majority judgment dated 18.10.2000 gave the go ahead for the project as per stipulations of NWDT Award considering two conditions i.e.

(i) the completion of the project at the earliest &
(ii) ensuring compliance with conditions on which clearance of the Project was given including completion of relief & rehabilitation works and taking of ameliorative & compensatory measures for environmental protection in compliance with the scheme framed by the Government thereby protecting the rights under Article 21 of the constitution.
Hon’ble Supreme Court has laid down the procedures for further raising of the dam in its order dated 18.10.2000 in WP No. 319/1994

- Construction of the dam will continue as per the Award of the Tribunal.

- As the Relief and Rehabilitation Sub-group has cleared the construction up to 90 metres, the same can be undertaken immediately. Further raising of the height will be only pari passu with the implementation of the relief and rehabilitation and on the clearance by the Relief and Rehabilitation Sub-group. The Relief and Rehabilitation Sub-group will give clearance of further construction after consulting the three Grievances Redressal Authorities.

- The Environment Sub-group under the Secretary, Ministry of Environment and Forests, Government of India will consider and give, at each stage of the construction of the dam, environment clearance before further construction beyond 90 meters can be undertaken.

- The permission to raise the dam height beyond 90 meters will be given by the Narmada Control Authority, from time to time, after it obtains the above-mentioned clearances from the Relief and Rehabilitation Sub Group and Environment Sub-group.

- Every endeavor shall be made to see that the project is completed as expeditiously as possible.
In pursuance of the directions of Hon’ble Supreme Court, the NCA in its 61st Meeting held on 17.11.2000 approved the Action Plan / Time Frame for completion of construction of Sardar Sarovar Dam (SSD), as under:

**ACTION PLAN / TIME FRAME**

**FOR COMPLETION OF CONSTRUCTION OF SARDAR SAROVAR DAM**

<table>
<thead>
<tr>
<th>Dam Height (EL) (Afflux)</th>
<th>Development of all civic amenities and keeping in readiness developed agricultural land and house plots at R&amp;R sites and allotment of land and house plots to PAFs by</th>
<th>Completion of construction subject to permission of NCA after getting the clearance of R&amp;R and Environment Sub-groups and GRAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>100m. (120.04m)</td>
<td>December, 2001</td>
<td>June, 2002</td>
</tr>
<tr>
<td>110 m* (128.16m)</td>
<td>December, 2002</td>
<td>June, 2003</td>
</tr>
<tr>
<td>121 m** (134.32m)</td>
<td>December, 2003</td>
<td>June, 2004</td>
</tr>
<tr>
<td>138.68 m</td>
<td>December, 2004</td>
<td>June, 2005</td>
</tr>
</tbody>
</table>

*Revised to EL 110.64 M (128.16m) in 67th meeting of NCA held on 30.7.2003.

**Revised to EL 121.92m (134.32m) in 71st meeting of NCA held on 11.5.2004.
1. Narmada Main Canal to Rajasthan

- 0.5 MAF to Rajasthan (a non-riparian State)

- Gujarat wanted a steeper gradient to have a more economical section and save on cost of lining.

- Rajasthan, on the other hand, wanted a flatter gradient to bring substantial area under gravity flow irrigation and save on pumping cost of lift irrigation. It agreed to pay to Gujarat the differential cost arising due to flattening of bed gradient.

- Narmada Main Canal Sub Committee was constituted

- Rajasthan wanted an inter State construction monitoring agency, which was not agreed to. Subsequently, Madhya Pradesh wanted a review of design features of Narmada Main Canal, which was turned down

- There are other issues like estimation of water loss, calibration of head regulators, construction schedule (especially delivery of water to Rajasthan), etc., are still under discussion.
2. Sharing of cost of Real Time Data Acquisition System (RTDAS) Network

- NWDT award prescribes that all the capital and revenue expenditure required to be incurred by the Authority shall be borne by the State Government of Madhya Pradesh, Gujarat, Maharashtra and Rajasthan equally.

- Maharashtra and Rajasthan argued that they are not going to be benefited much by RTDAS, hence they didn’t want to share the costs equally.

- A series of meetings followed to evolve an acceptable cost sharing formula. Though the concept of establishing hydro meteorological network was initiated in 1983, the near consensus formula of cost sharing in the ratio of 44:40:15:1 by Gujarat, Madhya Pradesh, Maharashtra & Rajasthan was evolved in 1993.

- Rajasthan still had reservations and it is finally in 1999 that it agreed to bear 1% of the cost.
3. Sharing of cost of Energy Management Centre

- NWDT award prescribes that all the capital and revenue expenditure required to be incurred by the Authority shall be borne by the State Government of Madhya Pradesh, Gujarat, Maharashtra and Rajasthan equally.

- Rajasthan, not being a beneficiary of hydro power generation from Sardar Sarovar Project, objected to sharing the cost of Energy Management Centre set up by NCA.

- On the other hand, NWDT Award has also mandated NCA to do all things necessary, sufficient and expedient for the implementation of the Orders inter-alia with respect to sharing of power benefits from Sardar Sarovar project.

- Hence, Rajasthan was persuaded to agree to the cost of sharing of Energy Management Centre of NCA and finally in the 87th meeting of NCA, the same was agreed to.
4. Determination of backwater levels and extent of land/building acquisition

- NWDT Award stipulates that all lands of private ownership situated below the FRL + 138.68 m (455') and all buildings with their appurtenant land situated between FRL + 138.68 m (455') and MWL + 141.21 m (460') as also those affected by the backwater effect resulting from MWL + 141.21 m (460') be acquired under the Land Acquisition Act, 1894.

- Gujarat wanted the flood level to be as minimum as possible, but Madhya Pradesh wanted that back water levels be determined with reference to design flood, i.e., 1 in 10000 year flood, which corresponds to about 31 lakh cusec.

- Finally it was decided that 1/100 year frequency flood shall be used for backwater computations for fixing the submergence schedule of villages at the intermediate stages of dam construction and scheduling resettlement.
5. Provision & Operation of Irrigation Bye Pass Tunnel

- Due to reduction in no. of units of Canal Head Power House (CHPH), there is a shortfall of about 15000 cusecs to meet peak irrigation & drinking water requirement.
- Accordingly, Govt. of Gujarat proposed Irrigation Bye Pass Tunnel (IBPT). Since, IBPT provision is a later development, NWDT Award has no stipulation in this regard.
- Madhya Pradesh – Provision of IBPT would result into loss of power and IBPT is not required as per NWDT Award. Peak capacity of 40000 cusec of main canal is not justified.
- Maharashtra – No objection to the construction of IBPT, if reservoir water level is not depleted below MDDL 110.64 m (363ft)
- Rajasthan – No objection to the construction of IBPT even with lower sill level, but the costs should be charged to Unit I (Dam and appurtenant works) of SSP.
- Gujarat – IBPT is a technical necessity. Agreed to sacrifice their proposal for drought management through IBPT and also not to deplete the reservoir level below MDDL.
5. Provision & Operation of Irrigation Bye Pass Tunnel

- Main objection of Madhya Pradesh & Maharashtra was regarding power loss due to withdrawal of water through the IBPT.

- NCA, therefore, decided that IBPT be provided & operated in terms of recommendations of the technical Sub Committee and decisions in the Review Committee of NCA.

- Minimum draw down level would be maintained at 110.64m (363 ft) as provided in NWDT Award and any withdrawals below this level in emergency situation would be with the permission of NCA.

- Govt. of Gujarat has agreed to compensate for loss of power that might entail in process.
Narmada Control Authority
– Transforming Conflict into Cooperation

6. Resettlement & Rehabilitation of Project Affected Families of Sardar Sarovar Project

✓ Grievance Redressal Authority
  ➢ judicial review,
  ➢ checks corruption
  ➢ reduces litigations
  ➢ helps gain confidence of general public and Courts

✓ Special Purpose Vehicle for ESM and R&R
  - avoids conflict of interest
  - may comprise Forest, Tribal Welfare Deptt. with local NGOs and elected leaders
6. Resettlement & Rehabilitation of Project Affected Families of Sardar Sarovar Project

✓ Review of size of house plots in urban areas of Madhya Pradesh

NWDT Award had stipulated allotment of house site of size 18.29 x 27.43m. (60' x 90') free of cost to every PAF. But this much size of land was not available in the urban area like Dharampuri town in Madhya Pradesh and urban house plots are generally smaller.

Hence, considering the practical limitations, it was decided under the aegis of NCA that house plot sizes be reduced to 60’x 40’ for urban areas in Madhya Pradesh.
6. Resettlement & Rehabilitation of Project Affected Families of Sardar Sarovar Project

✓ Consideration of major daughters as PAF in Maharashtra

Maharashtra has the practice of consideration of major daughters also as PAF. Hence, even though the NWDT Award stipulates only major sons as PAFs, Gujarat agreed to reimburse cost of Resettlement & Rehabilitation of major daughters also. Here NCA played a major mediator role in resolving this difference.

The above cases establish the adequacy of NCA set up to resolve any new issue, which may crop up either due to change in technical features or during implementation of the Project subsequently.
Inter State Water Disputes are highly contentious and emotive. These not only hampers water resources development but also pose great challenges to the union character of the country.

- Encouraging bilateral/trilateral agreements among the basin States,
- Enacting Legislations to constitute Corporations/Boards for development of river basins,
- Securing basin development through Inter-State Agreements on particular projects,
- Setting up of Joint Control Boards, and/or
- Arranging consensus in Zonal Councils on vexed non-technical, administrative issues.
Success on most of the above steps depends on political will power, which is very necessary even though these often get dictated by the politics of the issues.

Often, the professionalism gets lost in the process, which is not desirable for optimum development of water resources in the country.

Narmada Control Authority brings together water resources managers and engineers of Central / State Governments, so that proper decisions are taken in sound professional manner in true corporate culture.
THANK YOU