



GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES

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**NATIONAL COMMISSION
FOR
INTEGRATED WATER RESOURCES
DEVELOPMENT PLAN**

**NEW DELHI
DECEMBER 1998**

822-IN98-16633

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NATIONAL COMMISSION FOR INTEGRATED WATER RESOURCES DEVELOPMENT PLAN

(NCIWRDP)

I. CONSTITUTION OF NATIONAL COMMISSION

The Ministry of Water Resources, Govt. of India had constituted a High Powered commission for preparation of an Integrated Water Resources Development Plan having 8 members and the Convenor under the Chairmanship of Dr. G.V.K. Rao, Ex. Member, Planning Commission vide MOWR Office Memorandum No. 2/11/96-BM/654 dated 13th September, 1996. The Commission was set up with the approval of Prime Minister. As provided in the terms of reference of the Commission and in consultation with the Chairman of the Commission, 5 additional members were co-opted vide NWDA OM No. NWDA/113/67/Tech-I dated 9.10.1996. The High Powered Commission was subsequently renamed as "National Commission for Integrated Water Resources Development Plan", Dr. S.R. Hashim designated as Vice Chairman instead of Member and Director General, NWDA designated as Member-Secretary instead of Convenor vide MOWR OM No. 2/11/96-BM/804 dated 25.10.1996. Shri G.V.K. Rao resigned from the post of Chairman, National Commission due to health problems. Shri C.H. Hanumantha Rao, Ex-Member, Planning Commission was appointed as Chairman, National Commission in place of Shri G.V.K. Rao vide MOWR OM No. 2/11/96-BM/981 dated 22.11.1996. But due to pre-occupation, Shri C.H. Hanumantha Rao expressed his inability to accept the post. After that Dr. S.R. Hashim, Member, Planning Commission was appointed as Chairman, National Commission vide MOWR OM No. 2/11/96-BM/190 dated 14/17.2.1997. Dr. A. Vaidyanathan, one of the co-opted members, resigned due to his preoccupation in other works. As approved by the Chairman of the National Commission, Chairman, CGWB was co-opted as an additional member. It has been informed that Shri S.P. Caprihan is unable to work due to his bad health. As such, it was decided in the 7th meeting of National Commission held on 7th November, 1998 that Shri A.D. Mohile, Chairman, CWC will look after the work of Shri Caprihan. The present composition of National Commission is as under :

1. Dr. S.R. Hashim, : Chairman
Member-Secretary,
Planning Commission.

2. Sh. V. Ramachandran, : Member
Ex-Chief Secretary,
Govt. of Kerala,
Trivendrum.

3. **MR. V.S. Vyas (ECONOMIST),** : **Member**
 Ex. Director,
 Institute of Developmental Studies,
 8-B Jhalana Institutional Area,
 Jaipur-302 004.
4. **Dr. D.N. Tewari,** : **Member**
 Ex-Chancellor,
 F.R.I. (Deemed University),
 Dehradun (U.P.).
5. **Shri S. Prakash,** : **Member**
 Ex-Engineer-in-Chief,
 Delhi Water Supply &
 Sewage Disposal Undertaking.
6. **Shri C.C. Patel,** : **Member**
 Ex-Secretary (WR),
 Govt. of India.
7. **Dr. Bharat Singh,** : **Member**
 Vice-Chancellor (Retd.),
 University of Roorkee.
8. **Shri Ramaswamy R. Iyer,** : **Member**
 Research Professor,
 Centre for Policy Research,
 Dharma Marg, Chanakya Puri,
 New Delhi.
9. **Shri B.G. Verghese,** : **Member**
 Research Professor,
 Centre for Policy Research,
 Dharma Marg, Chanakya Puri,
 New Delhi.
10. **Additional Secretary,** : **Member**
 Ministry of Water Resources,
 Shram Shakti Bhawan,
 New Delhi.
11. **Chairman,** : **Member**
 Central Water Commission,
 Sewa Bhawan, R.K. Puram,
 New Delhi-110066.

12. Chairman, : Member
Central Ground Water Board,
Jam Nagar House,
Man Singh Road, New Delhi.

13. Director General, : Member-Secretary
National Water Development Agency,
Saket, New Delhi.

II. TERMS OF REFERENCE OF THE NATIONAL COMMISSION

- i) To prepare an integrated Water Plan for development of water resources for Drinking, Irrigation, Industrial, Flood Control and Other Uses;
- ii) To suggest modalities for transfer of surplus water to water-deficit basins by inter-linking of rivers for achieving the above objectives;
- iii) To identify important On-going Projects as well as New Projects which should be completed on priority basis together with phasing;
- iv) Identify a technological and interdisciplinary research plan for the water sector with a view to maximise the benefits;
- v) To suggest physical and financial resource generation strategies for the water sector;
- vi) Any other related issue.

The 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, and 8th meetings of the National Commission were held on 7th January, 1997, 8th April, 1997, 14th August, 1997, 6th March, 1998, 25th May, 1998, 10th October, 1998, , 7th November, 1998 and 5th December, 1998 respectively.

III. TASK FORCE

A Task Force under the Chairmanship of Dr. S.R. Hashim, Member, Planning Commission was constituted vide NWDA OM No. NWDA/113/67/Tech-I/96 dated 8.10.1996 to assist the High Powered Commission in deciding modus operandi and action plan in regard to the work of the Commission for reviewing its progress and for coordinating administrative actions required to be taken for facilitating the work of the Commission. The composition is as follows :

1. Dr. S.R. Hashim, : Chairman
Member (Irrigation),
Planning Commission.

2. Additional Secretary, : Member
Ministry of Water Resources,
New Delhi.
3. Chairman, : Member
Central Water Commission,
Sewa Bhawan, New Delhi.
4. Member (WP&P), : Member
Central Water Commission,
Sewa Bhawan, New Delhi.
5. Advisor (I&CAD), : Member
Planning Commission,
New Delhi.
6. Director General, : Member-Secretary
NWDA, Saket, New Delhi.

The 1st and 2nd meetings of the Task Force were held on 11th October, 1996 and 11th November, 1996 respectively. Later on, the Task Force was renamed as Core Working Group.

IV. CORE WORKING GROUP

As decided during the first meeting of the National Commission on 7.1.1997, a Core Working Group has been constituted to examine and make recommendations as regards the following for purpose of assisting the Commission in dealing the modus operandi:

- a) To detail out the work plan considering the terms of reference of the National Commission.
- b) Make suggestions about Working Groups.
- c) Make suggestions about overall coordination of the work.
- d) Examine and recommend the secretariat requirements for National Commission.

The composition of the Core Working Group is as follows :

1. Dr. S.R. Hashim, : Chairman
Member Secretary,
Planning Commission.

2. Prof. V.S. Vyas (Economist), : Member
Ex. Director,
Institute of Developmental Studies,
8-B Jhalana Institutional Area,
Jaipur-302 004.
3. Shri Ramaswamy R. Iyer, : Member
Research Professor,
Centre for Policy Research,
Dharma Marg, Chanakya Puri,
New Delhi.
4. Shri B.G. Verghese, : Member
Research Professor,
Centre for Policy Research,
Dharma Marg, Chanakya Puri,
New Delhi.
5. Secretary, : Member
Ministry of Water Resources,
Shram Shakti Bhawan,
New Delhi.
6. Additional Secretary, : Member
Ministry of Water Resources,
Shram Shakti Bhawan, New Delhi.
7. Director General, : Member-Secretary
National Water Development Agency,
Saket, New Delhi.

The 1st, 2nd, 3rd & 4th meetings of Core Working Group were held on 17th February, 1997, 12th March, 1997, 13th August, 1997 and 5th September, 1998 respectively.

V. WORKING GROUPS

Nine Working Groups have been formed under the Chairmanship of various members of National Commission to deal with specialised fields covering the terms of reference of the National Commission. The names of the various Working Groups including the Chairman of each Group are listed below :

<i>S.No.</i>	<i>Name of Working Group</i>	<i>Chairman</i>
1.	Perspective of water requirements	Dr. V.S. Vyas

- | | |
|---|---------------------|
| 2. Water availability for use | Dr. S.R. Hashim |
| 3. Water management for agriculture, hydropower, flood control and other allied sectors | Dr. C.C. Patel |
| 4. Water management for domestic, industrial and other uses | Sh. S. Prakash |
| 5. Legal, institutional and financing aspects | Sh. V. Ramachandran |
| 6. Environmental aspects | Dr. D.N. Tewari |
| 7. Interbasin transfer of water | Dr. Bharat Singh |
| 8. Prioritisation of ongoing and new projects together with phasing | Sh. A.D. Mohile |
| 9. International dimensions of water planning | Sh. B.G. Verghese |

The composition of all the Working Groups are furnished at Annexure-I. 5-7 members have been kept in each Working Group. In addition to this, Chairman of each Working Group can co-opt one or two members with the approval of the Chairman, National Commission, in case of further requirements subject to the condition that total number of members including Chairman of Working Group does not exceed eight. It is envisaged to avail the services of full time consultant for each Working Group, who will act as "Resource Person" for the respective tasks and assist Chairman of Working Group. As proposed by the Chairman, Working Group on "Water Management for Agriculture, HydroPower, Flood Control and Other Allied Sectors" and approved by the Chairman, National Commission, 8 Sub-Groups have been formed to collect data, information, maps, and prepare reports on various terms of reference which are grouped together on the basis of similarity in contents. The composition of Sub-Groups is given in Annexure-II.

The original terms of reference of all the Working Groups are furnished in Annexure-III. Based on suggestions and discussions held during the meetings of Working Groups, the Working Groups on "Water Availability for Use", "Water Management for Domestic, Industrial and Other Uses" and "International Dimensions of Water Planning" have modified their terms of reference. The Working Groups on "Water Management for Agriculture, Hydropower, Flood Control and Other Allied Sectors" and "Interbasin Transfer of Water" have regrouped their terms of reference. The revised/modified terms of reference of these Working Groups are given in Annexure-IV.

VI. SETTING UP OF THE OFFICE OF THE NATIONAL COMMISSION

The office of the National Commission has started functioning in the Trikoot-1, 3rd Floor, Bhikaji Cama Place, New Delhi-110066. The telephone numbers of the office of National Commission are given in Annexure V.

VII. NODAL OFFICERS

Some of the State Governments have identified the nodal officers in their States and NWDA has also identified some field officers of NWDA for providing assistance to the members of the National Commission. Details are furnished in Annexure-VI.

VIII. TENURE OF THE NATIONAL COMMISSION

The tenure of the National Commission as originally constituted covered two-years period viz., from 13.9.1996 to 12.9.1998. It has now been extended for a further period of 9 months i.e. upto 30th June, 1999. The draft reports of Working Groups are scheduled to be completed by December, 1998 and the draft report of the National Commission is to be completed by March, 1999. Accordingly, the final report of the National Commission is to be submitted to the Hon'ble Prime Minister in June, 1999.

IX. TOTAL OUTLAY

The estimated outlay for National Commission during the IXth Five Year Plan is Rs. 2.78 crores.

COMPOSITION OF WORKING GROUPS

I. Working Group on "Perspective of Water Requirements"

- | | | | |
|------|--|----------|---|
| i) | Prof. V.S. Vyas,
Ex. Director, Institute of
Development Studies,
396, Vasundhara Extn.,
Gopalpura Bye-pass, Tonk Road,
Jaipur (Rajasthan) 302018. | Chairman | 0141-515348(O)
519825 (O)
513601 (R)
Fax: 0141-515348 |
| ii) | Dr. R.K. Patel,
Ex-Vice Chancellor,
Rajasthan Agricultural University,
92/252, Agrawal Farm, Kshipra Path,
Mansarovar, Jaipur. | Member | 0141-396215 (R) |
| iii) | Sh. A.S. Kapoor,
Chairman, Indira Gandhi Nahar,
Pariyojana Board,
Bhawani Singh Marg, Tilak Nagar,
Jaipur (Rajasthan)-302005. | Member | 0141-380413 (O)
620673 (R) |
| iv) | Sh. T.K. Maullick,
CEO, ERM India,
A/8, First Floor, Chittaranjan Park,
New Delhi-110019. | Member | 011-6238420 (R)
8-252449 (R)
Fax: 011-6283755
6478420
6227277 |
| v) | Sh. Ravi Chopra,
Engineer & NGO,
Secy. General,
Peoples Science Institute Dehradun,
369/1, Vasant Vihar Enclave,
Dehradun-248006 (UP). | Member | 0135-683649 (O)
628024 (R)
Fax: 0135-620334 |
| vi) | Sh. C.S. Hukmani,
Ex-Chairman, Brahmaputra Board,
653, Adarsh Nagar,
Jaipur-302004. | Member | 0141-40642 (R) |

vii) Sh. P.S. Kavadia, Resource Person 0141-301919 (R)
Retd. Chief Engineer, Fax: 0141-301919
Water Resources,
A-50A, Shastri Nagar,
Jaipur-302016.

2. Working Group on "Water Availability for Use"

i) Dr. S.R. Hashim, Chairman 011-3719082(O)
Member-Secretary, 3711876 (O)
Planning Commission, 3717539 (O)
Yojana Bhawan, 3386010 (R)
New Delhi. Fax: 011-3719082

ii) Sh. R.S. Prasad, Member 011-6108590 (O)
Member (WP&P), 7016186 (R)
CWC,
Sewa Bhawan, 2nd Floor,
R.K. Puram,
New Delhi-110066.

iii) Dr. L.K. Mishra, Member 0663-430211 (O)
Professor, Civil Engineering, 430841 (R)
Dean, Planning & Coordination, Fax: 0663-430204
University College of Engineering Burla,
P.O. Burla Engineering College,
Sambalpur (Orissa),
Pin-768018.

iv) Sh. C.L.N. Sastry, Member 040-3740961 (O)
Retd. Secy. Irrigation, 860013 (R)
Govt. of Andhra Pradesh, Fax: 040-3740961
Flat No. 102-7-1-77,
Rajlaxmi Enclave, Dharam Karan Road,
Ameer Pet,
Hyderabad-500016.

v) Sh. C.D. Khoche, Member 011-6195519 (O)
Chief Engineer (IMO), 6105220 (R)
CWC, Sewa Bhawan,
R.K. Puram,
New Delhi-110066.

vi) Sh. S.K. Sharma, Member 011-3383851 (O)
Member, 4676974 (R)
Survey, Assessment & Monitoring,
Central Ground Water Board,
Jamnagar House, Mansingh Road,
New Delhi-110011.

vii) Prof. C.P. Sinha, Member 0360-257401 (O)
North Eastern Regional Institute 257402
of Science & Technology, 257403
Nirjuli-791109 (Itanagar), Ext. 104
Arunachal Pradesh. 257470 (R)

viii) Sh. R.V. Godbole, Resource Person 011-6105974 (O)
Retd. Chief Engineer, CWC, 5529756 (R)
Trokoot-1, 3rd Floor,
Bhikaji Cama Place,
New Delhi-110066.

3. Working Group on "Water Management for Agriculture, Hydropower, Flood Control and Other Allied Sectors"

i) Dr. C.C. Patel, Chairman 02712-26198 (O)
Ex. Secretary (WR), 21670(O)
91, "Suyog", Sector-19, 21105, 25173(R)
Gandhi Nagar (Gujarat). Fax: 02712-21670 (O)
22532 (O)
Fax: 011-6898809 (R)

ii) Dr. C.D. Thatte, Member 011-6116837 (O)
Ex. Secretary (WR), 011-6895966 (R)
Secretary-General, Fax: 011-6115962
ICID, Nyaya Marg,
New Delhi-110021.

iii) Sh. M.U. Purohit, Member 02712-26198(O)
Ex-Secretary, 25714 (R)
Narmada & Water Resources Deptt., Fax: 02712-26975
Plot No. 287, Nirant, Sector-20,
Gandhinagar-382020 (Gujarat).

- | | | |
|--|--------|--|
| i) Sh. R. Ghosh,
Consultant, CES,
M-215, Sector-25,
Jalvayu Vihar,
NOIDA-201301 (UP). | Member | 011-6438271 (O)
9-534451 (R)
Fax: 011-6460409 |
| v) Sh. D.V. Khera,
Secretary,
Central Electricity Authority,
Sewa Bhawan, New Delhi-110066. | Member | 011-6107783 (O)
011-5192529 (R)
Fax: 011-6172942 |
| vi) Sh. M.R. Dighe,
Executive Director,
Godavari-Marathawada,
Irrigation Development Corporation,
CADA Bhawan, Garkheda Road,
Aurangabad-4310001,
Maharashtra. | Member | 0240-3340226 (O) |
| vii) Sh. M.G. Padhye,
Ex-Secretary (WR),
4, Bharat Kunj, 2 Ganesh Nagar,
Road, Pune-411038. | Member | 0212-330835 (R) |
| viii) Sh. O.N. Bajpai,
Chief Engineer (WR) (Retd.),
4, Canal Colony (Irrigation Dept.),
Cantonment Road,
Lucknow-226001,
(UP). | Member | |
| ix) Sh. Muthukumarsamy,
Retd. Chief Engineer & Director,
Public Works Department,
Institute for Water Studies,
Taramani, Chennai-600113
Tamil Nadu. | Member | |
| x) Sh. B.N. Navalawala,
Advisor (I&CAD),
Planning Commission,
207, Yojana Bhawan, New Delhi. | Member | 011-3710273 (O)
6255604 (R)
Fax: 011-3717681 |

- | | | | |
|-------|---|-----------------|--|
| xi) | Sh. C.D. Khoche,
Chief Engineer (IMO),
CWC, Sewa Bhawan,
R.K. Puram, New Delhi. | Member | 011-6195519 (O)
6105220 (R)
Fax: 011-6195289 |
| xii) | Dr. S.P. Sinha Ray,
Member (SML),
Central Ground Water Board,
NH-IV, Faridabad-121001. | Member | 91-212130 (O)
91-215024 (R)
Fax: 91-212524 |
| xiii) | Sh. M.R. Gandhi,
Chief Engineer (Retd),
Plot No. 607,
Saurabh, Sector-22,
Gandhinagar (Gujarat)-382022. | Resource Person | 02712-23569(R) |

4. Working Group on "Water Management for Domestic, Industrial and Other Uses"

- | | | | |
|------|--|----------|---|
| i) | Sh. S. Prakash,
Ex. Engineer-in-Chief,
Delhi Water Supply & Sewage
Disposal Undertaking, Delhi.
1022, Sector-17B, IFFCO Colony,
HUDA, Gurgaon-120001 (Haryana). | Chairman | 91-347725 (O)
91-345888 (R)
91-345889 (R)
Fax: 91-342320 |
| ii) | Dr. S.R. Sukla,
Advisor,
Ministry of Urban Development,
Nirman Bhawan, New Delhi. | Member | 011-3017482 (O)
2713793 (R) |
| iii) | Dr. S.P. Chakravarty,
Member-Secretary,
Central Pollution Control Board,
Parivesh Bhawan, East Arjun Nagar,
New Delhi. | Member | 011-2217078 (O)
2423476 (R)
Fax 011-2217078 |
| iv) | Dr. K. Mohan,
Advisor,
Min. of Environment & Forests,
Pariyavaran Bhawan, CGO Complex,
Lodhi Road, New Delhi-110003. | Member | 011-4362735 (O) |

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|-------|--|-----------------|---|
| v) | Sh. V.K. Gupta,
Managing Director,
U.P. Jal Nigam,
Lucknow. | Member | 0522-222389 (O)
376251 (R) |
| vi) | Sh. S. Daivamani,
Engineering Director,
Madras Metro Water Board,
114, Habibullah Road,
T-Nagar, Chennai-600017. | Member | 044-8253575 (R) |
| vii) | Sh. V.K. Jain,
Chairman,
M.P. Pollution Control Board,
Bhopal, (M.P.). | Member | 0755-563143 (O)
556470 (R)
Fax: 0755-563742 |
| viii) | Sh. N. Kittu,
O.S.D. (Technical),
RGDWM,
Room No. 2, B-Block, 8th Floor,
Paryavaran Bhawan,
C.G.O. Complex, Lodhi Road,
New Delhi. | Member | 011-4364869 (O)
6762304 (R) |
| ix) | Sh. M.L. Kansal,
Chief Engineer (Retd.)
C-109, Preet Vihar,
Delhi-110092. | Resource Person | 011-6105974 (O)
2221893 (R)
2214698 (R) |

5. Working Group on "Legal, Institutional & Financing Aspects"

- | | | | |
|-----|--|----------|--|
| i) | Sh. V. Ramachandran,
G-4, Jawahar Nagar,
Thiruvananthapuram-695014,
Kerala. | Chairman | 0471-332132 (O)
329703 (R)
Fax: 0471-331253
0265-795499(R)
011-6515103 (R) |
| ii) | Sh. Syed Turabul Hassan,
Chairman,
Inst. of Research Development &
Social Management,
10-1-123/A/3/1, Saisabad,
Hyderabad (AP). | Member | 040-3307008 (O)
3396324 (R)
Fax: 040-3322015 |

- | | | | |
|-------|---|-----------------|---|
| iii) | Sh. Kamta Prasad,
Professor (Retd.),
Indian Institute of Public Administration,
B-606, Anand Lok Housing Society,
Mayur Vihar Phase-I,
Delhi-110091. | Member | 011-3382416 (O)
2493060 (R)
2494821 (R) |
| iv) | Sh. B.R. Chauhan,
Ex. Head,
Deptt. of Law,
Himachal Pradesh University,
M-203, Aruna Cooperative Housing Society,
33, I.P. Extension, Delhi-110092. | Member | 011-2726004 (R) |
| v) | Prof. Rahmat Ulla Khan,
Rector, Jawaharlal Nehru University,
Jawaharlal Nehru Chair in
Environmental Law,
School of International Studies,
New Delhi-110067. | Member | 011-6162171 (O)
6102689 (R)
Fax: 011-6165886
6198234 |
| vi) | Sh. S.C. Agarwal,
National Council of Applied
Economic & Research Institute,
Parisila Bhawan, Indraprastha Estate,
New Delhi-110002. | Member | 011-3317861 (O)
2229251 (R) |
| vii) | Sh. Virendra Singh Rekhi,
Director, National Law Institute,
Q-301, Ansal Lake,
View Apartments,
Shyamla Hills,
Bhopal (M.P.). | Member | Fax: 0755-551876
Mobile: 0-9827010330 |
| viii) | Sh. K.K. Singh,
C-233, Indira Nagar,
Lucknow-226016. | Member | 0522-351075 (R) |
| ix) | Sh. R. Vidyasagar Rao,
Retd. Commissioner, MOWR,
11-B, Sheikh Sarai Phase-I,
New Delhi-110017. | Resource Person | 011-6105974 (O)
011-6420273 (R) |

6. Working Group on "Environmental Aspects"

- | | | | |
|------|---|----------|---|
| i) | Dr. D.N. Tewari,
Ex-Chancellor, FRI,
18A, Auckland Road, Civil Lines,
Near Bahuguna Market
Allahabad (U.P.). | Chairman | 0532-420454 (R)
Fax: 0532-623959 |
| ii) | Dr. Ram Prasad,
Director,
Indian Institute of Forest Management,
Nehru Nagar, Post Box No. 357,
Bhopal (MP)-462003. | Member | 0755-575998(O)
551328(R)
Fax: 0755-572878 |
| iii) | Sh. R.N. Mishra,
Chief Conservator of Forests,
Survey & Forest Conservation Act,
Forest Department, Govt. of M.P.,
1st Floor, 'A' Wing, Satpura Bhawan,
Bhopal (M.P.). | Member | 0755-551578 (O)
564497 (R)
Fax: 0755-552184 |
| iv) | Sh. B.K.P. Sinha,
Chief Conservator of Forest
(Social Forestry),
Eastern Zone,
Allahabad (U.P.). | Member | 0532-623247 (O)
623074 (R) |
| v) | Sh. R.L. Java,
Ex-Principal CCF,
No. 1, Rajnagar Society,
Behind Gujarat Electricity Board,
Akota Stadium Road,
Vadodara (Gujarat)-390015. | Member | 0265-312254 (R) |
| vi) | Dr. S.K. Pandey,
G1, South Civil Lines,
Veterinary College Campus,
Jabalpur (MP)-482001. | Member | 0761-324026 (R) |
| vii) | Dr. V.V. Srinivasan,
Ex-Director,
17/1, West Park Road,
Ground Floor, Malleshwaram,
Bangalore-560003. | Member | 080-3441265(R) |

- viii) Sh. Kaushal Kumar, Member 0532-603947 (R)
Sociologist, 623950 (R)
102, G/3, Beniganj,
Allahabad (UP).
- ix) Dr. R.M. Singhal, Member Telefax: 0135-759203 (O)
Project Co-ordinator, 24794 (R)
IDRC Project, New Forest, 655077 (R)
Dehradun (UP). 0135-752673 (O)
0135-757021(O)
Ext. 4480
- x) Dr. Mahendra Pal, Member 0135-683033 (R)
Head, Botany Division, FRI, Fax: 756865
PO: New Forest,
Dehradun (UP).
- xi) Dr. Ashok Singh, Resource Person 0532-624848(R)
Ex. Principal Conservator 624888(R)
of Forest, Govt. of UP, Fax: 0532-624888
Clive Road-5, Civil Lines,
Allahabad (UP)-211001.

7. Working Group on "Interbasin Transfer of Water"

- i) Dr. Bharat Singh, Chairman 01332-74256 (R)
Retd. Vice Chancellor, 72349 Ext. 5772(O)
University of Roorkee, Fax: 01332-71073
57/1, Civil Lines, Roorkee-247667 (U.P.). 73560
- ii) Sh. A.D. Mohile, Member 011-6108855 (O)
Chairman, 6510116 (R)
Central Water Commission, 6521706 (R)
Sewa Bhawan, R.K. Puram, Fax: 6195516
New Delhi-110066.
- iii) Prof. M.C. Chaturvedi, Member 011-6449756 (R)
Retd. Professor, IIT,
323, Nilgiri, Alaknanda,
New Delhi-110019.

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|---|--|-----------------|---|
| u) | Dr. G.N. Padhi,
Orissa State Management Consultant,
Hydrology Project,
Plot No.2132/5124, Nageswar Tangi,
Bhubaneswar-751002 (Orissa). | Member | 0674-432873 (O)
431714 (O) |
| v) | Sh. A. Mohankrishanan,
Retd. Chief Engineer (Irrigation),
48, A.K. Block, Annanagar,
Chennai-600040 (Tamilnadu). | Member | 044-8260732 (O)
6211716 (R)
Fax: 044-8260732 |
| vi) | Sh. M.D. Pol,
Retd. S.E., Govt. of Maharashtra,
129, Shastri Nagar,
Garkheda Road,
Aurangabad-431005 (Maharashtra). | Member | 0240-332939 (R) |
| vii) | Sh. A.S. Chawla,
Ex. Prof., WRDTC,
26, Vishal Apartment,
5, Vasundhara Enclave,
Delhi-110096. | Resource Person | 011-6102789 (O)
011-2481527 (R) |
| 8. Working Group on "Prioritisation of Ongoing & New Projects together with Phasing" | | | |
| i) | Sh. A.D. Mohile,
Chairman,
Central Water Commission,
Sewa Bhawan, R.K. Puram,
New Delhi-110066. | Chairman | 011-6108855 (O)
6510116 (R)
6521706 (R)
Fax: 011-6108614 |
| ii) | Sh. B.N. Navalawala,
Advisor (I&CAD),
Planning Commission,
207, Yojana Bhawan,
New Delhi-110001. | Member | 011-3710273 (O)
6255604 (R)
Fax: 011-3717681 |
| iii) | Dr. V.P. Elhence,
Ex. Chief Engineer,
B-87, Indra Nagar,
Lucknow-226016. | Member | 0522-382742 (R) |

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| iv) | Sh. Prodipto Roy,
Council for Social Development,
Sangha Rachana,
53, Lodi Estate, New Delhi-110003. | Member | 011-4611700 (O)
011-4632700 (R)
Fax: 011-4616061 |
| v) | Sh. K.P. Gargye,
Chief Technical Examiner,
Irrigation Department, Govt. of M.P.,
B-9, DDA Colony, Shivaji Nagar,
Bhopal (M.P.). | Member | 0755-551711 (R) |
| vi) | Sh. P.N. Soni,
Pr. Scientist (Retd.),
IARI,
228-B, DDA MIG Flats,
Rajouri Garden, New Delhi. | Member | 011-5190927 (R) |
| vii) | Sh. K.C. Manchanda,
Retd. Chief Engineer, CWC,
Trikoort-I, 3rd Floor,
Bhikaji Cama Place,
New Delhi-110066. | Resource Person | 011-6105974 (O)
6519063 (R) |

9. Working Group on "International Dimensions of Water Planning"

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|------|--|----------|--|
| i) | Sh. B.G. Verghese,
Research Professor,
Centre for Policy Research,
Dharma Marg, Chanakyapuri,
New Delhi. | Chairman | 011-6115273 (O)
3325091 (R)
Fax: 011-6872746 |
| ii) | Sh. R.B. Shah,
Ex. Chairman, CWC,
M-61, Swati Apartments,
No.12, Patparganj,
Delhi-110092. | Member | 011-2216122 (R) |
| iii) | Sh. T. Prasad,
Director,
Centre for Water Resources Studies,
Patna University, Patna-800005. | Member | 0612-662611 (O)
670786 (R) |

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| v) | Sh. Dipankar Basu,
Chairman, Inland Waterways
Authority of India,
B/109-112, Commercial Complex,
Sector-18, Noida (U.P.)-201301. | Member | 91-521684 (O)
011-3782403 (R)
Fax: 91-522490 |
| v) | Sh. Arbinda Ghose,
Formerly with Hindustan Times,
G-201, Nanak Pura,
New Delhi-110 021. | Member | 011-3715331 (O)
6889782 (R) |
| vi) | Dr. P.S. Rao,
Joint Secretary,
Legal & Treaties Division,
Ministry of External Affairs,
V/3/17, Lodi Complex,
New Delhi. | Member | 011-3381839 (O)
3389724 (O)
4692316 (R) |
| vii) | Sh. R. Rangachari,
Ex-Member, CWC,
M-31, Swati Apartments,
12, Patparganj,
Delhi-110092. | Member | 011-2222079 (R)
2057551 (R) |
| viii) | Sh. N.V.V. Char
Commissioner (Retd.),
A-12C, Munirka DDA Flats,
New Delhi-110067. | Member | 011-4362780 (R) |
| ix) | Sh. M.S. Menon,
Retd. Chief Engineer, CWC,
Trikoort-I, 3rd floor, Bhikaji Cama Place,
New Delhi-110066.
Res: 30, Ganga Apartments,
Alaknanda, New Delhi. | Resource Person | 011-6105974 (O)
6465995 (R) |

**Composition of Sub-Groups for Working Group on "Water Management
for Agriculture, Hydropower, Flood Control and Other Allied Sectors"**

<i>Sub-Group No.</i>	<i>Subject</i>	<i>Names of the Convenor & Members of the Sub-Group</i>	<i>Telephone/ Fax No</i>
I.	Water Management (TOR Nos. 1,2,3,4,&5)	<p>Convenor Sh. M.G. Padhye, 4, Bharat Kunj-2, Ganesh Nagar Road, Pune-411038.</p> <p>Members</p> <p>i. Sh. B.N. Navalawala, Advisor (I&CAD), Planning Commission, 207, Yojana Bhawan, New Delhi.</p> <p>ii. Sh. C.D. Khoche, Chief Engineer (IMO), Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi.</p> <p>iii. Sh. M.R. Dighe, Executive Director, Godavari-Marathawada Irrigation Development Corporation, CADA Bhawan, Garkhade Road, Aurangabad-431001 (Maharashtra)</p> <p>iv. Sh. Muthukumarsamy, Retd. Chief Engineer & Director, Public Works Department, Institute for Water Studies, Taramani, Chennai-600113, Tamilnadu.</p> <p>v. Shri O.T. Gulati, Chief Engineer (CAD) & Jt. Secretary Narmada and Water Resources Dept., Block No.9,</p>	<p>0212-330835 (R)</p> <p>011-3710273 (O) 6255604 (R) Fax: 011-3717681</p> <p>011-6195519 (O) 6105220 (R) Fax: 011-6195289</p> <p>0240-3340226 (O)</p> <p>02712-20389 (O) 25911 (R) Fax: 02712-20406</p>

<i>Sub-Group Subject No.</i>	<i>Names of the Convenor & Members of the Sub-Group</i>	<i>Telephone/ Fax No</i>
	2nd Floor, New Sachivalaya, Gandhinagar-382010.	
	vi Sh. P.B.S. Sarma, Ex-Director, Water Technology Centre, IARI, New Delhi-110012.	
II. Canal Automation (TOR Nos.6 & 7)	Convenor Sh. A.B. Mandavia, Chief Engineer & Director, WALMI, Anand, (Gujarat)	02692-24450 (O)
	Members	
	i. Shri P.M. Soni, Chief Engineer, Sardar Sarovar Narmada Nigam Ltd., Block No-12, New Sachivalaya, Gandhinagar-382010.	02712-23515 (O) 23061 (R) Fax: 02712-23056
	ii. Sh. H.K. Pasarate, Superintending Engineer, Jayakwadi Project Circle, Aurangabad, Maharashtra.	0240-334107 (O) 331362 (O) 331361 (R)
	iii. Sh. S.B. Kulkarni, Joint Director, C.W.P.R.S., Post-Khadakvasla, Pune-411024.	Fax: 0212-592004
	iv. Sh. R.D. Sharma, Chief Engineer, CAD, Indira Gandhi Nahar Project, Bikaner (Rajasthan)	

<i>Sub-Group Subject No.</i>	<i>Names of the Convenor & Members of the Sub-Group</i>	<i>Telephone/ Fax No</i>
III. Equitable Distribution & Water Users' Participation (TOR Nos.8,9,10 & 12)	Convenor Sh. Onkarnath Bajpai, Retd. Chief Engineer, Department of Irrigation, 4, Canal Colony, Cantonment Road, Lucknow-226001 (U.P.).	
	Members	
	i. Sh. M.A. Bandi, Chief Engineer (MI) & Jt. Secretary, Narmada & Water Resources Deptt., Block No.9, New Sachivalaya, Gandhinagar-382010.	02712-20037 (O) 6404 (P) 21804 (R)
	ii. Sh. A.N. Mistry, Director and Chief Engineer, Water and Land Management Institute, Post Box No.80, Anand, Gujarat.	02692-41751 (O) 41651 (O) 079-7478727 (R)
IV. Water Logging & Drainage (TOR Nos. 11 & 14)	Convenor Sh. C.D. Thatte, Secretary General, ICID, Nyaya Marg, New Delhi-110021.	011-6116837 (O) 011-6895966 (R) Fax: 011-6115962
	Members	
	i. Dr. N.K. Tyagi, Director, Central Soil Salinity Institute, Karnal-132001, Haryana.	0184-250801 (O) 251801 (R) Fax: 0184-250480
	ii. Sh. T.P. Mathur, Project Manager, Rajad Project, CAD Building, P.O. Box No. 112, New Green Mandi, Kota-324007, (Rajasthan).	0744-428625 Fax: 0744-428609
	iii. Sh. P.B.S. Sharma, Ex-Director, Water Technology Centre, IARI, Pusa Road, New Delhi-110012.	

Sub-Group Subject No.	Names of the Convenor & Members of the Sub-Group	Telephone/ Fax No
	iv. Sh. O.T. Gulati, Chief Engineer (CAD) & Jt. Secretary, Narmada Water Resources Department, Block No.9, 2 nd Floor, New Sachivalaya, Gandhinagar-382010.	02712-20389 (O) 6776 (O) 25911 (R) Fax: 02712-20406
V. Flood Control (TOR Nos. 23, 24 & 25)	Convenor Sh. R. Ghosh, M-215, Sector-25, Jal Vayu Vihar, Noida-201301.	011-6438271 (O) 011-534451 (R)
	Members	
	i. Sh. B.P. Singh, Member, Ganga Flood Control Commission, Sichai Bhawan, Patna-800015.	0612-223084 (O) Fax: 0612-224895
	ii. Sh. S.K. Chakravorty, Chief Engineer (P&D), Bramaputra Board, Basistha, Guwahati-28.	0361- 562527 (O) 560169 (R)
	iii. Sh. A.N.K. Singh, Chief Engineer, Flood and Delta, Office of the Engineer-In-Chief, Secha Bhawan, Bhubaneswar-751001, Orissa.	0674-400185 (O) 501762 (R) 513364 (R)
VI. Pricing of Water & Micro Watershed Development (TOR Nos.13 & 17)	Convenor Sh. M.U. Purohit, Ex. Secretary, Irrigation, GOG, Plot No.287, "Nirant", Sector 20, Gandhinagar-382020, Gujarat.	02719-26198 (O) 25714 (R) Fax: 02719-21670
	Members	
	i. Dr. D. Ramakrishnaiah Deputy Commissioner (DPAP), Ministry of Rural Areas and Employment, Block No. 11, 6 th Floor, CGO Complex, Lodi Road, New Delhi-110003.	011-4361693 (O) 3385842 (R) Fax: 011-4362205

<i>Sub-Group Subject No.</i>	<i>Names of the Convenor & Members of the Sub-Group</i>	<i>Telephone/ Fax No</i>
	ii. Sh. P.C. Bodh, Director (WRE), Central Water Commission, Room No. 901 (S), Sewa Bhawan, R.K. Puram, New Delhi-110066.	011-6100801 (O) 4678062 (R)
	iii. Sh. Gajendra Singh Chaudhari, Chief Engineer, Irrigation Department, Government of Rajasthan, Sinchai Bhawan, Bhavani Singh Marg, Jaipur-302004.	0141-380542 (O) 525242 (R) 5233521 (R) Fax: 0141-380288
VII. (a) Hydro Power (TOR Nos.19, 20 & 21)	Convenor Sh. D.V. Khara, Member (HEP), Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.	011-6107783 (O) 011-5192529 (R) Fax: 011- 6172942
	Members	
	i. Sh. Onkarnath Bajpai, Retd. Chief Engineer, Department of Irrigation, 4, Canal Colony, Cantonment Road, Lucknow-226001 (U.P.).	
	ii. Sh. Suresh Agrawal, Principal Scientific Officer, Ministry of Non-Conventional Energy Sources, Govt. of India, New Delhi.	011-436707 (O) Ext. 2214 Fax: 011-4361298
(b) National Rehabilitation Policy	Convenor Sh. M.G. Padhye, 4, Bharat Kunj-2, Ganeshnagar Road, Pune-411038, Bhubaneswar.	0212-330835 (R)

Sub-Group No.	Subject	Names of the Convenor & Members of the Sub-Group	Telephone/ Fax No
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Members

i. Sh. N.B. Desai,
Secretary (Narmada),
Sardar Sarovar Narmada Nigam Ltd.,
Block No.12, New Sachivalaya,
Gandhinagar-382010, Gujarat.

02712-23504 (O)
23542 (R)
Fax: 02712-23056

ii. Sh. V.K. Babbar,
Rehabilitation Commissioner,
Chief Executive Officer,
S.S. Rehabilitation Agency,
Vadodara.

0265-421723 (O)
335777 (R)

**VIII. Ground Water including
Conjunctive use
(TOR Nos. 16, 18)**

Convenor

Sh. Muthukumarasamy,
Retd. Chief Engineer & Director,
Institute for Water Studies, Taramani,
Chennai-600113.

Members

i. Dr. S.P. Sinha Ray,
Member (SML), CGWB, NH-IV,
Faridabad-121001.

91-212130 (O)
91-215024 (R)
Fax: 011-212524

ii. Sh. A.S. Chawla,
26, Vishal Apartment,
5, Vasundhara Enclave,
New Delhi-110096.

011-6102789 (O)
011-2481527 (R)

ORIGINAL TERMS OF REFERENCE OF WORKING GROUPS

1. Working Group on "Perspective of Water Requirements"

Terms of reference

1. To assess the consumptive and non-consumptive domestic requirement and population for mega cities, other cities and rural areas for 2010, 2025 & 2050.
2. To obtain information on present status of per capita requirement of water in various states for domestic, bovine and industrial needs for urban and rural areas and separately for large cities along-with present and expected population in 2010, 2025 and 2050 AD.
3. To decide the high priority basic minimum requirements and suggest the norms, which need to be provided for as a basic right or for minimum support for life.
4. To obtain information about area irrigated and assess area likely to be brought under irrigation by 2050 AD (Statewise and basinwise).
5. To obtain information on essential needs of water for navigational development in the country at present and assess needs upto 2050 AD.
6. To obtain information for consumptive needs of hydropower development upto 2050 AD, as also on the quantity of hydropower draft non-compatible with other uses, such as tail race discharges near the coast.
7. To have information for essential environmental needs of water at present and upto 2050 AD.
8. To obtain information about norms being used for above uses for planning purposes by states, if any.
9. To examine the norms vis-a-vis the norms in other countries in the sub-continent, norms suggested by Ministry of Urban Development, Bureau of Indian Standards, CWC, Inland Waterways Authority of India, CEA and Ministry of Environment and Forests and suggest norms for adoption in the country considering expected socio-economic development, industrialisation, improvement in living and health standards.

10. **The group would attempt a country wide assessment, as well as its segregation basinwise and Statewise.**
11. Any other related issues.

2. Working Group on "Water Availability for Use"

Terms of reference

1. **To assess the natural availability of surface water, ground water in deep aquifers & fossil water both as dynamic flows and static resource basinwise and Statewise.**
2. **To assess the ground water recharge and ground water parameters connected with surface flows.**
3. **To assess utilisable flows from surface water as well as ground water basinwise and Statewise.**
4. **To assess/suggest the probable utilisable surface water and ground water for consumptive use.**
5. **To assess the possibilities of large utilisation through water harvesting, induced percolation through percolation tanks, hydro-fracturing etc. as also renovation of small tanks and traditional structures, encouraging roof top harvesting.**
6. **To obtain information about Statewise/basinwise utilisation of water for irrigation, hydropower and other uses at present and in future upto 2025 AD.**
7. **To assess desalination as a supply possibility.**
8. **Keeping in view the existing technology, to suggest research and development requirements for augmenting available supplies.**
9. Any other related issues.

3. Working group on "Water Management for Agriculture, Hydropower, Flood Control and Other Allied Sectors"

Terms of reference

1. **To identify and assess the irrigable areas by surface water and ground water respectively basinwise and Statewise.**
2. **To collect information on present agricultural practices in the country and the water uses.**

3. To suggest ways and means to discourage practices involving wasteful use of water in irrigation and encourage water saving methods.
4. To study low cost improved irrigation methods such as furrows, surges etc. and high cost irrigation mechanical methods, and make suitable recommendations. To recommend public awareness programmes and field extension approaches.
5. To consider management practices and possibilities with particular emphasis on allocation of water amongst the users either as per the cropping pattern or as a fixed quantum/ha.
6. To study the methods of operation of secondary system with (i) minimum control and (ii) full control and suggest appropriate methods.
7. To assess the possibility of automation of operation of main canals.
8. To study and recommend the extent of the conveyance system to be handed over to the Water Users Associations.
9. To consider whether water should be made available per capita or land holding basis and study the issue of water rates.
10. To assess the efficiency of conveyance of delivery system and recommend research and development needs in this sector.
11. To assess the areas affected by water logging and salinity and suggest methods for improving the irrigability of such areas.
12. To review and suggest changes in the institutional structures for agricultural water use including participatory irrigation management.
13. To have information on pricing structure of water Statewise and make suitable recommendations.
14. To study the problem of water logging and drainage in irrigated areas and assess requirement of drainage system in the existing, ongoing and future projects.
15. To collect information on projected, ongoing and new projects and their phasing and prioritisation.
16. To decide additional recharge in the command due to water loss in the net-work and field application.

17. To study the possibilities on large scale micro water shed development in the country especially in the drought prone areas for sustaining atleast one crop - for multipurpose uses such as irrigation, prevention of soil erosion, afforestation etc.
18. To make recommendations on optimising conjunctive use with surface and ground water.
19. To assess the potential and prospects of hydropower development and the methods of accelerating the hydropower availability and recommend strategies and policies to be framed for speedy development of hydropower, suggest ideas for hydro thermal mix etc.
20. Assessment of availability of hydropower by inter-basin water transfer in future.
21. To assess the compatibility and/or conflict between hydropower generation and agricultural requirement.
22. To assess the unutilised potential due to tail water discharges in the coastal regions and to suggest measures for utilising these waters.
23. To evaluate the effectiveness of various flood control measures adopted so far and their effectiveness and to suggest further measures to accelerate the programmes, prioritise the affected regions, future strategies to safeguard against the damage to life and property by floods.
24. To examine preparation of flood zone and land zone maps and need for adopting appropriate control measures for limiting development in flood prone areas. To examine possibility of introducing crop insurance against floods instead of flood relief measures.
25. To study economics of providing flood space in new reservoirs, flood proofing and flood plain zoning and management to prepare action plan for fighting the disaster of floods caused by natural calamities and man made intervention.
26. Any other related issues.

4. Working Group on "Water Management for Domestic, Industrial and Other Uses"

Terms of reference

1. To assess the consumptive and non-consumptive domestic requirement and population for mega cities, other cities and rural areas for 2010, 2025 & 2050.

2. To suggest measures for minimising water requirement for consumptive uses in water short areas and to suggest drill of reducing consumption of domestic water in years of low availability. Suggest ways for implementation of these through community involvement.
3. To consider social/political constraints in present pricing policies and suggest ways and means of resources generation under Indian social and economic conditions.
4. To study the prevalent norms of domestic water requirement and to suggest core needs attracting priority and non core needs not requiring priority.
5. To assess line losses (water not used) and commercial losses (Water used but not accounted for), and to decide the practicable lower limits on these, and ways of achieving these limits.
6. To suggest the standard of sewage to be allowed in sewerage, storm water drainage.
7. To suggest the institutions/bodies which would bear the costs of the sewage treatment and modes for raising the funds for this purpose which may include some self paying innovative ideas like combination of oxidation tank with safety tanks and with advantages of subsequent pisciculture and to examine the possibilities of using low cost system of oxidation ponds combined with pisciculture for sewage treatment.
8. To suggest various research and development needs for improving the quantity and quality of water requirement for domestic purposes.
9. People's participation in rural water supply schemes through voluntary organisations.
10. To assess the possibility of self generation of funds for rural water supply & reduction of grants and involving Panchayats in such issues.
11. To obtain information on present water use, quantum of waste and toxic discharges in various industries.
12. To assess the possibility and extent of reuse of water in industries and possibility of insisting on zero effluent condition while allowing hazardous industries in semi and arid areas.
13. To suggest the norms for supply of different qualities of water to various industries, so that good quality water is not used for inferior purposes and to suggest strategies for reducing industrial use of water.

14. To study the economics of treating toxic discharges and desirability of having deterrent measures.
15. To assess the research and development needs for minimising water use, improving the quality of waste water, toxic discharges etc.
16. To assess possibilities of social forestry or disposal on land to eliminate hazardous industrial effluents, and possible long term effect of these on ground water.
17. Any other related issues.

5. Working Group on "Legal, Institutional and Financing Aspects"

Terms of reference

1. To examine the possibility of private financing of water projects, through different types of Management Schemes, the legal aspects of such participation, financial sustainability of such schemes etc.
2. To obtain information on present status of role/involvement of people's institutions, private sector, co-operative sector in water development and management, water distribution, collection of water rates etc.
3. To examine the feasibility/desirability of involving private/Co-operative participation and limits there of.
4. To assess the essential sphere of responsibility of Govt. in regard to items like land acquisition which private agencies may not be able to handle.
5. To suggest measures to build up confidence in private developpers, to ensure that political changes would not cause impediments.
6. To suggest a policy for involving and assisting Voluntary/Co-operative agencies for promotion of farmers participation in water resources sector.
7. To assess the possibility & desirability of joint sector management of water projects, through the Govt., private parties and water users associations contributing to the equity.
8. To prepare working paper on the above aspects after getting inputs from various Central Organisations and State Govts. for consideration of the Core Working Group.
9. Review of existing institutional and organisational structure in relation to water in Govt., Co-operative and Private Sector.

10. To suggest changes in personnel policies and cadre management in encouraging professionalism, training and education as also possibility of inducting personnel directly at various higher levels.
11. To suggest a programme for both improved management and expansion of water development.
12. To assess the possibility of restructuring in Indian water sector institutions towards consolidation, internalisation of concerned and interdisciplinary working and providing for user's participation.
13. To assess the possibility of setting up independent autonomous and largely self finance institution for basin management and water sector performance analysis etc.
14. To assess the physical and financial resource generation for water resources projects.
15. To assess the possibility of support and guidance of international donors and the Union Govt. to act as an important motivation factors for the necessary changes in the water resources sector.
16. To assess changes needed in the legal aspects of water rights of individuals, communities and States.
17. To examine the constitutional provisions pertaining to water sector in general and article 262 by 17-list II and entry 56- list I in particular and suggest guidelines for meeting the requirements by various interstate groups in future.
18. To suggest the legal and administrative steps for regulation of ground water so as to maintain desirable depths in areas of over exploitation.
19. To examine and suggest any modification in the model bill for the ground water.
20. To suggest legal and administrative means for minimising the toxic discharge of industrial waste.
21. To suggest the legal and administrative measures for regulating the ground water quality as affected from surface water containing fertilisers, pesticides and insecticides.
22. To review the prevalent water market in various regions and to suggest its continuance or otherwise.
23. To review the framework of inter state sharing of water.

24. To examine the issues pertaining to financing of Water Resources Projects.

25. Any other related issues.

6. Working Group on "Environmental Aspects"

Terms of reference

1. To assess the information about the forest area submerged by storages already created and likely to be created in future, the consequent loss of biomass as also the consequent new biomass created through irrigation.
2. To collect the information regarding rehabilitation & resettlement of oustees as well as soil & water conservation aspects with due respect to afforestation programme both along the water distribution system and other suitable areas.
3. To obtain information on ecologically sensitive and biologically rich regions for total protection & demarcation of critically degraded areas requiring priority treatment.
4. To evaluate the present development mix alongwith formation of environmental management plans for prevention or mitigation of adverse impacts from the development projects both existing and those in the pipeline.
5. To assess environmental impact of large projects and interbasin water transfer links.
6. To obtain information about water logging, salination, sedimentation of reservoirs and sedimentation of distribution network.
7. To examine if losses of diversity in plant life through large irrigation projects constitute ecological risks.
8. To examine the role of irrigation paddy as a contributor of green house gases.
9. Need for internalisation of environmental concerns within water resources institutions, instead of having separate institutions for developmental and environmental concerns, apparantly working at cross purposes.
10. To suggest norms for the quantification of the environmental costs and benefits with and without project development.
11. To evolve criteria for improving sustainability of water resources projects.

12. To assess the economic value of environmental action and attempt to quantify the intangibles.
13. To establish environmental management systems, create reliable environmental data base and eco-systems, rehabilitation as well as strengthening the institutional support.
14. To assess the minimum flow requirements downstream of water resources structures for maintaining the ecological balance.
15. To identify various activities causing surface water & ground water pollution and suggest the suitable controlling measures.
16. To collect information about the positive & negative environmental impacts of water resources projects in India and abroad.
17. To assess the information on management of wetland systems & mangrove, coastal land for sustainable development.
18. To assess water quality, water borne diseases, health and dam safety.
19. To assess the need of having transparency and public hearings for developmental projects.
20. Any other related issues.

7. Working Group on "Interbasin Transfer of Water"

Terms of Reference

1. To review the role of Union Govt. in regard to inter-basin transfer of water.
2. To assess the possibility of water available to non-basin States through inter-basin transfer of water.
3. To assess the interstate accord/tribunals for deciding the ultimate requirement of the basin and the balance of surplus water.
4. To suggest the guidelines for the criteria to be adopted for economic analysis of inter-basin transfer.
5. To evaluate economic viability of inter-basin transfer over long distances vis-a-vis lifting.
6. To assess the socio-economic and environmental impact due to inter-basin transfer links.

7. To study the need for enabling legal instruments, including if necessary, constitutional amendment for the implementation of inter-basin water transfer links.
 8. To study the possibility of private funding and soft loans from international agencies for implementation of inter-basin water transfer projects, taking their primary role in providing food & employment and thus maintaining ecological balance.
 9. To evaluate the role of inter-basin water transfer in the sustainable development of water and land and suggest the R&R possibilities.
 10. To suggest criteria for cost & benefits of inter-basin water transfer links.
 11. To assess the availability of water and modalities of inter-basin water transfer links and their phasing.
 12. Any other related issues.
- 8. Working Group on "Prioritisation of Ongoing and New Projects Together with Phasing"**

Terms of reference

1. To have information and recommend guidelines for prioritisation of ongoing projects considering the following:
 - (a) Limitations of the availability of finance and to make reasonable projection for future financial requirements.
 - (b) Need for prioritising projects nearing completion and to recommend the procedure so that the benefit starts showing at the earliest.
 - (c) The financial problems of the projects because of inadequate financing, consequent delays which lead further to increase of residual cost due to inflation and increase of interest rate etc.
 - (d) Need felt by State Govts. to maintain regional balances in regard to spending money in projects.
 - (e) Need for completing projects giving substantial domestic water supply benefits on higher priority.
 - (f) Need felt by State Govts. to complete some projects on priority, in view of interstate aspects.

2. To evaluate the possibilities of phasing projects to that ponding the reservoirs only when it becomes possible to use the spread water, thus reducing sedimentation.
3. To discuss, how, phasing of a project for early start of irrigation in head reaches with plentiful waters should not lead to problems like waterlogging, changes in cropping pattern which are difficult to correct, and larger maintenance problems on main canal flowing with a small discharge (learning from Sri Ram Sagar and Indira Gandhi Nahar Pariyojana phase I).
4. To review the need for pilot and experimental crops being watered by ground water till the storage project comes up, to help in phasing and quick development.
5. To recommend guidelines about the overdrawing of ground water in the command of the project which is under construction, before surface water irrigation starts, and allow rebuilding of ground water later on.
6. To recommend the methodology to be adopted for phasing of hydropower projects so that, with suitable rating of design head, the powerhouse can start functioning even with partial ponding.
7. Any other related issues.

9. Working Group on "International Dimensions of Water Planning"

Terms of Reference

1. Relations with neighbouring countries in the area of water resources, and their bearing on national planning, keeping in mind the desirability of optimising benefits, avoiding conflicts of interests, and ensuring fairness, equity and no harm to any party.
2. Possibilities of enhancing the usefulness and effectiveness of national planning through coordinated planning across borders; possibilities of cooperation in water resources development, management, utilisation and conservation, including joint projects/programmes where feasible and desirable.
3. Need for/possibilities of cross-border cooperation in; (a) environmental protection measures, conservation of scarce natural resources, maintenance of water quality, preservation of wetlands, etc; (b) flood/disaster preparedness, management and mitigation of damage; (c) promotion of inland water transport.
- 4(a) The looming global water shortage in relation to population growth and sustainability.
 - (b) Emerging international water law (e.g. the International Law Commission's draft now before the United Nations), Conventions and basin agreements, e.g. Mekong.
5. Co-operation in the generation/sharing/processing of data and information relating to all of the above.
6. Any other related issues.

**THE REVISED/MODIFIED TERMS OF REFERENCE
OF WORKING GROUPS**

2. Working Group on "Water Availability for Use"

Terms of Reference (Modified)

1. To assess the natural availability of surface water, ground water in deep aquifers & fossil water both as dynamic flows and static resource basinwise and Statewise.
2. To assess the ground water recharge and ground water parameters connected with surface flows.
3. To assess utilisable flows from surface water as well as ground water basinwise and Statewise.
4. To assess/suggest the probable utilisable surface water and ground water for consumptive use.
5. To assess the possibilities of large utilisation through water harvesting, induced percolation through percolation tanks, hydro-fracturing etc. as also renovation of small tanks and traditional structures, encouraging roof top harvesting & recycling of water.
6. To obtain information about Statewise/basinwise utilisation of water for irrigation, hydropower and other uses at present and in future upto 2025 AD.
7. To assess desalinisation as a supply possibility.
8. Keeping in view the existing technology, to suggest research and development requirements for augmenting available supplies.
9. Sedimentation of reservoirs and its impact on water availability.

3. Working Group on "Water Management for Agriculture, Hydropower, Flood Control & other Allied Sectors"

Terms of Reference (Regrouped)

Sub Group No.	T.O.R. Nos.	Subject
I	1 to 5	Water Management
II	6 & 7	Canal Automation
III	8, 9, 10, 12	Equitable distribution & Users' Participation
IV	11, 14	Water logging & drainage
V	23, 24, 25	Flood Control
VI	13 & 17	Pricing of Water & Micro Water Shed Development
VII	19, 20, 21	a) Hydro- Power, b) National Rehabilitation Policy
VIII	16 & 18	Ground Water including conjunctive use

4. Working Group on "Water Management for Domestic, Industrial and Other Uses"

Terms of reference (Modified)

1. To assess the consumptive and non-consumptive domestic requirement and population for mega cities, other cities and rural areas for 2010, 2025 & 2050.
2. To suggest measures for minimising water requirement for consumptive uses in water short areas and to suggest drill of reducing consumption of domestic water in years of low availability. Suggest ways for implementation of these through community involvement.
3. To consider social/political constraints in present pricing policies and suggest ways and means of resources generation under Indian social and economic conditions.
4. To study the prevalent norms of domestic water requirement and to suggest core needs attracting priority and non core needs not requiring priority.
5. To assess line losses (water not used) and commercial losses (Water used but

not accounted for), and to decide the practicable lower limits, on these, and ways of achieving these limits.

6. To suggest the standard of sewage to be allowed in sewerage, storm water drainage.
7. To suggest the institutions/bodies which would bear the costs of the sewage treatment and modes for raising the funds for this purpose which may include some self paying innovative ideas like combination of oxidation tank with safety tanks and with advantages of subsequent pisciculture and to examine the possibilities of using low cost system of oxidation ponds combined with pisciculture for sewage treatment.
8. To suggest various research and development needs for improving the quantity and quality of water requirement for domestic purposes.
9. People's participation in rural water supply schemes through voluntary organisation.
10. To assess the possibility of self generation of funds for rural water supply & reduction of grants and involving Panchayats in such issues.
11. To obtain information on present water use, quantum of waste and toxic discharges in various industries.
12. To assess the possibility and extent of reuse of water in industries and possibility of insisting on zero effluent condition while allowing hazardous industries in semi and arid areas.
13. To suggest the norms for supply of different qualities of water to various industries, so that good quality water is not used for inferior purposes and to suggest strategies for reducing industrial use of water.
14. To study the economics of treating toxic discharges and desirability of having deterrent measures.
15. To assess the research and development needs for minimising water use, improving the quality of waste water, toxic discharges etc.
16. To assess possibilities of social forestry or disposal on land to eliminate hazardous industrial effluents, and possible long term effect of these on ground water.
17. Any other related issues.

7. Working Group on "Interbasin Transfer of Water"

Terms of Reference (Regrouped)

1. To assess the availability of water in each river basin, its potential use for sustainable development, and transfer, if there is any surplus available.
2. To evaluate the modalities of interbasin transfer, the need for storage, the conveyance links, and other hydraulic structures and their phasing.
3. To study the need for enabling legal instruments including, if necessary, constitutional amendment for implementation taking into account existing interstate accords, tribunal decisions and to review the role of the Union Govt. in interbasin transfer particularly to non-basin states.
4. To evaluate the economic viability of interbasin transfer, to suggest guidelines for economic analysis and allocation of costs and benefits to different components.
5. To assess the socio-economic and environmental impact due to interbasin transfer including R&R requirement.
6. To study the possibility of private funding and soft loans, from international agencies for implementation of interbasin water transfer, considering their primary role in providing food & employment and thus maintaining regional tranquility.
7. Need for future research.

9. Working Group on "International Dimensions of Water Planning"

Terms of Reference (Modified)

1. Need For/possibilities of cross-border cooperation in; (a) environmental protection measures, conservation of scarce natural resources, maintenance of water quality, preservation of wetlands, etc; (b) flood/disaster preparedness, management and mitigation of damage; (c) promotion of inland water transport.
2. The looming global water shortage in relation to population growth and sustainability.
3. Cooperation in the generation/sharing/processing of data and information relating to all of the above.
4. Possibilities of enhancing the usefulness and effectiveness of national planning through coordinated planning across borders; possibilities of cooperation in water resources development, management, utilisation and conservation, including joint projects/programmes where feasible and desirable.

5. Relations with neighbouring countries in the area of water resources, and their bearing on national planning, keeping in mind the desirability of optimising benefits, avoiding conflicts of interests, and ensuring fairness, equity and no harm to any party.
6. Emerging international water law (e.g. the International Law Commission's draft now before the United Nations), Conventions and basin agreements, e.g. Mekong.
7. Any other related issues.

**Telephone Numbers of Office of
National Commission for Integrated Water Resources
Development Plan, Trikoot-I, 3rd Floor
Bhikaji Cama Place, New Delhi
Fax No. 91-11-6105562**

<i>Name & Designation</i>	<i>Office</i>	<i>Residence</i>
1. Dr. S.R. Hashim Chairman	6105981	3386010
2. Dr. R.K. Parashar Member-Secretary	6106277	6467346
3. Sh. S.B. Suri Chief Engineer	6105980	2249667
4. Sh. B.M. Jha Director (I)	6105974	91-411373 (Faridabad)
5. Sh. Rajesh Kumar Director (II)	6105974	740227 (Ghaziabad)
6. Sh. K.P. Gupta Deputy Director	6105976	7274549
7. Sh. S.C. Awasthi Deputy Director	6105973	
8. Sh. J.S. Taneja Deputy Director	6105973	
9. Sh. K.K. Bansal Deputy Director	6105973	
10. Sh. S.K. Sinha Assistant Director	6105976	
11. Sh. R.K. Kharbanda Assistant Director	6105976	
12. Sh. K.K. Rao Assistant Engineer	6105976	

LIST OF NODAL OFFICERS

1. List of Nodal Officers nominated by State Govts. so far

S.No.	Name & Designation	Address	Telephone No. /Fax
1.	Sh. R. Sethuraman, Dy. Advisor (PHE)	Room No. 657-A, Nirman Bhawan, CPHEEO, Ministry of Urban Affairs & Employment (Deptt. of Urban Dev.), New Delhi.	011-3019559(O) 011-6253143 (R) Fax: 011-3014459
2.	Sh. H.Madhava Reddy Principal Systems Analyst	National Informatics Centre, A-Block, CGO Complex, Lodhi Road, New Delhi.	011-4361504 (O) 011-4361447 (O)
3.	Sh. M.M. Rawal Director, CEA	HP&I Division, Central Electricity Authority, Room No. 403 (North), Sewa Bhawan, R.K. Puram, New Delhi-110066.	011-6104103 (O)
4.	Sh. Vijay Kumar General Manager	Agriculture Finance Corporation Ltd., NRO, B-1/9, Community Centre, Janak Puri, New Delhi-110058	011-5599106 (O) 011-5595088 (O) 011-5597437 (R)
5.	Sh. V.K. Arora Superintending Engr.	Project Public Health Circle, Room No. 309, 3rd Floor, U.T. Secretariat, Sector-9-D, Chandigarh, Punjab.	0172-743183 (O) 0172-770865 (R)
6.	Managing Director	Kerala Water Authority, JALABHAVAN, Thiruvananthapuram, Kerala-695 033.	0471-68654 (O) 0471-64903
7.	Sh. L.K. Shrivastava Chief Engineer (Project)	Water Resources Development Plan, P.P. Cell, Biscoman Tower, 7th Floor, Patna, Bihar.	0612-226245 (O) 287166 (R)

S.No. Name & Designation	Address	Telephone No. /Fax
8. Sh. Palart Mohandas Joint Secretary & Mission Director	Rajiv Gandhi National Drinking Water Mission, Ministry of Rural Area & Employment, Deptt.of Rural Development 9th Floor, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi.	011-4361043 (O) 6873645 (R)
9. Sh. A.M. Kashmi Koya, Superinten- ding Engineer.	Public Works Department, Kavarathi, Lakshadweep.	
10. Chief Engineer (D&M)	Irrigation & Public Health Department, Shimla-1, H.P.	
11. Chief Engineer	Irrigation Department, Jaipur, Rajasthan.	
12. Engineer-in-Chief	Irrigation Department, Lucknow, Uttar Pradesh	
13. Engineer-in-Chief	Water Resources Deptt., Organisation, Ananda Rao Circle, Bangalore, Karnataka	080-2871174 (O) 2871094 (O) 6692876 (R) Fax: 080-2872247 2204528
14. Sh. S.K. Chhabara Engineer-in-Chief	Delhi Water Board, Varunalaya Phase II, Jhandewalan, New Delhi-5.	011-7535944 (O) 7535941 (O) 7535943 (O) 7535945(O) Ext. 322 011-231005 (R) 2518044-204 Fax: 011-524612
15. Joint Development Commissioner(Works)	Public Works Deptt., Civil Secretariat, Jammu.	
16. Secretary	Major Project Control Mandal, Water Resources Deptt., Bhopal, MP.	

<i>S.No. Name & Designation</i>	<i>Address</i>	<i>Telephone No. /Fax</i>
17. Sh. M.A. Bandi Chief Engineer (MI) & Jt. Secretary.	Narmada & Water Resources Deptt., 2nd floor, Block No. 9, Sachivalaya, Gandhinagar-382010, Gujarat.	02712-20037(O) 6404(O) 21804(R) Telefax: 20406(R)
18. i) Secretary	Irrigation Deptt., Govt. of Goa, Junta House, Annexe Panaji-Goa.	
ii) Sh. S.M. Nadkarni Chief Engineer	--do--	0832-223506 (O) 226386 (R) Fax: 0832-232286
19. Chief Engineer (Coordination)	Irrigation Deptt., Haryana	
20. (i) Sh. D.K. Vaghela I/C Suptd. Engineer	Public Works Deptt., Daman, Union Territory of Daman & Dadra & Nagar Haveli, Moti Dawan-396220.	02636-54268 (O) 42341 (R) 42509 (R)
(ii) Sh. Ramesh Negi Finance Secretary & Secretary (PWD)	--do--	02636-54773 (O) 54771 (R) Fax: 02636-54685
21. Engineer-in-Chief (Interstate)	I&CAD Department, Govt. of A.P., Hyderabad.	
22. Shri K. Sesidharan Chief Engineer (I&A)	Irrigation Works Irrigation (GI & Plg. Deptt.) Thiruvananthapuram.	0471-322927 (O) 343209 (R) 344609 (R) Fax: 0471-322927
23. Chief Engineer PWD (WR)	Public Works Department (Water Resources), Govt. of Tripura, Kunjaban, Agartala, Tripura.	
24. Sh. S.M. Gohain Baruah, Addl. Chief Engineer (Monitoring & Investigation)	Irrigation Department, Irrigation Branch, Govt. of Assam, Chandmari, Guwahati-3.	

S.No.	Name & Designation	Address	Telephone No. /Fax
25.	Sh. S.V. Sodal Chief Engineer (WR) & Joint Secretary	Irrigation Department, Govt. of Maharashtra, Mantralaya, Mumbai-400032.	
26.	Sh. Gagan Kumar Dhal I.A.S. Addl. Secretary	Department of Water Resources, Govt. of Orissa, Bhubaneswar.	
27.	Chief Engineer & Director	IWS Taramani, Public works Department, Chennai-610013.	044-2351674
28.	Sh. B.S. Dhanju Director	Water Resources and Environmental Directorate, Irrigation Department, Punjab, Chandigarh.	
29.	Director	Agriculture & Minor Irrigation, Govt. of Mizoram, Mizoram.	03832-322437(O) 322438 (R)
30.	Sh. V.S. Sharma Chief Engineer (Monitoring)	Office of the Engineer-in-Chief, Irrigation Department, Bhopal, M.P.	
31.	Secretary (Agriculture including minor Irrigation)	Govt. of Meghalaya, Agriculture Department, Shillong.	0364-2280(O) 222460 (R)
32.	Chief Engineer (I&A)	Irrigation (ISW) Department, Thiruvananthapuram, Kerala.	0471-322927 (O) 0471-343209 (R)
33.	Sh. D.P. Pradhan P. CE/Secretary	Irrigation Department, Nirman Bhawan, Gangtok, Sikkim-737101.	03512-23404 (O) 22713 (R) 25216 (R)
34.	Sh. A.K. Jain, Commissioner & Secretary	Irrigation & Flood Control, Govt. of Nagaland, Kohima.	03866-32852(O) 32351 (R)
35.	Sh. B.N. Nagaraja, Superintending Engineer	CCI, APWD, Port Blair	

2. LIST OF NWDA OFFICERS

<i>S.No.</i>	<i>Name & Address</i>	<i>Telephone No.</i>
1.	Shri D.K. Sharma, Executive Engineer, NWDA, 8, Pannalal Road, Allahabad.	0532-607543 (O)
2.	Shri R.K. Singh, Executive Engineer, Investigation Divn., NWDA, 424, Adrash Block, Mahavir Bhawan, Tonk Road, Jaipur-302018.	0141-545417 (O)
3.	Shri C.P.S. Sengar, Asstt. Executive Engineer, Investigation Sub-Divn., NWDA, N.K. Zaveri Estate, 4th Floor, Near Sadhna Talkies, Nyaya Mandir, Vadodara-390001.	0265-429350 (O)
4.	Shri P.K. Srivastava, Asstt. Engineer, NWDA, Maduri Bhawan, Cell No. 5, Rajendra Nagar, Dehradun Road, Roorkee-247667, Uttar Pradesh.	01332-74281 (O)
5.	Shri S. James, Asstt. Engineer, NWDA, H. No. TC 25/1121, Thigavia Bhawan, Model School Road, Thampanoor, Thiruvananthapuram-695001.	0471-439497 (O)