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**REPORT ON HUMAN RESOURCES DEVELOPMENT (HRD)
FOR RURAL WATER SUPPLY AND SANITATION SECTOR
IN THE EIGHTH FIVE YEAR PLAN**

**DEPARTMENT OF RURAL DEVELOPMENT
MINISTRY OF AGRICULTURE
GOVERNMENT OF INDIA
KRISHI BHAVAN, NEW DELHI - 110001**



**राष्ट्रीय पेय जल मिशन
NATIONAL DRINKING WATER MISSION**

DECEMBER, 1990

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LOOKING TO THE 90s AND BEYOND

All developing countries

UNDP World Development

United Nations Development Programme
One UN Plaza, New York, NY 10017

Comparison of levels
of service coverage—
1985 and 1990

(in millions)

All developing countries

☐ Population with services

▨ Population in need of services

INDIA

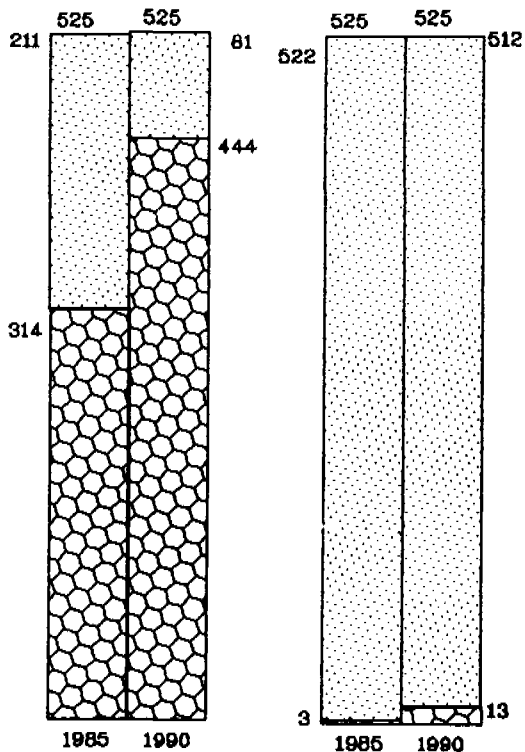
Department of Rural Development (DRD)

Krishl Bhavan, New Delhi - 110001

R U R A L

Water supply

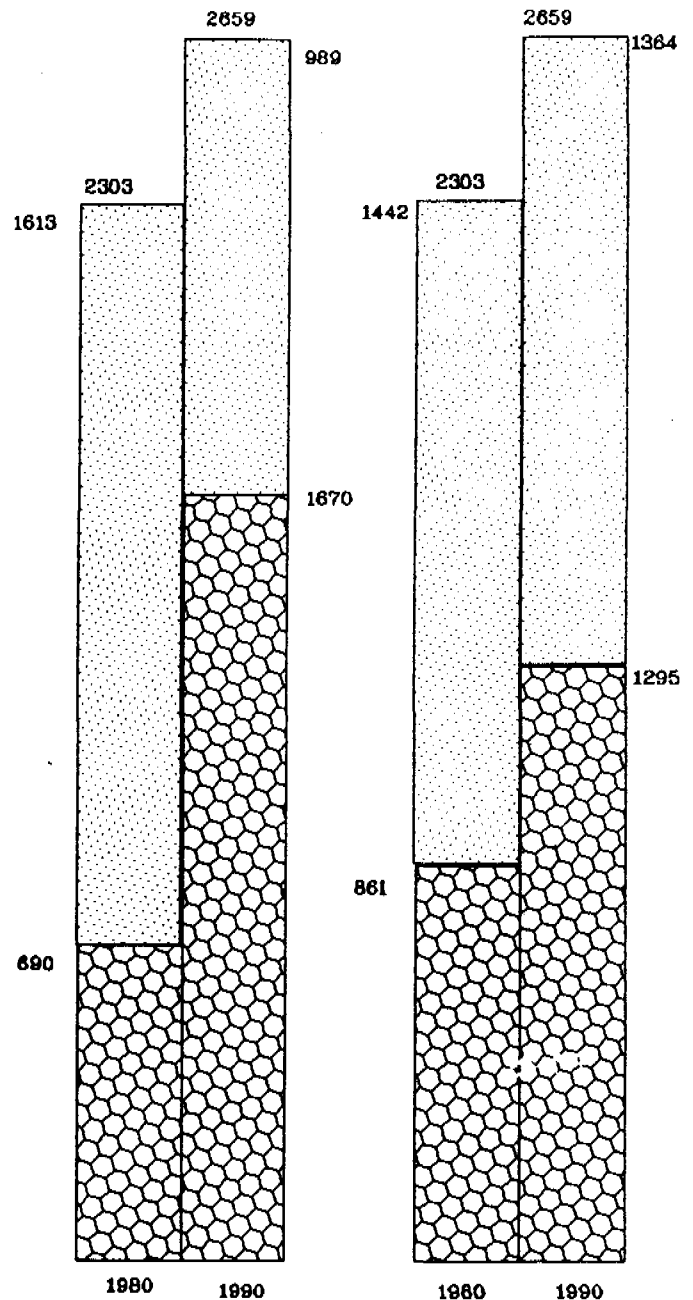
Sanitation



R U R A L

Water Supply

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VOLUME ONE

DECEMBER, 1990

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**REPORT ON HUMAN RESOURCES DEVELOPMENT FOR
RURAL WATER SUPPLY AND SANITATION SECTOR
IN VIII FIVE YEAR PLAN**

VOLUME ONE

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PRESENTATION

Supply of safe and adequate drinking water on a sustained basis has been given major thrust and priority in rural areas of India. The National Drinking Water Mission (NDWM) of the Government of India, setup to provide a boost to this programme is leaving no stone unturned in providing water and sanitation services to all villages of the country. In doing so, the Mission experienced lack of awareness and understanding, and inadequate skills in its innovative multi-disciplinary approach, (associated with modern management system and S&T) generally among the public health engineers and others responsible to provide these services to rural community. An urgent need, was, therefore, felt for upgrading and updating the knowledge and skills of various levels of such functionaries as well as the micro level institutions, voluntary agencies and the rural community, to enable them to participate effectively in the gigantic task of the MISSION.

Development of such a large human resource that too for Rural Water Supply and Sanitation (RWSS) sector required a different approach for training, education and orientation. This required strengthening the competence and capability of institutions imparting education and training in human resources development for the sector.

Recognising the above need, the Department of Rural Development (DRD), Government of India constituted a Committee (list of members of the Committee placed below) under the chairmanship of Prof. K.J.Nath (AIIPH, Calcutta) to overview and assess the present and future need of Human Resources Development (HRD) in the Rural Water Supply and Sanitation (RWSS) sector for the VIII Five Year Plan (1991-1995). The Committee was expected to develop an approach paper highlighting the strategy and plan of action and identify training institutions which could be involved in this task. This report should also discuss financial and other inputs required to be provided for the National Human Resources Development Programme (NHRDP) in general and for appropriately strengthening the identified training institutions in particular.

Since trainers form the backbone of HRD, the report should cover not only institutional development, but also training of trainers in terms of providing genuine interaction and intervention of rural backdrop and experiences and work demand of trainees of various levels and categories.

The International and bilateral agencies also recognised the basic need for appropriate HRD in RWSS sector. These agencies proposed resources in terms of strengthening a few Participating and Key Institutions; training of trainers and providing continuing education to professionals and engineers under the International Training Network (ITN).

The Working Group on the RWSS Sector in the VIII Plan also made recommendations on similar lines and even mentioned that the Government of India should provide atleast one percent (1%) of the sector allocation for minimum needs for NHRDP.

Recently the question of HRD in water and sanitation sector was discussed in the 'Global Consultation on Safe Water 2000' (Delhi, September, 1990). The conference also recognised the need and recommended that each government should workout the strategy for bridging their HRD gaps through continuing education. Keeping in view the above expectations, the Committee decided that the said report be prepared by Dr. J.C. Srivastava, Consultant (S&T), NDWM and member-secretary of the committee. This report is mainly based on Mission's experiences (1986-1990) and provides not only the state of art, but also the required scientific and systematic approach to meet the above challenging need by introduction a 3 tier system of continuing education and its linkages from village level to upwards.

According to the author, the report has been prepared not only to provide the required guidelines for the NHRDP, but also to serve as a resource document for orientation in this new subject.

The Committee, therefore, strongly recommends that this report be adopted for implementation and to that effect, the Department of Rural Development, Government of India should urgently constitute a National Coordination Committee (NCC) and setup a Central Coordination Cell (CCC) in DRD to take further action.

The Committee acknowledges with gratitude the advise and support provided to it by Sh.G. Ghosh, Joint Secretary & Mission Director, Mohd. Inamul Haq, Adv.(PH), and Sh. Jagdish Chander, Dy. Secretary of the National Drinking Water Mission(NDWM) and Sh. A.K. Sengupta, Liaison Officer, UNDP/World Bank. Special credit goes to Dr. J.C. Srivastava, Consultant (S&T), NDWM, who prepared the report which helped us to deliberate on the subject and finalise it.

I have great pleasure in submitting this report.

K.J. Nath
(Prof. K.J. Nath)
Chairman

New Delhi

14.11.1990

MEMBERS OF THE COMMITTEE

- | | | |
|-----|--|------------------|
| 1. | Prof. K.J. Nath,
All India Institute of
Hygiene & Public Health
(AIIPH), Calcutta | Chairman |
| 2. | Sh. G.Ghosh, IAS
Jt. Secretary & Mission Director,
Department of Rural Development
Government of India, New Delhi | Member |
| 3. | Mohd. Inamul Haq,
Adviser (PH),
National Drinking Water Mission (NDWM)
New Delhi | Member |
| 4. | Dr. P.N. Phadtare,
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| 5. | Sh. Y. Nanjundiah,
Formerly Director,
Gujarat Jalseva Training Institute
Gandhinagar
Consultant, WHO | Member |
| 6. | Sh. A.K. Sengupta,
Liaison Officer, UNDP/World Bank
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| 7. | Sh. Gulam Ahmed,
Retd. Chief Engineer,
(Karnataka State)
Bangalore | Member |
| 8. | Dr. S.K. Biswas,
Addl. Adviser, NDWM
New Delhi | Member |
| 9. | Sh. Jagdish Chander,
Dy. Secretary, NDWM
New Delhi | Member |
| 10. | Dr. J.C. Srivastava,
Consultant (S&T), NDWM
R-1, Green Park Ext.
New Delhi | Member-Secretary |

A WORD OF CAUTION

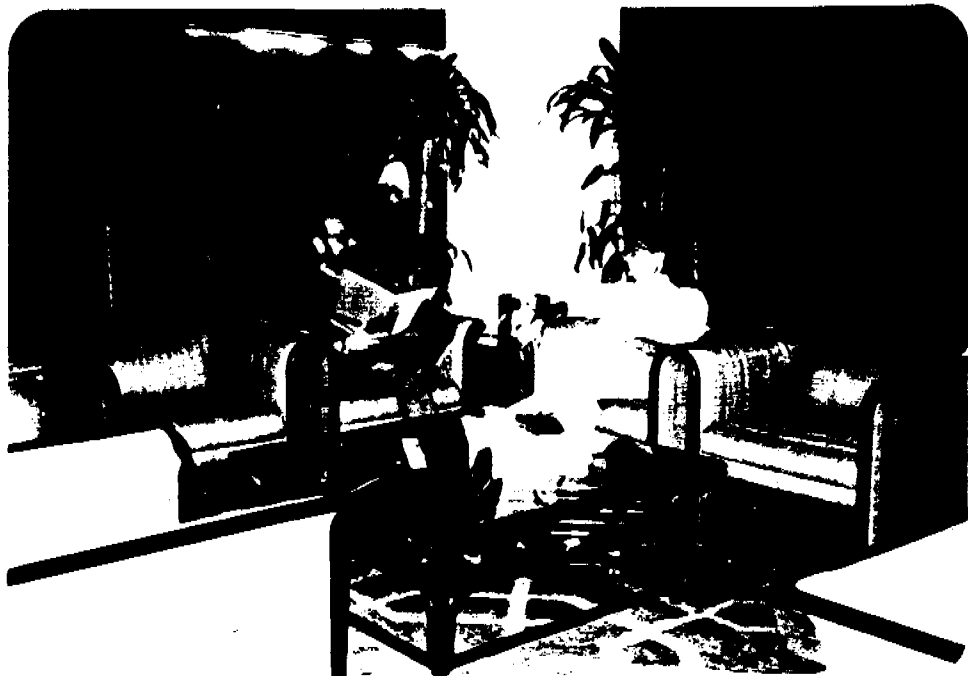
UNLESS

1. THE SECRETARY (WATER) OF THE STATE GOVERNMENT decides, plan and identify
 - 1.1 the trainees they would sponsor in a phased manner in the VIII Plan period; and
 - 1.2 the areas of training needs of each (out of various options) as per states needs and priorities;

2. THE DRD, Government of India
 - 2.1 assigns the trainers and trainees to various Centres of Excellence and Specialised Institutions as per state's proposals;

3. THE CENTRES OF EXCELLENCE/SPECIALISED INSTITUTIONS
 - 3.1 responsibility of the institute/Director is explicitly defined;
 - 3.2 respective institutes give green signal with a year planner and calender;
 - 3.3 curriculum and syllabus designed as per 1.2 above;
 - 3.4 villages identified for field work; and
 - 3.5 respective institutes got their trainers trained;

perhaps we may have to wait for 'TOMORROW'.



Author discussing some tender issues of HRD with Mr. G.Ghosh
Joint Secretary & Mission Director (with a report in hand)
(National Drinking Water Mission, India).

PART ONE
SUMMARY STATEMENT

PART ONE

SUMMARY STATEMENT

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PART ONE

SUMMARY STATEMENT

1. HRD IN RWSS SECTOR

Human Resources Development (HRD) means 'development of humans and their resources'. In the context of Rural Water Supply and Sanitation (RWSS) sector, it denotes development of cadre of professionals, technicians and managers, both in-service and new entrants and the related supporting staff by strengthening their capacity development and capability building in managing multi-disciplinary and S&T based projects and programmes and tackling effectively the emerging and new challenges in a cost-effective manner. HRD strategies include assessment of needs, and planning for trainers training and continuing education to all those who are engaged in RWSS sector.

2. WATER MISSIONS APPROACH

The rapid expansion of water supplies and application of appropriate technologies by the Mission, expanded the scope of provision of drinking water supplies with 'quality assurance' to entire rural population. The valuable assets thus created in form of source development, quality improvement in situ viz. (guineaworm eradication, removal of excess iron and fluoride) desalination, installation of deepwell VLOM hand pumps, SPV units, rainwater harvesting structures, and such other related projects needed planning, locating, installing, maintaining (O&M), monitoring and evaluating at the decentralised level. This situation placed new demands on human resources at different levels.

The fact that the National Drinking Water Mission (NDWM) is not a hardware oriented approach, rather aimed at change in the strategy from planning to operational level for supply of adequate quantity of acceptable quality of drinking water at the door steps of rural communities, the Mission's RWSS programmes, had to be designed in its totality. This holistic approach demanded development of a strong communication system, a management information system (MIS) and transference of mission's experiences into implementation and multiplication strategy. The application of these softwares also needed specially trained persons.

3. THE SHORTCOMINGS

Keeping in view the Mission's innovative approaches in meeting the RWSS needs of rural communities, efforts were made in collaborating with scientific research organisations and scientific departments of the Government of India, specialised institutions and public sector undertakings in the country for conducting training programmes in selected subjects for public health engineers engaged in this sector. While these efforts generated a definite sense of awareness and appreciation of Mission approach, the programme was taken on an adhoc basis.

A major gap was noted of inadequate inservice training and continuing education among different categories of functionaries. Due to lack of planned approach for HRD, the funds earmarked for training could not be utilised. There was little thinking about training of trainers (who form the backbone of HRD programme) and giving them exposure to the new approaches for RWSS, making their outlook rural biased and motivating them for application of modern management concept and S&T. Besides, those engaged at operational level like village level workers, teachers, pump mechanic, panchayat functionaires and women development workers were also to be made aware of these developments and involved in RWSS system.

4. THE NEED

The above situation necessitated to review the human resources status in the sector; to identify gaps; and to develop a master-plan for continuing education for updating and upgrading knowledge and skills of existing human resources including trainers and, the new entrants. This also needed strengthening developing institutions to be associated in organising training and education in different parts of the country and ultimately their networking.

5. WORKING GROUP RECOMMENDATIONS

The Planning Commission Working Group on Rural Water Supply and Sanitation (April, 1989) recognised the need for extensive training and education for HRD in RWSS sector. The Group recommended that the Department of Rural Development, Government of India may constitute a Committee to go into an indepth study and assessment of the HRD needs and present the required proposal. The Working Group also suggested to earmark atleast one per cent (1%) of the VIII Plan allocation for RWSS sector for this purpose (Recommendation 6.4 of the Approach Paper, April, 1989, enclosed as annexure).

6. CONSTITUTION OF COMMITTEE ON HRD

The Department of Rural Development (DRD), Government of India, accordingly setup a Committee under the Chairmanship of Prof. K.J. Nath of the All India Institute of Hygiene and Public Health (ALL&PH), Calcutta. The Committee decided that Dr.J.C. Srivastava Consultant, S&T NDWM of DRD and Member-Secretary of this Committee would prepare the report.

7. PLANNING FOR HRD INTERVENTIONS

In the preparation of the approach paper, efforts have been made to formalise the HRD programme in its totality for the RWSS sector and its management to enhance the understanding, knowledge and skills of all those who are directly/indirectly involved and the new entrants to be inducted in the programme, under the umbrella of the Department of Rural Development, Government of India (the nodal department for RWSS in the centre) and the departments concerned with rural water supply in the state.

7.1 INSTITUTIONAL FRAME WORK

The HRD programme in this report, has been conceived in a frame-work of 'CONTINUING EDUCATION', 'SPECIALISED TRAINING' and as a long term strategy introduction of RWSS in Graduate and Post-Graduate Courses. Central to this idea is, development of institutional setup in collaboration with various national, regional and state institutions covering the entire country. These institutions have been categorised as Centres of Excellence, Specialised Institutions and State Training Centres.

7.2 The establishment of Centres of Excellence, Specialised Institutions and State Training Centres is a legacy. The legacy is arguably as valuable as HRD itself. This legacy includes:

- * a deliberate and continuing process of introducing 'change' into the participating community;
- * introduction of situation specific, practical, cost-effective, maintainable and affordable technologies; and
- * regular monitoring and evaluation and updating the knowledge and skills and feedback to those already trained.

7.3 THE NATIONAL TRAINING PROGRAMME (NTP)

The NTP will cover,

- a) the normal training programme of the Government of India;
- b) the training programmes of the State Governments;
- c) the international training programmes organised by bilaterals; and
- d) trainers training and continuing education under ITN.

7.4 HRD FRAMEWORK

The interaction between education and training and the job demands of trainers (demand of workplace) and required practise of learning by doing in field conditions (villages) should be dominant factor to help to attain improved performance by the trainees in the provision of RWSS services. The following schematic diagram presents the proposed three tier HRD frame-work and its linkages at various levels which is a central organising principle.

7.4.1 THREE TIER SYSTEM

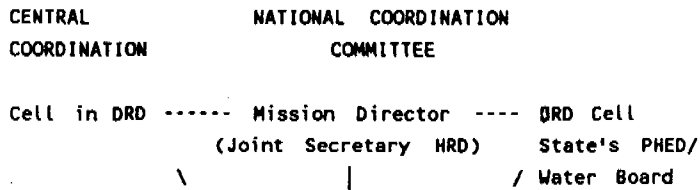
The National Human Resources Development (NHRD) programme should therefore, have following three tier system:

- i) Training of trainers;
- ii) Training of trainees; (professionals, technicians and craftsmen);
- iii) Training of voluntary agencies, panchayats, other village institutions and functionaries of line agencies working for rural development.

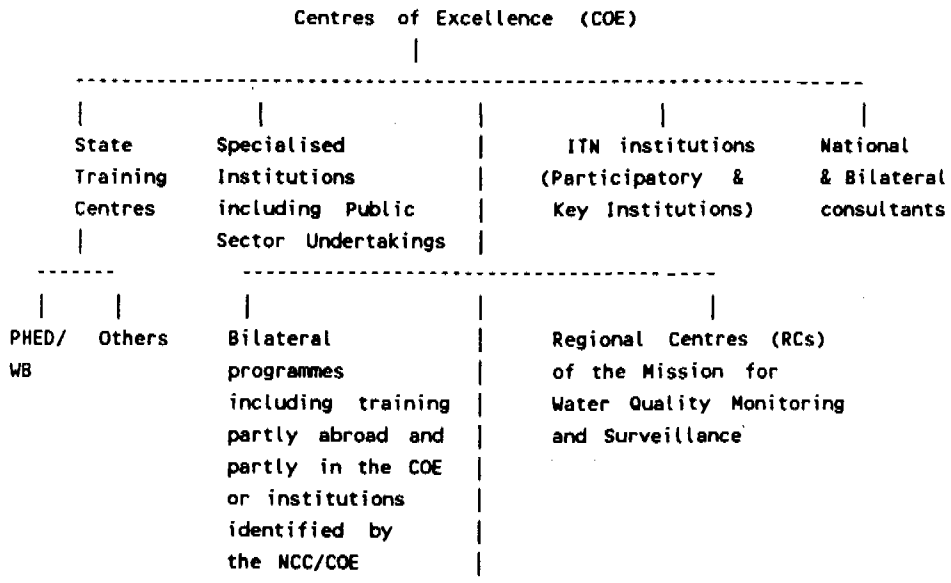
**NATIONAL PROGRAMME FOR HRD IN RWSS
(Three Tier System)**

Department of Rural Development (DRD)

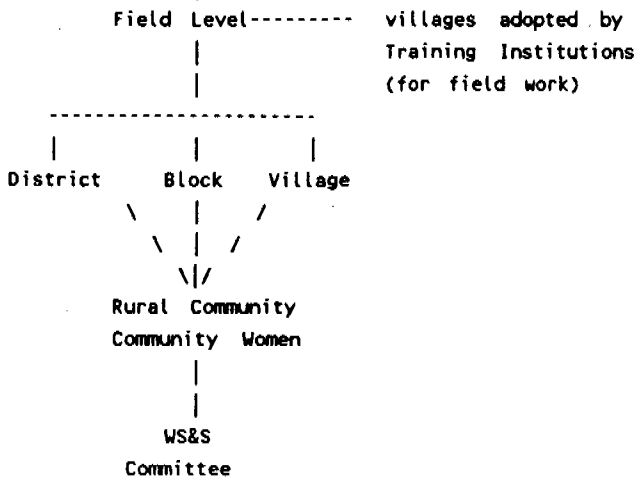
(I) CENTRAL LEVEL



(II) INSTITUTIONAL CELL



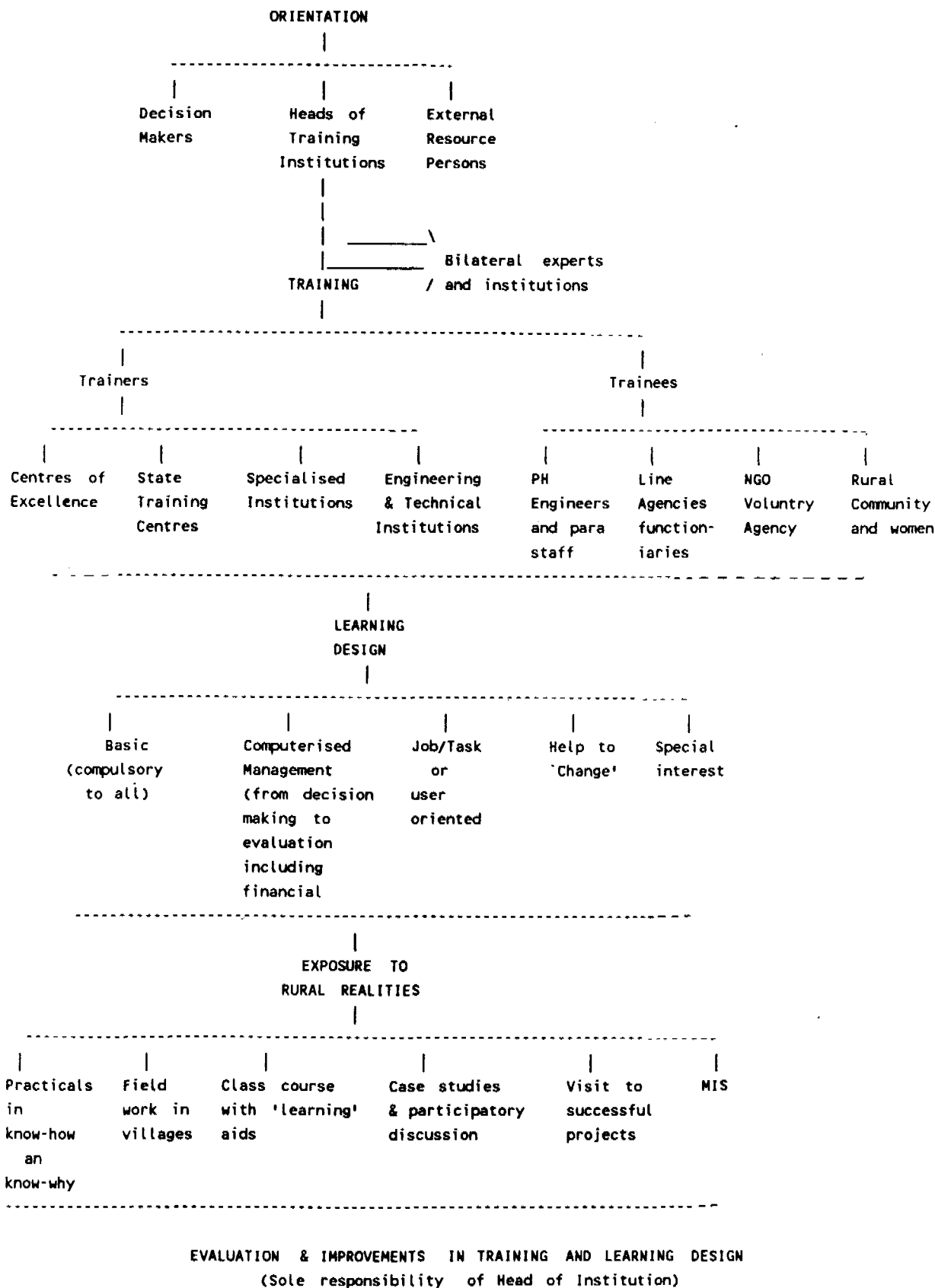
(III) FIELD LEVEL



8. CONTINUING EDUCATION

The 'Continuing Education' will help in developing appropriate education and training system with a rural bias. It will promote the introduction of a multi-disciplinary approach (emphasizing socio-cultural and health considerations) in planning, implementing and maintaining the RWSS systems. The main objective will be to train practising engineers, and field staff and to inform the decision makers about management, technological and social interventions in the sector. These learnings will draw heavily on practicals, demonstrations, field level action, group discussion and case studies. This concept is being presented here through the following diagram.

LEARNING THROUGH CONTINUING EDUCATION

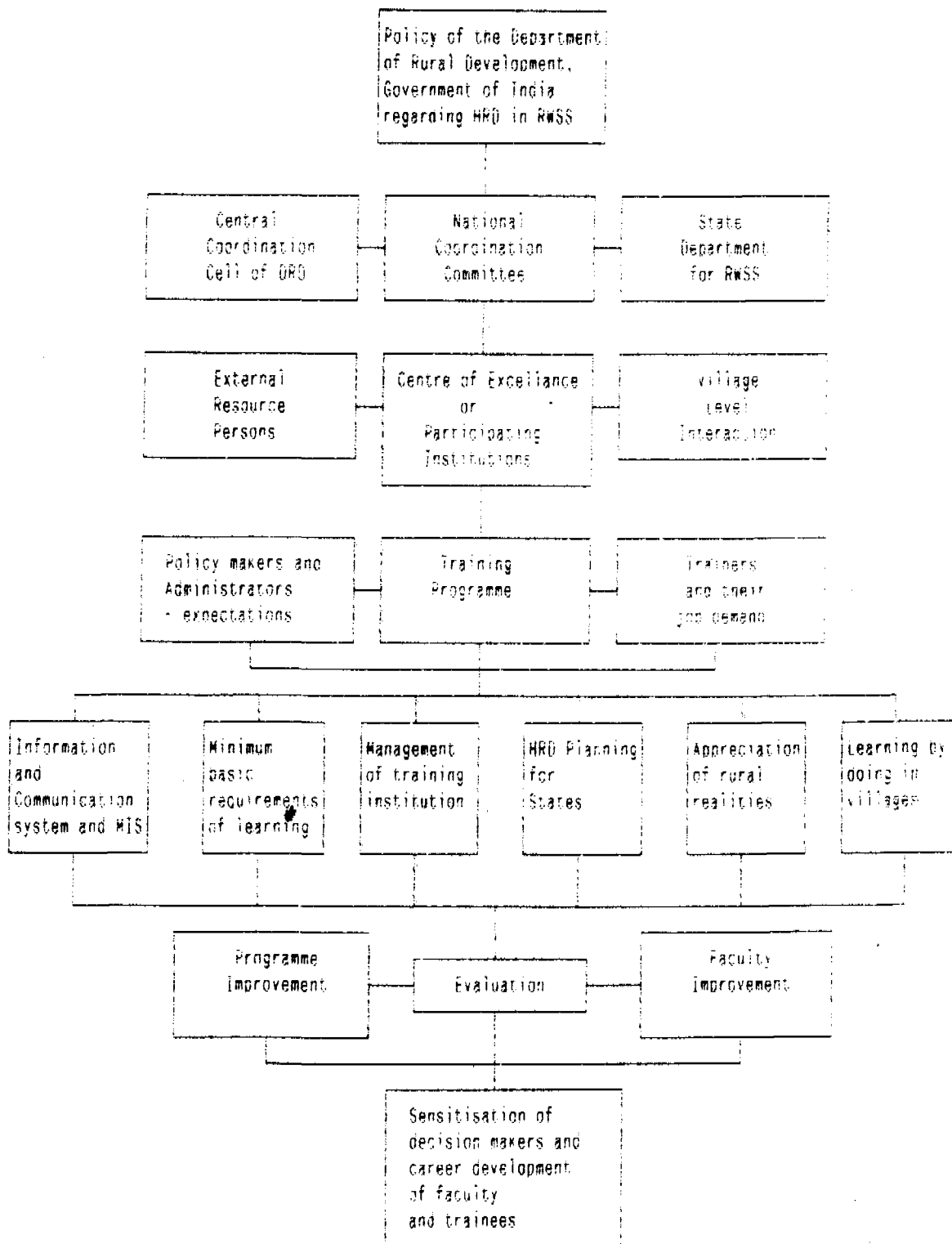


9. ASSESSMENT OF TRAINING NEEDS

Trainers training is the foundation of continuing education. Special emphasis should, therefore, be given to a periodical upgradation of faculty members and trainers of existing institutions and proposed training centres in the states. Such a training be imparted by Centres of Excellence and specialised Institution or they could associate specialised institutions and external resource persons. The concept of trainers training has been explained through the following diagram.

Details about assessment of training needs have been discussed in part 2 of this report.

TRAINERS TRAINING IN RWSS SECTOR



9.1 ORIENTATION OF DECISION MAKERS

Drinking Water and Sanitation is a State subject in India. Hence, all policy decisions are taken by the states and accordingly directives given to concerned engineers for execution. Some policy guidelines also emerge at the Centre which are conveyed to state for implementation. The Secretary/Chief Engineer responsible for RWSS are bestowed with authority to manage RWSS services and thus are moving spirit behind the sector's administrative structure in the State.

- 9.1.1 The staff who receives training are sponsored by the above authorities. There is, however, no commitment of the state that the staff who have been trained in a subject/specialisation will be placed for handling that particular item on completion of the training.

This situation demands orientation of senior level administrators and decision makers of the states, for seeking their full cooperation and support in the NHRDP.

- 9.1.2 It is therefore, recommended that a 'National Consultation Meeting on HRD in RWSS' may be invited by DRD in the first instance.

In this meeting, the heads of COE and State Training Centres, Nodal officers of state (identified by states) for HRD, head of the Central Coordination Cell for HRD in DRD and members of the National Coordination Committee should also be invited.

- 9.1.3 As a matter of fact the take-off stage will emerge only after this workshop.

9.2 TRAINING OF NODAL OFFICERS

The other clientele for orientation would be the nodal officers of the State department (responsible for RWSS) for HRD, the staff of the Central Coordination Cell for HRD in DRD and the head of all training institutions identified for participation in the NHRDP. They should be provided orientation in the output indicators, their contribution in monitoring, reporting and followup. This orientation should be organised by the COE.

9.3 TRAINING OF INFORMATION /MONITORING CELL STAFF OF STATES

Each State has setup a cell to assist in planning and monitoring. Little attention has so far been given towards 'information and communication'.

It is therefore, recommended that this cell should be strengthened to accomodate 'information and communication' activities. Such personnels should be given tailor made training in modern information system. This training can be imparted by one of the COE.

9.4 TRAINING OF OTHER FUNCTIONARIES

There is need for awareness and orientation of medical and health staff, adult literacy staff, rural development extension workers, village level functionaries (belonging to line agencies) and representatives of voluntary agencies /Panchayats, schools, etc.

9.5 TRAINING OF WOMEN AND CHILD DEVELOPMENT FUNCTIONAIRES

Under centrally sponsord and under state departments, there are schemes devoted to development of women and children in villages (viz ICDS, Primary Health Centres, DWACRA, etc.). These departments also organise training of their supervisors and village level functionaries. In this case the trainers of such training institutions should also be given orientation in RWSS.

9.6 TRAINING IN SANITATION

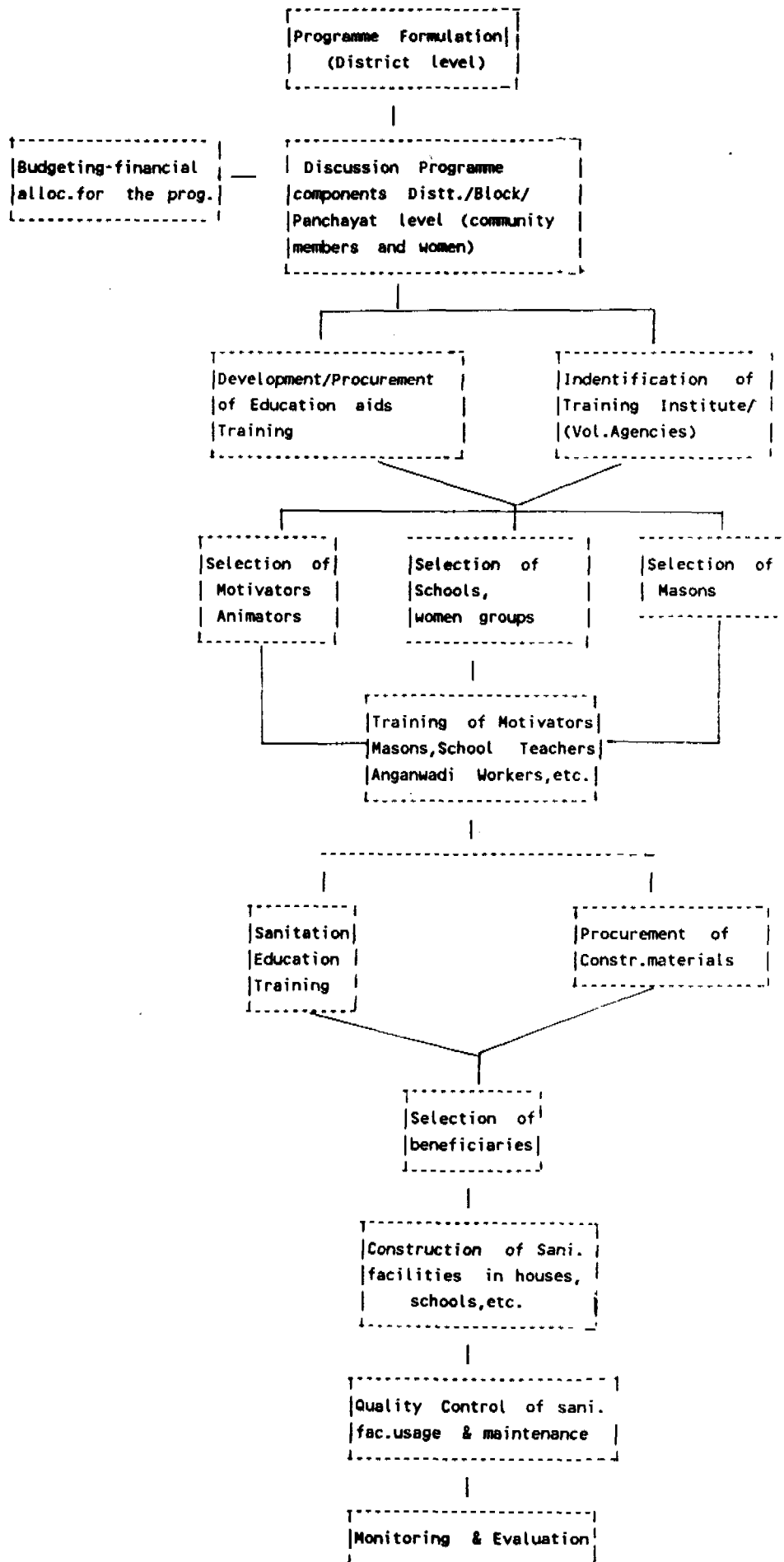
Envrionmental sanitation is as essential as drinking water itself. Yet its importance has not been adequately felt by the managers of water supply and rural community. There are behavioural limitations also.

This is, therefore, one of the most challenging areas in RWS as merely conducting training by the participating institutions even of the highest order would be of little value unless the trainers and trainees also practise the same in villages. The output indicator for such a training (as expected by the DRD) should be the number of households/villages adopted the knowledge and skills at the behest of the Training Institute.

The Voluntary Agencies could play a positive role in social mobilisation and provision of required services to willing households/women in villages.

The above type of non-conventional training should, therefore, be given a major thrust in VIII FYP. Similarly, budget provision for such a training should be for the 'integrated project of Lab to Land to User'. A schematic diagram presents this concept.

TRAINING IN RURAL SANITATION



10. STATE'S COMMITMENT

The success of proposed HRD programme would depend on commitment of the state departments in regular secondment of their RWSS functionaries to the training institutions. Similarly, the RWSS administrators should also indicate specialised areas in which their staff could be trained. To this effect, the states should motivate and encourage their staff to enhance their skills and to raise their qualifications in terms of diploma and degree in RWSS (proposed to be organised under the HRD programme).

10.1 It would perhaps be advisable to make the proposed HRD programme as mandatory in the administrative structure of state PHED/Water Board and the training could be considered as a condition for promotional assessment. Till such time this idea is sold, all states (PHED, Water Board, etc.) be approached to prepare the status of all the staff (irrespective of their position) engaged in RWSS including the para-engineering functionaries; the laboratory workers and women staff members.

10.2 HRD plan for each state should be prepared under the following categories:

- i) trainers training,
- ii) trainees training,
- iii) orientation workshop,
- iv) specialised training, and
- v) those to be sponsored for diploma/degree courses.

10.2.1 This could further be divided for various target groups/users and with different training modules.

10.3 It is recommended that planning for HRD in states should be undertaken in consultation with concerned state department. In order to elicit this information, the following two types of formats are given below as guidelines :

10.4 **THE CUTTING EDGE OF NHRDP IS WILL OF STATES TO REGULARLY SPONSOR THEIR STAFF FOR TRAINING**

To this effect there should be some regulatory and obligatory system of earmarking a portion of ARWSP fund only for HRD.



Author discussed HRD programme with Mr. K.G. Dave, Chief Engineer and Director Gujarat Jalseva Training Institute, Gandhinagar, retired Chief Engineer of Gujarat Water Supply Sewerage Board, and the staff of the institute.

FORMAT FOR DEPUTATION FOR TRAINING IN RWSS UNDER NATIONAL HUMAN RESOURCES DEVELOPMENT PROGRAMME OF THE DEPARTMENT OF RURAL DEVELOPMENT (DRD), GOVERNMENT OF INDIA

- 1) Name in full (Mr./Ms/Mrs.)
- 2) Complete address
- 3) Date of birth (age)
- 4) Qualification
 - (a) academic
 - (b) professional
- 5) Present designation
- 6) Basic pay/scale
- 7) Date of joining
- 8) Nature of present duties (in brief) including period spent in rural areas
- 9) Training acquired if any during the last five years:
 - i) Subject
 - ii) Date
 - iii) Duration
 - iv) Institution (India/Abroad)
 - v) Source of funding
- 10) Whether belong to SC/ST Yes/No
- 11) Choice for any specialised course by the candidate including desire for higher education in RWSS - Diploma/Degree/Post-graduate course.
- 12) Recommendation of the Chief Engineer/Managing Director
 - i) Refresher course (5 days)
 - ii) Short course (diploma) (3 months)
 - iv) Diploma course in environmental engineering (3 months)
 - v) Specialised course (10-15 days)
 - vi) Any other course (specify)

Signature of authority

signature of candidate

**FORMAT FOR DEPUTATION OF
TRAINERS FOR TRAINING AT COE OF THE NHRDP**

- 1) Name
- 2) Age
- 3) Full address
- 4) Qualification
 - (a) Educational
 - (b) Professional
 - (c) Specialisation
- 5) Designation
- 6) Basic pay/scale
- 7) Date of joining the department or the training institute
- 8) Nature of present assignment
- 9) Training acquired during the last five years:
 - i) Subject
 - ii) Date/Duration
 - iii) Institution (India/Abroad)
 - iv) Source of funding
- 10) Choice for training in any specialised area
- 11) Choice for higher education for diploma, degree, post-graduate
- 12) Recommendation of the Director of the Institute

Signature of authority

Signature of candidate

Date

11. CENTRAL COORDINATION CELL (CCC of DRD)

It is recommended that DRD should immediately setup the Central Coordination Cell (CCC) for the proposed NHRDP under the charge of an officer of the rank of atleast Deputy Adviser solely responsible for the development of HRD. He should be supported by technical and administrative staff. This CCC should initiate following action :

- 1) Addressing to all states to collect basic information to identify statewide HRD needs;
- 2) Taking steps towards strengthening of existing training institutes/centres and identification of other institutions in the state which could be associated in the programme;
- 3) Identifying regional level institutions like Engineering College, ITI, Polytechnic, or Community Polytechnics to catre the training needs of 2-3 states/union territories like in north-east; and
- 4) Assessing the competance and capability of existing institutions to be selected for imparting 'Continuing Education' under the HRD programme.

12. CURRICULUM FOR TRAINING

If trainers are the backbone of HRD, the well planned/tailored curriculum/syllabus is the foundation of HRD. Since the trainees would be practising engineers and field level technicians and craftsmen, the approach to their training and orientation should be different. Same is true with other types of training (op.cit.).

12.1 It is for this reason that curriculum development for all courses be prepared in advance by a group of experts. This should contain (i) basic course (compulsory); (ii) special course; (iii) applied subjects; (iv) practicals; (v) field work, etc. (also refer para 8).

12.2 The Central Coordination Cell of DRD should collect training syllabus/curriculum of all institutions providing training in public health and envrionmental engineering and those training in RWSS. These syllabus/curriculum should be discussed and finalised in a joint meeting of heads of all the participating institutions and experts.

13. INTERNATIONAL TRAINING NETWORK (ITN)

The UNDP/World Bank, ODA, and The Netherland Government have proposed to provide complimentary support to the Government of India (Department of Rural Development), where these and other bilateral agencies will help to develop training infrastructure to suit India's needs and plans. The training activities will be financed partly by International Agencies and associated Bilaterls and partly by the Government of India. The Government of India has agreed to this arrangement (details discussed in Part 6 of this report).

13.1 Collaborative training between foreign and Indian institutions

Keeping in view the innovative collaborative programme introduced by the Mission, between the Project Planning Centre, Bradford (England) and Gujarat Jalseva Training Institute, Gandhinagar, India, it is recommended that 50 per cent of future such courses could be conducted in India in collaboration with bilateral institutions abroad. This should also have a built in component of training of trainers and exposure of trainers of bilateral institutions to enable them to appreciate HRD needs in India's rural backdrop and the rural workplace environment.

13.2 LINKAGES OF ITN WITH NHRDP

Mr. G.Ghosh, Joint Secretary & Mission Director, Department of Rural Development, Government of India has explained the proposed vertical and horizontal linkages between the ITN, training abroad under bilateral programme and the National Human Resources Development Programme (NHRDP) of the DRD through the following chart.

13.3 TRAINING OF TRAINERS

A tentative programme of training of trainers by the All India Institute of Hygiene & Public Health, (AIIHP&H), Calcutta (Participating Institute) under ITN is placed below for information.

TRAINING NETWORK FOR HUMAN RESOURCES

DEVELOPMENT FOR RURAL DRINKING WATER

SUPPLY AND SANITATION PROGRAMME

(Vertical and horizontal linkages)

NATIONAL COORDINATION COMMITTEE (NCC)	GOVT.OF INDIA (DRD) FUNDED PROGRAMME	UNDP/WORLD BANK ODA/DUTCH INTERNATIONAL TRAINING NETWORK (ITN)	MULTILATERAL/BILATERALS UNDP/WORLD BANK/PROWESS UNICEF/WHO/NETHERLANDS ODA/DANIDA/OTHERS
CENTRAL HRD COORDINATION CELL (DRD)	REFRESHER COURSES	AIIH & PH, (CALCUTTA) PARTICIPATING INSTITUTION DRD	TRAINING ABROAD UNDER BILATERAL PROGRAMME
GOVERNMENT OF INDIA (DRD) FUNDED PROJECT .CENTRES OF EXCELLENCE .SPECIALISED INSTITUTIONS .STATE INSTITUTIONS	SHORT-TERM PROGRAMMES INCLUDING DIPLOMA AND SPECIALISED COURSES	GUJARAT JALSEVA TRAINING INSTITUTE (GJTI) (GANDHINAGAR) KEY INSTITUTION DRD	TRAINING ABROAD IN CONJUNCTION WITH FIELD TRAINING IN INDIA (PARTICIPATING INSTITUTIONS)/CENTRES OF EXCELLENCE
REFERAL GROUP (IRC) NIDC, NID	LONG-TERM PROGRAMMES GRADUATE AND POST-GRADUATE COURSES	S J C E (MYSORE) KEY INSTITUTION DRD	STRENGTHENING STATE INSTITUTIONS FOR CAPABILITY AND CAPACITY DEVELOPMENT TO MEET NEW TRAINING NEEDS AND ESTABLISHING NEW STATE TRAINING CENTRES

G. Ghosh
12.7.90

AIH&PH - COURSES UNDER ITN

(at a glance)

Course	Total Training days in	Total Subsistence days in	Years					Total people trained	
			No. of Courses						
			No. of people trained						
			1	2	3	4	5		
Engineers/other professionals 12 Courses per year 1 Week (6 days) 20 Students per course	72	1440	6	12	12	12	12	120 240 240 240 240	1080
Lecturers/Instructore Degree & Post Graduate 3 Courses per year 3 Weeks 16 Students per course	54	864	1	3	3	3	-	12 36 36 36 -	160
Lecturers/Instructors Polytechnic 3 Courses per year 3 Weeks 16 Students per course	54	864	1	3	3	3	-	12 36 36 36 -	160
Instructors - ITIs 5 Courses per year 2 Weeks 10 Students per course	60	600	1	5	5	5	-	10 50 50 50	210
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	240								1670
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* In addition about 120 inservice professionals would be trained in the existing M.E. (P.H.), D.P.H., D.W.E. courses and one orientation workshop for decision makers would be held each year.

14. OUTPUT INDICATORS AND EXPECTATION OF BILATERALS

Indicators help in looking at the degree of effectiveness of the training and education programme in achieving its objectives and also in improving the programme. This is generally concerned with rating of the trainers delivery and the extent of learning has taken place. The output indicator of the training and education in RWSS system will however, also include tangible results of trainers own performance in their respective institutions; the impact of the programme at the field level in term of reduced cost, productivity, improved system (quality, quantity), health benefits, people's participation and consciousness generated among rural communities in ownership of assets, and cost sharing as a result of trainee's interventions.

- 14.1 These indicators should, therefore, be conveyed to trainers and training institutions for assessment of their programme and performance of trainers/trainees.
- 14.2 Monitoring of these aspects should be one of the responsibilities of Centres of Excellence.
- 14.3 Following table provides broad indicators in terms of achievements, value, measurement of indicators and expectations of DRD.

OUTPUT INDICATORS OF ITN IN
NATIONAL HRD PROGRAMME FOR RWSS SECTOR

Sl. No.	Partners	Financial (Rs. in Lakhs)	Contribution Technical	Others	Expectations	Name of Nodal Official
1.	Govt. of India (Deptt. of Rural Development)	Rs. 25.07	i) Advisor ii) Dy. Advisor iii) Adv. Asstt. iv) MIS expert v) Sociologist vi) Communication expert vii) Organisation of national/regional workshop viii) Evaluation of programme in terms of objectives, output indicators, and criteria for evaluation a) institutions b) trainers (trainees) c) quantitative achievements d) cost/trainee/course/instt.	i) Administrative and secretarial support ii) Accomodation for the secretariate iii) Infrastructural support iv) Followup and monitoring activities v) Linkage & coordination	i) Strengthening of participating institutions as per proposals approved by NCC ii) Clearance of training proposals (trainers) of the institutions iii) Quality of training imparted & number of trainees trained iv) Linkage between NCC, CCC, Participating institutions, specialised institutions, State institutions and, establishment of new institutions v) Donors funding utilised as per sanction of NCC (activities/institution wise)	Joint Secy. DRD & Mission

Sl. No.	Partners	Financial (Rs. in Lakhs)	Contribution Technical	Others	Expectations	Name of Nodal Official
2.	The British Government (ODA)	Rs. 34.78		<ul style="list-style-type: none"> i) Strengthening of Participating and & key institutions ii) Cost of training of trainee (trainers) iii) Cost of development, production, and/or procurement of training aids/ equipment iv) Cost of MIS software & related support expenditure 	<ul style="list-style-type: none"> i) Number of institutions strengthened in terms of core staff (faculty), resource, persons, equipment, training materials, demonstration infrastructure (for field level exposure), boarding/ lodging and TA/DA for trainees ii) Number of trainers trained as per training schedule (institution wise) iii) Training materials to be supplied to each trainee iv) Trainers imparting more value added training to other trainees v) Number of trainees trained by newly trained trainees and task oriented training imparted vi) fund utilisation as per estimate for each item earmarked 	First Secretary British Commission Delhi or nominee
			* International consultant his job/ contribution has yet to be defined and finalised by NCC			
		Rs. 3.30	Cost of International Consultant			

Sl. No.	Partners	Financial (Rs. in Lakhs)	Contribution Technical	Others	Expectations	Name of Nodal Official
3.	The Netherlands Government	Rs. 7.50		i) National Coordinating (Cell) established in the DRD ii) The staff identified are placed to duty iii) Budget for the cell prepared and expenditure being incurred according to approved breakup		Coordinator Water Project Embassy of Netherlands, New Delhi
		Rs. 50,000* per year	Adviser/ Consultant for NCU in DRD	i) Consultant/Adviser identified and appointed ii) Consultant/Adviser's functions defined iii) Consultant/Adviser's functions functioned accordingly		
		Rs. 18.00	Strengthening of two key institutions in the States	i) The two key institutions ii) These institutions to undertake training programme		
4.	UNDP/World Bank RWSG-SA		Cost of Technical support to the NCC		i) Technical support required to be identified	UNDP/ World Bank RWSG-SA New Delhi
			Cost of training aids		ii) Training aids required identified, procured, supplied & appropriately used in training programme	
			Cost of exchange of information			
			Cost towards exchange visit of training experts		iii) Communication technology cell developed in each training centre	
			Cost of Training Material developed by the World Bank			
5.	Other Bilaterals (like WHO, DANIDA, SIDA, FRG, UNICEF, RAC, PROWESS)		Organisation of consultation meetings; Technical workshops; Development of training aids; International collaboration and coordination; Literature service secondment of training specialist in specified subject/area		Help in making making the best of India better	Jt. Secretary DRD (NDWM)

WORKING GROUP REPORT (MANPOWER)

(pp 12, para 6)

Assessing the current availability of trained manpower in the field of rural water supply and measures necessary for the upgradation in both quality and quantity necessary for the technological and other needs in the future.

1. Adequately trained professional manpower is an essential ingredient for successful implementation of water supply programmes. Public Health Engineering Departments and Water Supply and Sewerage Boards at the State level need professionals at different levels and multidisciplinary subjects to carry out the programme. Present experience specially with respect to Rural Water Supply Programme under Drinking Water Mission indicates that assistance of space science, geoscience, chemistry, biochemistry, biotechnology, geophysics, agro-chemistry sociologist, socio-economist, mass media men are equally important along with the services of environmental engineers to make the programme successful. It is rather impossible to recruit all these multidisciplinary staff within the departments. But it is always advisable to take assistance of the specialised organisation on these subjects as and when required. However, it may be necessary to train a few of the existing staff and recruit a few in these specialised fields to carry out the routine programme in the State Department/Board so that necessary modification at the field level could be carried out as and when demands occur. Actually mere CE with MPHE background was not enough to deliver the goods. Each PHED institution must form a multidisciplinary body.
2. Drinking Water Mission has shown that for a nationwide water supply programme, besides the formal structures of human resources development there is a necessity to tap all the resources from available national institutions and scientific bodies. The academic institutes are to play a major role in providing additional inputs in both project preparation, implementation and monitoring. Looking to the experience gained so far, it may be necessary to start an integrated course which would provide the entire facet of the science and engineering and technology available in the area of Public Health Engineering as well as provide additional inputs of social water supply and sanitation engineers. A qualitative change is necessary in the technical education of the engineers involved in rural water supply and sanitation projects, so as to increase the Sector's capacity to apply appropriate low cost water supply and sanitation

technologies in socio-culturally acceptable manner at costs affordable to the low income beneficiaries and with their active participation in the planning and implementation of the project and with provision for related hygiene education and environmental measures. The training programme should lay emphasis on :

- 2.1 Bringing necessary qualitative changes in the formal technical education for public health engineers, junior engineers and technicians (ITI Certificat holders).
- 2.2 Continuing education of in-service engineers and other professions like environmental scientists, hydrogeologists, chemists, microbiologists, geo-physicists etc.
- 2.3 Orientation training for decision makers, administrators and planners.
- 2.4 Training to the grass root level workers of NGOS voluntary organisations, village panchayats etc.

To achieve the above objectives it is proposed to undertake training network programme involving several institutions at different levels. The structure of the proposed training network programme is given at annexure-I. 3. Apart from Central programme of Human Resource Development each of the Stat Govt. should establish a training institute for sectoral development. The Central Government may provide necessary financial and softwate assistance for carry out the programme. This may include

- development of training material to meet the local requirement in local language
- short term courses covering different aspects of implementation execution and operation and maintenance of water supply schemes and repair of water well pumps
- to implement a proper water surveillance programme to create a team of trained analyst and chemist to carry out water quality monitoring
- to have proper management information system a number of engineers, technicians trained in computerised management system.
- to train a team of motivators to organise awareness camps and motivate people for community participation in implementation, operation and maintenance of the system.

4. It is recommended to have a working group to go in for an in depth study and give a broad based systematised planning and programme for training and development. However, for the purpose of financial matters for VIII Plan, it would be necessary to yearmark at least 1% of the budget for training and manpower development.
5. Other recommendations included the following :
 - 1) HRD is required in application of S&T methods in water targetting.
 - 2) Low cost technology options which are specific.
 - 3) Training in water quality and surveillance and on institutioning such mechanisms.
 - 4) Training in integrated water management.
 - 5) Training be conducted through multidisciplinary forum - for eg. Irrigation, agriculture, drought, economists, social scientists and PHE engineers being trained together.
 - 6) Training required in project formulation, implementation and appraisal.
 - 7) Training required in traditional water harvesting structures to reorient PHE engineers to become "resource managers".
 - 8) Strengthen existing training institutions, networking with existing institutions, setting up new training institutions to fill in the gaps.
 - 9) Training in social communication and community participation.
 - 10) Training through attachment with successfully managed projects - Govt. and non-govt. NGOs could also be assigned training tasks.
 - 11) Training for both skill upgradation as well as for creating public orientation.
 - 12) It has often been seen that the persons to be trained could not attend the training programme due to lack of TA/DA budget. It is recommended that TA/DA training programme should form a part of the training budget.

PART TWO

**RECOMMENDATIONS
AND
PLAN OF ACTION**

OF

**THE NATIONAL HUMAN RESOURCES
DEVELOPMENT PROGRAMME
(NHRDP)**

INCLUDING
**THE INTERNATIONAL TRAINING
NETWORK PROGRAMME (ITNP)**

PART TWO
RECOMMENDATIONS
AND
ACTION PLAN

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RECOMMENDATIONS

While many recommendations have been made in the last part (summary) and following parts, the recommendations, have been consolidated in this part for ready attention.

The major question was to decide the percentage of plan allocation for the National Human Resources Development Programme (NHRDP). It was recommended by the Working Group (op.cit.) that Rs.20 crores (Rs. 200 million) be earmarked in the VIII Five Year Plan budget allocation for RWSS. Keeping this indicative figure in view, following recommendations have been made :

1. It is recommended that to begin with the following four institutions be identified as Centres of Excellence (COE) :

- (i) All India Institute of Hygiene & Public Health, Calcutta.
- (ii) Gujarat Jalseva Training Institute, Gandhinagar
- (iii) S.J. College of Engineering, Mysore.
- (iv) Institute of Engineering and Rural Technology, Allahabad.

- 1.1 The broad functions of these COE would be,

- i) to conduct refresher courses, short term courses and intermediate level courses in rural water supply and sanitation for degree and diploma holders, professionals, and technicians;
- ii) to conduct training of trainers;
- iii) to undertake continuing education programme for senior level officials, and professionals;
- iv) to impart specialised courses directly or in association with other COE or specialised institutions;
- v) in the long run, to introduce graduate and post-graduate courses in Public Health and Environmental Engineering with adequate bias in Rural Water Supply and Sanitation; and
- v) to undertake action-study in HRD and related areas and R&D in RWSS.

2. Following institutions functioning as Regional Centres of the NDWM for (i) monitoring and establishing District Level Laboratories; (ii) acting as referral institution; and (iii) imparting training in water quality monitoring and surveillance. These be appropriately merged or integrated with COE functions and jurisdiction:

- (i) AIIH&PH, Calcutta
- (ii) ITRC, Lucknow
- (iii) DL, Jodhpur
- (iv) BARC, Bombay
- (v) SJCE, Mysore

Similarly, the scope of intervention by the RCs should be enlarged from 'water quality' to areas like sanitation, O&M in RWSS and social communication.

3. A few institutions should be identified to impart specialised courses like remote sensing, geophysical/geohydrological studies, water management and other sciences and technologies. Based on experience of Water Mission, another set of institutions which could provide specialised courses are the scientific research laboratories and public sector institutions like NIDC, CEL, BIS, etc.
4. The existing State Government institutions (PHED/WB) engaged in imparting training in RWSS should be identified as State Training Centres to undertake training and education functions under NHRDP, as allocated by NCC.
5. Following gray areas of training and education should be given emphasis :
- i) Management including financial management;
 - ii) Professional and technological development;
 - iii) Technicians and craftsmen training in modern techniques;
 - iv) Institutional management;
 - v) MIS, monitoring and evaluation;
 - vi) Training aids, communication and information;
 - vii) Water technologies and water surveillance; including their O&N;
 - viii) Environmental sanitation and engineering;
 - ix) Social mobilisation including involvement of women;

- x) Standards; and
- xi) Legislation

There will, however, be some subjects more or less common in all courses.*

6. All cost towards organising training under the NHRDP should be met by DRD from the sector allocation. This funding should, however, be proportionate to the responsibilities shared by participating institutions, the courses conducted, number of trainees trained and evaluation of contribution of institutions in terms of output indicators.
7. The Department of Rural Development, should urgently established a Central Coordinating Cell to coordinate and monitor the national and international training programmes.
8. Each State PHED/Water Board should also setup a HRD cell and nominate a nodal officer to monitor state's HRD programmes as well as to establish linkage with the above DRD cell, Participating/Key institutions/Centres of Excellence and specialised institutions.
 - 8.1 A special orientation course should be organised for the officials of the Central Coordination Cell of DRD, the nodal officers for HRD of states; and heads of training institutions/centres.
 - 8.2 Among the core staff of the Central Coordination Cell, there should be a women consultant (sociologist).
9. DRD should meet TA/DA of all trainees, including trainers, trainee from the HRD funds. To this effect, norms of the Ministry of Urban Development be adopted.
10. The training for updating and upgrading the knowledge and skills should be compulsory to all level of RWSS personnel irrespective of their status and be reflected in their Confidential Report (CR). Their performance in the training should also be used as a condition for departmental promotion.

* Detailed training profiles based on Mission's innovative approaches will be discussed in a subsequent study.

11. List of all those who have been trained abroad under DRD - Bilateral (Foreign Training) programme both under short and intermediate level courses should be prepared. Selected ones should be invited as resource persons (in the area of their specialised training) and field experience of rural WSS.
12. Resource persons should also be drawn from seats of higher learning (imparting graduate/post-graduate degree in water/health and environmental engineering), scientific research organisations, Universities and senior practising executives of corporations and engineers. This will not only strengthen the academic resources, but also forge linkage between HRD programme and these seats of learning.
13. All faculty members and external resource persons should also be invited for a special orientation workshop on 'rural bias to water and environmental sciences, technologies and engineering'. To this effect, a special course material should be prepared by a group of experts.
14. International Training Network (ITN) programme should be a part of the overall National HRD Programme of DRD. Linkages should be established with bilateral agencies and joint programmes be developed between training institutions abroad and the Centres of Excellence in India.
 - 14.1 AIIH & PH, Calcutta, has already been identified as ITN Participating Institution with funding through ODA and Govt. of India.
 - 14.2 The Department of Rural Development, Government of India should identify 3-4 key institutions for undertaking training and education in RWSS. These institutions in the first instance could be GJTI, SJCE and IERT.
15. Keeping in view the vastness of the country and expanding needs in human resources in the sector, generally each State/UT should have a State Training Centre attached to the state department responsible for RWSS. Funds should, therefore, be earmarked for the purpose (by DRD). Bilateral agencies could also be invited to cooperate in this programme. These centres should, however, have linkage with COE of the NHRDP.
16. The Chairman of the National Coordination Committee should be vested with sufficient powers to administer the national programme and international network, specially its impact at the grassroots.

17. Linkages, coordination and mutual support should be inducted between the following sub-sectors,
- 1) between Centre of Excellence; (COE), specialised institutions, Regional Centres, State's Training Centres; and the national scientific research organisations;
 - 2) between NHRDP, PHEDs/WB line agencies and voluntary agencies/NGOs;
 - 3) COE, trainers of institutions and trainees;
 - 4) Bilaterals, participating/key institutions and COE;
 - 5) IRC Referral Centre, PROWESS with National programme and ITN; and
 - 6) Public sector undertakings and NHRDP

These linkages have been explained through a diagrammatic presentations (refer page 10).

18. All participating institutions in NHRDP should sign a MOU with DRD, duly defining their respective roles and responsibilities.
19. DRD should constitute a special expert group of COEs and external resources to develop foundation curriculum for training of trainers and training and orientation programmes.
20. It is not necessary that COE and State Training Centres should run all specialised courses. For this, specialised institutions should be identified and such training be imparted by them only. Some such specialised institutions could be upgraded as National Institute viz. for drilling technology, communication technology, environmental sanitation, etc.
21. The training in RWSS particularly the environmental sanitation should be of non-conventional type with an output indicator from Lab to Land to User as an inbuilt component of training.
22. Special training be organised in behavioural aspects. Women faculty or resource person be encouraged to impart this training to men engineers and managers.

23. There should be phased growth of Centres of Excellence with generally identical resource support.
24. Parameters for output judgement and evaluation should be decided in advance and given to each participating institution as guideline (also refer 18 above).
25. An expert group should be assigned to draw out measurement parameters of the training network, to enable NIDC to develop an appropriate MIS for the NHRDP.
26. All training institutes should draw a year-planner and calender of activities which should be adhered to strictly.
27. There is need to make a formal assessment of HRD needs in RWSS in the states to help them to plan the sponsorship of their staff for training/orientation under the NHRDP.
28. To make the HRD programme obligatory, DRD may consider earmarking a portion of ARWSP fund specially for training. This finding will be linked up with the number of staff members trained from each State/UT.
29. A roster of external resource persons be prepared on all India basis and made available to all participating institutions.

**ACTION FOR THE
DEPARTMENT OF RURAL DEVELOPMENT**

1. DRD formally approves the HRD proposal and related funding for VIII FYP;
2. DRD sets up a Central Coordination Cell in the Department to initiate further action;
3. DRD appoints a National Coordination Committee;
4. DRD obtains formal consent of the Centres of Excellence and the specialised institutions, for participation in the proposed HRD programme by clearly defining their role;
5. DRD approaches state PHED/Water Boards to identify their own training centre and/or other training institutions of the state to be brought under the umbrella of NHRDP for which necessary funding should be provided for their strengthening and/or development as a State Level Training Centre in the VIII FYP;
6. DRD invites proposals for
 - (i) strengthening the facilities for training and continuing education to accomodate the proposed NHRDP;
 - (ii) state the list of trainers already working in the institutions; and
 - (iii) a tabulated list of professionals, engineers, technicians, statisticians, mechanics, geologists, chemists, etc., working in the department at various levels, to enable the DRD cell to prepare a roster of such personnel for planning their training programme;
7. DRD finalises norms for meeting training cost per trainee per day , including TA/DA and fee to external resource persons/faculty. These norms should be conveyed to all institutions;
8. The DRD invites a meeting of the heads of all identified institutions for a detailed discussion and finalisation of calendar of training activities;

9. Each state nominates a nodal officer for HRD programme and intimates his name address, etc., to DS-TM.
10. In consultation with the participating institutions, DRD cell prepares a roster of resource persons in different subjects and specialisation.
11. DRD releases proportionate funding to enable the Centres of Excellence for equipping them to undertake the training programme;
12. DRD invites the meeting of the National Coordination Committee to give a green signal to the programme; and
13. All the heads of the COE should sit together to decide the total plan of action, coordination monitoring and exchange of faculty and identification of external resource persons. One of the main items of agenda should be discussion on common facilities and joint efforts in curriculum development, preparation of syllabus and course materials aimed at cost-effectiveness. There should be roster of external resource persons for consultation by all the training institutes/centres.

Tasks relating to ITN, India

Item	Action
1. Submission of the report to the Dept. of RD,GOI.	Prof.K.J. Nath Coordinator
2. Approval of above by DRD.	Sh. G.Ghosh Jt.Secretary
3. National Coordination Committee (NCC) is constituted and notified.	JS
4. Central Coordination Cell (CCC) in DRD is setup.	JS DSTM
5. UNDP/World Bank-Expert/Adviser appointed to work with NCC and CCC his role clearly defined and to whom he will be responsible.	UNDP/World Bank JS
6. Finalisation of Key Institutions.	JS
7. DRD issues communication to states about i) proposed NHRDP/ITN programme ii) their compilation of list of staff public health engineering staff including prospective trainers as per proforma suggested in the report.	DSTM/CCC
8. Circulation of the report to all concerned including bilaterals.	DS-TM/CCC
9. DRD follows up with states on 7 above.	DS-TM
10. DRD invites status of competance and capability of the Centres of Excellence in training in Rural WSS, names of staff members (with their qualification and rural experience); facilities for class room and practicals; infrastructure, equipment, boarding and lodging and field work.	DS-TM/CCC

11. Preparation of curriculum for orientation of trainers (Participating/Key Instt.) and finalisation of venue, date and duration of their training.
12. Finalisation of the list of all India external Resources Persons.
13. Preparation of the list of existing training institutions and specialised institutions including Public Sector, etc. Assessment of their present status and areas of their participation in the NHRDP.
14. Preparation of proposal for new institutions to be setup in states where there are no such institutions or to identify regional institutions to cater to needs of 2-3 states/UT.
15. Visit of a team of DRD to all training institutions for ascertaining their arrangements for undertaking the training programme.
16. First meeting of the National Coordination Committee (NCC).
17. Organisation of training of trainers of the Participating and Key Institutions.
18. Organisation of orientation workshop for decision makers, administrators and senior level officials responsible for RWSS.
19. Preparation of master-plan for integrated training of trainers including awareness in specialised areas and field.
20. Preparation of master-plan for integrated training of trainees including training in specialised areas and related field work.

Heads of Participating and Key Institution

21. Organisation of orientation workshop for external resource persons including consultation meeting of heads of training institution for finalisation of the above two master plans (19 & 20 above) including finalisation of system of monitoring and evaluation.
22. Preparation of final calendar of training of trainers and trainees for 1991-92 for all institutions and beyond and its circulation to all concerned.
23. Preparation of list of trainers and trainees and the programme of their participation in respective training programmes
 - i) Name
 - ii) Course
 - iii) Date/Duration
 - iv) Institution
 - v) Date of reporting
24. Meeting of the NCC Finalisation of evaluation criteria and who will evaluate.
25. Training continues as per calendar and master-plan.
26. Orientation workshop of head of institutions of all training institutions takes place.
27. First evaluation after one year.
28. Second evaluation after 3 years.
29. Final evaluation and future plan of action at the end of 5 years.
30. Thrid meeting of the NCC.
31. International Workshop of ITNs in Delhi in 1993.
32. Fourth meeting of the NCC to make a final assessment of the programme.

PART THREE

BUDGET FOR THE NHRDP/ITNP

PART THREE
BUDGET FOR THE NHRDP/ITN

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1. INTRODUCTION

Keeping in view the recommendations of the Working Group (op.cit), it is suggested that DRD should initially earmark a sum of Rs.20 crores (Rs.200 million) for HRD programme in the VIII Five Year Plan. Out of this budget provision, a part of the committed share of the Govt. of India should be given to the ITN programme. (op.cit.). The proposed National Human Resources Development Programme (NHDRP) National Training Network NTN has, therefore, been designed keeping this budgetary provision in view.

Due to complexity of training programmes in terms of variety, number, duration, location and subjects; and different levels of education and jobs, it was considered advisable to develop cost-norms for budget allocation to Centres of Excellence and the State Institutions. These norms have been worked out on average, and appropriate expenditure for each item on all India basis. Existing norms of training activities of the Government of India have also been considered (annexure 1).

2. Cost-model

The cost-model is expected to provide guidelines for inviting project proposal and earmarking funds or calculating financial inputs required by training institutions.

3. Norms for cost-effective courses

The following norm could be considered for working out the cost-effective courses:

- i) number of trainees per batch/course: (20-25);
- ii) four centres of Excellence should conduct 10 courses a year;
- iii) specialised institutions be involved in above courses (ii above), but they could independently conduct 10 courses (at present 10 specialised institutions have been identified);

- iv) to begin with 15 state level training centres have been identified in states. They should conduct atleast four courses a year of 10 days duration; and
- v) it has been stipulated to conduct short courses (including diploma courses) of 3 months duration and atleast one such course a year by each COE.

4. Budget estimates

The following table provides an estimated cost under three braod heads:

- i) one time expenditure;
- ii) annual allocation; and
- iii) recurring (based on number of courses to be held in a year, number of participants and duration of a course)

**CONSOLIDATED POSITION ABOUT TRAINING COURSES AND
PERSONS TO BE TRAINED IN RWSS IN VIII FIVE YEAR PLAN**

		<u>In Five Years</u>	
		<u>Total No. of trainees</u>	<u>Total No. of courses</u>
1.	Refresher courses at 5 Centre of Excellence (COE) 10 courses a year of 15 days each 25 trainees a course for 5 years	6250	250
2.	Diploma (short course) at 5 COE 1 course a year of 3 months 20 trainees a course - for 5 years	500	5
3.	Orientation Workshop for decision makers and senior level officials at 5 COE 2 workshops a year of 5 days duration each 20 participants a workshop-for 5 years	1000	50
4.	Training at 12 Specialised Institutions including Regional Centres (RCs) 4 courses a year of 15-30 days duration each (average 20 days) 25 trainees a course-for 5 years	6000	240
5.	Training at 15 State Training Centres (STs) 10 Courses a year of 10 days duration each 25 trainees a course - for 5 years	18750	750
6.	Training of trainers of line agencies working for development in rural and peri-urban areas; NGOs including Zilla Parishad, panchayats and voluntary agencies, staff of community polytechnics, Krishi Vigyan Kendras, etc. (4 courses a year of 10 days duration each-25 trainees a course at 5 COEs-for 5 years.	2500	100
Total		<u>35000</u>	<u>1395</u>
7.	Setting up 10 new state Training Centres	Number of courses and trainees not included.	

CONSOLIDATED BUDGET AT A GLANCE

(National Human Resources Development Programme)

	<u>Rs. in crores</u>	<u>(millions)</u>
1. Plan allocation for RWSS in the VIII Five Year Plan	4000.00.	(40000)
2. Amount proposed to be earmarked for NHRDP in RWSS sector (0.05%)	20.00	(200)
2.1 Budget for training (Breakup placed below) including 2.2 and 2.4	14.907	(149.068)
2.2 Budget for setting up of 10 new state training centres with PHEDs	1.000	(10)
2.3 Budget for R&D in RWSS and HRD	5.000	(50)
2.4 Cost of organisation of training to trainers of line agencies working for development in rural and peri-urban areas; NGOs including Zilla Parishad, panchayats and community polytechnics and 'Krishi Vigyan Kendras' etc.	0.625	(6.25)
3. India's share to International Training Network (committed)	0.260	(2.6)
4. Total budget :	Rs.20 crores (200)	
5. Disbursement of Funds for Training in 5 years		
Total amount earmarked Rs. 1490.70 lakhs.		

<u>Year</u>	<u>Percentage of Total</u>	<u>Rs. in lakhs</u>	<u>Amount (millions)</u>
1990-91	5	74.535	(7.453)
1991-92	15	223.605	(22.360)
1992-93	25	372.675	(37.267)
1993-94	25	372.675	(37.267)
1994-95	30	447.210	(44.721)
Total		1490.700	(149.068)

**5. BUDGET ESTIMATE FOR THE NATIONAL HUMAN RESOURCES DEVELOPMENT PROGRAMME (NHRDP)
FOR RURAL WATER SUPPLY AND SANITATION SECTOR IN VIII FIVE YEAR PLAN (1990-1995)**

S.No.	Institution and their total number	Item of expenditure	One time expenditure	Annual expenditure	Expenditure for 5 years	Expenditure total number of institutions
				Rs.in LAKHS	(millions)	
5.1	Strengthening Centres of Excellence (COE) (5)	1. Strengthening of existing infrastructural facilities	8.50	-	8.50	42.50 (4-250) (see annexure 1)
	(1) East & N-East	1.1 Faculty position for 5 years (trainer/field staff)	-	1.00	5.00	25.00 (2.50) (see annexure 1)
	(2) North	1.2 Installation of computers (equipment, stationary, printer, maintenance, air-conditioner, etc.)	5.00	-	5.00	25.00 (2.50) (see annexure 1)
	(3) West	1.3 Other equipment required for practise by trainees	5.00	-	5.00	25.00 (2.50) (see annexure 1)
	(4) Central	2. Cost towards external faculty/resource persons including TA/DA	-	1.00	5.00	25.00 (2.50)
	(5) South	3. Development of training and awareness camp aids and preparation of extension materials by the trainees	2.00	-	2.00	10.00 (1.00) (see annexure 1)
		4. Library and documentation (Quarterly report and bibliography, Issue of newsletter)	-	1.00	5.00	25.00 (2.50)
		5. Boarding and lodging for trainees @ Rs.100/- per day per trainee				
	5.1 i) 25 trainees per course		-	3.75	18.75	93.75 (9.375)
	ii) 10 courses a year					
	iii) 15 days (average) per course					
	5.2 TA to trainees (by train) @ Rs.1000/- per trainee per course		-	2.50	12.50	62.50 (6.250)
	Cost towards 250 trainees a year					

S.No.	Institution and their total number	Item of expenditure	One time expenditure	Annual expenditure Rs.in LAKHS	Expenditure for 5 years (millions)	Expenditure for total number of institutions
		5.3 Field visit per trip by road per course @ Rs.3000/- 10 course a year	-	0.30	1.50	7.50 (0.750)
		6. SHORT COURSES (certificate course in RWSS for 20 candidates for 3 months @Rs.100/- per candidate for boarding and lodging)				
		6.1 One course a year (20x90x100)	-	1.80	9.00	45.00 (4.50)
		6.2 Outstation visits/educational tours (by train & bus) @ Rs.3000/- per trainee (a special component to this course)	-	0.60	3.00	12.00 (1.20)
		6.3 TA to trainees @Rs.1000/- per trainee	-	0.20	1.00	5.00 (0.50)
		6.4 TA and honorarium to external faculty	-	0.50	2.50	12.50 (1.250)
		6.5 Field visit for practicals in villages per trip by road @ Rs.3000 (two visit)	-	0.06	0.06	0.30 (0.030)
		7. Cost towards orientation of Senior Level Officials (Decision Makers) - orientation workshop				
		- 20 participants per workshop				
		- 2 workshops a year				
		- 5 days (average) duration per workshop				
		Cost to institution (COE)	-	0.50	2.50	12.50 (1.250)
		7.1 TA/honorarium to external resource persons (senior level experts will be invited for these workshps)	-	0.25	1.25	6.25 (0.625)
		Total of 4 COE	20.50	13.40	87.50	467.50 (46.750)

S.No.	Institution and their total number	Item of expenditure	One time expenditure	Annual expenditure Rs.in LAKHS	Expenditure for 5 years (millions)	Expenditure for total number of institutions
5.2	Specialised Institutions (SI) (12)	Training in specialised areas to be conducted in 10 SIs (for details refer annexure 1) - 25 participants per course - 15-30 days (average 20 days) duration of each course - 4 courses a year				(Ref. annexure)
	5.2.1	Boarding/lodging per participant @ Rs.100/- per day	-	2.00	10.00	120.00 (12.00)
	5.2.2	TA @ Rs.1000/- per trainee (by train)	-	1.00	5.00	60.00 (6.00)
	5.2.3	TA/honorarium to external resource persons	-	1.00	5.00	60.00 (6.00)
	5.2.4	Cost to institutions (SI)	-	2.00	10.00	
	5.2.5	Field visit @ Rs.3000 a trip For 4 course a year	-	0.12	0.60	7.20 (0.72)
		Total of 12 SIs	-	6.12	30.60	367.20 (36.720)
5.3	State Training Centres (STC) (existing institutions with PHED/Water Boards) (15)	State level training of departmental candidates and village level functionaries				
	5.3.1	Lumpsum grant for development of infrastructure, strengthening of existing facilities training aids	5.00	-	-	75.00 (7.50)
	5.3.2	Training cost towards - 10 courses a year - 25 candidates a course - 10 days duration a course Boarding/lodging @Rs.100/- per day per trainee	-	2.50	10.00	150.00 (15.00)

S.No.	Institution and their total number	Item of expenditure	One time expenditure	Annual expenditure	Expenditure for 5 years	Expenditure for total number of institutions	
				Rs.in LAKHS	(millions)		
		5.3.3 TA @ Rs.500 per trainee (by train or bus)	-	1.25	6.25	93.75	(9.375)
		5.3.4 TA/honorarium to external resource persons	-	0.50	2.50	37.50	(3.750)
		5.3.5 Field trip @ Rs.3000 a trip for 10 courses	-	0.30	1.15	17.25	(1.725)
		Total of IS STC	5.00	4.55	19.90	373.50	(3.735)
5.4	Setting up of 10 new state level training centres (STC) with PHEDs including Union Territories (10)		100.00	-	-	100.00	(10.000)
		Total of STCs	105.00	4.55	19.90	478.50	(47.850)
5.5	Regional Centres (RCs) of the NDWM (5)	i) Training in examination of water quality, water quality monitoring and surveillance) and assistance to states in the setting up of new laboratories and i.e. mobile laboratories)	-	2.00	10.00	50.00	(5.00)
		ii) Awareness and training in water hygiene O&M and sanitation	-	2.00	10.00	50.00	(5.00)
		iii) Provision of a jeep @ Rs.3 lakhs (per jeep)	15.00	-	-	15.00	(1.50)
		Total of RCs	15.00	4.00	20.00	115.00	(11.50)
5.6	Training of trainers of line agencies, NGOs/Voluntary Agencies; community polytechnics, and Krishi Vigyan Kendras						
	Institutions to impart this training						
	5 COEs						
	Per course 25 candidates 10 days duration						
	4 course/year - for 5 years						

S.No.	Institution and their total number	Item of expenditure	One time expenditure	Annual expenditure Rs.in LAKHS	Expenditure for 5 years (millions)	Expenditure for total number of institutions
-	Boarding/Lodging @ Rs.100 per day per candidate		-	1.00	5.00	25.00 (2.50)
-	TA/DA @ Rs.1000 per candidate (by train)		-	1.00	5.00	25.00 (2.50)
-	TA/Honorarium of external resource person		-	0.50	2.50	12.50 (1.25)
	Total of 5.6		-	2.50	12.50	62.50 (6.25)
6.	Cost towards R&D to be sponsored to scientific research institutions	List of areas/subjects requiring R&D has been in part 5 of the report	-	100.00	500.00	500.00 (50.00)
	Total of R&D		-	100.00	500.00	500.00 (50.00)
	Grand total for NHRDP in RWSS for 5 years		140.50	130.57	670.50	1990.70 (199.07)
	Total	Rs. 1990.70 Lakhs				(199.70 million)

Breakup and explanation of the items of expenditure

(Refer item 5.1)

1.	Strengthening of	5 Centres of Excellence		
	i)	Computer room - one	20x15 = 300 sq.ft. @ Rs.200/- per sq.ft. = Rs. 60,000/- = Rs.240,000/- for 4 COE	(Rs. million) (0.24)
	ii)	Additional lecture rooms - two	@ Rs. 50,000/- = Rs.200,000/- for 4 COE	 (0.2)
	iii)	Additional hostel accomodation for 20.25 trainees (in men and women)		
		@ Rs. 15,000/- per room with toilet Rs. 5,000/- per room for furniture		
		----- Rs. 20,000/-		
		for 25 rooms =	Rs. 500,000/-	(0.50)
	b)	Extension of		
		a) kitchen		
		b) pantry		
		c) dining room		
		=	Rs. 1000,000/-	(0.1)
	c)	Common room -	Rs. 40,000/-	(0.04)
	d)	Furnitures and fixtures for above (TV etc.)	Rs. 100,000/-	(0.10)
		Total of (iii)	----- Rs. 740,000/-	(0.74)
	iv)	Total per centre @ Rs. 850,000/- for 4 centres Rs.3400,000/- (refer item 1)		(0.85) (3.40)

2. Faculty position in COE (refer item 1.1)
Lecturer - 1
Rural Demonstrator - 1
Helper - 1
Annual expenditure @ Rs. 100,000/- per centre
for 5 years Rs. 500,000/- (0.50)
for 4 COE Rs.2000,000/- (2.00)

3. Installation of a computer unit in each centre 5 Computers with voltage stabilizer, furniture, printer, stationary, air-conditioner and maintenance contract for 5 years (refer item 1.2)

@ Rs. 500,000 (one time) for 4 COE = Rs.20,000/- (2.00)

4. Equipment viz. laboratory equipment, working model, cut model, pumps (power/hand/other) water purification/water treatment plant model, SPV, Charts, prototypes, etc. (refer item 1.3)

@ Rs. 500,000/- (one time) for 4 COE = Rs. 20,00,000/- (2.00)

5. External resource persons/faculty (refer item 2)

Honorarium per lecture @ Rs. 150/- for 90 mts. TA/DA for outstation experts, Taxi for local (actual) experts. Experts should be invited from field level experienced people, higher seats of learning, and other COE.

Rs.100,000/- a year for 5 years Rs.5,00,000/- (0.50)
= for 4 COE - Rs. 20,00,000/- (2.00)

6. This items includes preparation of slides, films, slide/sound presentation and demonstration items. (refer item 3)

Under equipment, it will include camera, projector, screen, photo-processing equipment, etc. The trainers will be trained in preparing training aids and their use in imparting training and during awareness camps.

7. TA/DA will be borne by the participants themselves. (refer item 7)

8. Following specialised areas have been identified :
(refer item 5.2)

- 1) Management system including management of staff, HRD
- 2) Financial management - capital and revenue aspects
- 3) Source finding and source development
- 4) Water treatment/purification
- 5) Water management
- 6) Water examination, monitoring and surveillance
- 7) Health education/Hygiene
- 8) Environmental sanitation
- 9) Training technology
- 10) Rural sociology - social mobilisation including involvement of women
- 11) Legislation and related aspects
- 12) Standards, quality and materials

8.1 Institutions to be involved

- 1) National Geophysical Research Institute, Hyderabad
- 2) Space Application Centre - Remote Sensing Agencies
- 3) Safai Vidyalaya for sanitation
- 4) Sulabh International for sanitation
- 5) National Environment Engineering Res. Institute, Nagpur
- 6) Management Institution
- 7) Public Sector Computer Science Institute
- 8) National Industrial Development Corporation
- 9) Central Electronics Ltd., Shahibabad
- 10) Central Mechanical Engineering Res. Institute, Durgapur
- 11) SERC, Ghaziabad
- 12) IPCL, Baroda; NCL, Pune
- 13) Drilling Institute of CGWB

9. **Setting up of new State Training Centres**
(where these do not exist) - refer item 5.4

The lumpsum grant has been reflected to cover all expenditure required to give birth to a new institution for which breakup at this stage may not be possible. It is, however, presumed that states interested to setup such an institute will provide building and infrastructure facilities.

10. **Regional Centres (refer item 5.5)**

It has been decided by the Central Coordination Committee on Water Quality Monitoring & Surveillance (NDWM) that the scope of the cooperation of RCs to the Mission should be extended in the VIII Plan which should include organisation of awareness camps and training in water hygiene, sanitation and related O&M. For this purpose, a jeep may be given to the identified (RC) or the (COE) where these functions have been suggested to be merged (op.cit.). Provision of driver and maintenance of the vehicle should, however, be the responsibility of the receiving institution.

11. Training of functionaries of line agencies include those engaged in development in rural areas including training of NGOs (including Zilla Parishad & Panchayats) and voluntary agencies. Such training will be undertaken by COE, Specialised Institutions and State Institutions. These trainings have not been included earlier (5.1). Under this, programme training will be organised for their trainers of respective departmental training centres viz. Literacy Mission, Immunisation Mission, Rural Development, Primary Health Centres, Training Centres of ICDS/DWACRA workers, etc.

In addition to above, faculty member of COE would visit the above departmental training centres to give lectures and demonstrations.

7. BUDGET AT GLANCE

(International Training Network Programme)

1. Funds likely to be made available by ODA (UK) to DRD Rs. in crores (millions)
0.35 (3.50)

1.1 As per donors expectations this amount is to be spent by the All India Institute of Hygiene and Public Health (AII&PH), Calcutta (the Participating Institution of ITN) for training of TRAINERS in 5 years as follows :

Name of Course	No. of Courses	No. of participants per course	Amount earmarked Rs. in lakhs (x000)	%age of total amount
1. Orientation course for Decision Makers	1	30	530	20
2. Engineers and professionals as trainer	12	20	1048	44
3. Teaching staff/faculty of degree/post-graduate institutions	3	16	935	42
4. Teachers of technical institutions (ITI and Polytechnics)	3	16	595	28
5. Instructors of craftsmen/operators etc.	5	10	370	18
Total	24		3478	(0.347)

1.2 ODA is also to meet cost towards one International consultant for 5 years. Rs. 16,50,000 (0.165)

- | | Rs.in crores | (millions) |
|--|--------------|------------|
| 2. Funds to be made available to DRD by The Netherlands Government | 0.08 | (0.8) |
| 2.1 Out of above the donor has earmarked Rs.758,000/- for setting up of the Central Coordination Cell (CCC) for HRD in the Department of Rural Development (DRD), New Delhi. | | |
| 2.2 Balance of this is expected to be spent for strengthening of two - three key institutions. | | |
| 2.3 An additional fund of Rs.250,000/- has been indicated for meeting the cost of one consultant for the (CCC) of the DRD. | | |

Note : All funding from bilateral donors will be made to DRD. It is DRD who will disburse these to respective institutions/activities.

**Ministry of Works & Housing
Finance Division**

Subject : Expenditure norms for the various PHE training courses.

Will the PHE Division please refer to their U.O. Note No. Z-220011/8/85/Misc./Trg./CPHEEO, dated the 12th June, 1985 and the addendum thereto?

2. The proposals made therein were discussed at a meeting held by the undersigned with DS(W.S) and Deputy Adviser (Trg.) CPHEEO on 4th July, 1985. The norms as decided at the meeting for the various components are indicated below for the guidance of the PHE Division.

- | | | | |
|----|-----------------------------------|---|----------|
| 1. | Honoraria for the faculty/lecture | i) Specialised courses | Rs.150/- |
| | | ii) Courses for graduate & post graduate trainees | Rs.100/- |
| | | iii) Courses for diploma holders, filter operators etc. | Rs. 75/- |

These rates are subject to the following conditions namely:-

- a) The lectures will be of not less than 75 minutes duration;
- b) No lecturer would be entitled to honorarium for more than 5 lectures for any course.
- c) No person below the rank of Executive Engineer will be deputed for giving these lectures.

Note :-

The above rates are applicable only in the case of short-term courses of a duration of not more three months.

- | | | | |
|----|--|----|---|
| 2. | TA/DA for the faculty from outstation. | 2. | In addition to the honorarium mentioned above outstation faculty may be given only TA as per thier entitlement or actuals whichever is less. No DA or free board and lodge will be allowed. |
| 3. | Transport charges for field visits. | 3. | Rs.3/- per km. or actuals whichever is less. |

- | | | | |
|----|---|----|--|
| 4. | Stationery, lecture material, refreshments and contingencies. | 4. | Rs.30/- per trainee per day limited to actuals. |
| 5. | Chemicals and glassware | 5. | This will be allowed only as per actuals. The PHE side may however indicate a lumpsum at the time of submitting proposals for the release of grants. |
| 6. | Reimbursement of all types of fees e.g. tuition fee, examination fee, laboratory fee, computer fee etc. | 6. | Actuals may be allowed in respect of courses where this Ministry has agreed to the reimbursement of expenditure on these items. |
| 7. | Raising of staff support from existing 22,500/- to Rs.1,00,000 as recommended by the Working Group. | 7. | While this Ministry's share support would be limited to 50% of the actuals the ceiling may be raised to Rs.50,000/- per annum. |
3. As regards the proposals for raising of the stipend in respect of MEPHE courses, short-term course and Water Works and Sewage Works Supervisors Course is concerned, these rates were revised only recently. If therefore any further revision is considered necessary a separate proposal giving full justification therefore may be submitted by the PHE division.
4. The amount of grant-in-aid which may be given to the NEERI for the training programmes entrusted to that organisation may be considered as and when they are asked to conduct any programme.

This issues with the approval of JS(F).

(S.P. Singal)
Deputy Financial Adviser

DS(WS)/Dy.Adviser(Trg.) CPHEEO

M/o Works & Housing U.O. No.8(7)-W&E/85, dated 8.7.85

PART FOUR

NATIONAL TRAINING PROGRAMME

PART FOUR

NATIONAL TRAINING PROGRAMME

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1. PLANNING FOR CHANGE

Safe and adequate drinking water and environmental sanitation play an important role in the community's health, productivity and living conditions. As these basic and minimum needs to be provided should be cost-effective with the scope of decentralised operation and maintenance (O&M) and reach all villages in the vast rural areas of the country, the persons empowered to provide these services should be made aware and trained in the management of multi-disciplinary inputs of the sector. Similarly, those who are already working in the field, their knowledge and skills need also be updated to keep them abreast with modern innovations of management and application of science and technology (S&T).

- 1.1 Keeping in view the gap between demand and supply of human resources, the Working Group on VIII Plan Approach For Rural Water Supply & Sanitation (April, 1989) deliberated on the availability of trained manpower and their upgradation (refer Annexure of part one).

The Working Group recommended that 'training network involving several institutions at different levels be designed and developed. Apart from central programme of HRD, each State Government should also establish or identify the existing institutions for training and education in RWSS sector. To this effect, the Central Government may provide necessary financial and software assistance for carrying out the HRD programme'.

- 1.2 Nedler notes that human resource development (HRD) is an organised learning experience in a definite time period to increase the possibility of improving job performance or growth. The learning experiences cover (i) learning related to present job, (ii) learning to prepare the individual for different, but identified job and new technique; and (iii) learning for growth of the individual (Nedler, L., The Handbook of Human Resources Development, New York, 1984, 1, 3).
- 1.3 The limited resources of both funds and personnel for the vast rural areas, characterised by differing demographic status, geo-climatic and socio-economic and cultural conditions, scatteredness, remoteness, differing water sources and inability of centralised services to reach all these areas, pressed for required development of skills and knowledge of various levels of personnel engaged in RWSS sector and enthusing in them the much needed 'change'

towards community involvement, health education and sanitation. This also needed training and awareness among village level functionaries and the rural community (both men and women) expected to be involved in a practical way to supplement water supply and sanitation management at micro-level and sensitise them towards ownership of the related assets and their obligations to it. The most critical need was of promoting a behavioural change, change in outlook from tradition and generating consciousness about the importance of people's participation and involvement towards decentralised operation and maintenance and an uninterrupted performance of the assets created by the efforts of the NDWM.

- 1.4 Learning with Water Decade, a definite pace of 'change' was visible. This change needed to be recognised and strengthened through a system of continuing and participatory education in the post-decade including 'Health For All in 2000' and beyond.
- 1.5 There has been increasing coverage of rural population and promotion and installation of new technologies. One of the important pre-requisite to this was availability of skilled and trained persons in adequate number all over the country. This required institutionalisation of training and education programme which could enhance the process of change among the existing personnel, the trainers and the new entrants by initiating a system of continuing education. This also needed new orientation and innovation in HRD planning itself for the RWSS sector.
- 1.6 The academic institutions also have a major role to play in advancing this 'change' by providing a rural bias to water and sanitation engineering education thus incorporating qualitative modification in technical and engineering education in the areas of public health, water and sanitation engineering, with much needed inputs of rural sociology, social mobilisation, communication, computerised management systems and cost-effectiveness, the important tools for 'change'.
- 1.7 The cutting edge of the RWSS system is the 'WILL TO CHANGE' and human resources development is one of the planned processes to smoothen the path of change resulting in superior performance of RWSS.

2. WATER MISSION AND HUMAN RESOURCES DEVELOPMENT

The National Drinking Water Mission is characterised by the emphasis placed on supply of adequate quantity and acceptable quality of drinking water on a sustained basis in all villages of the country with available resources, and within plan allocation and defined time-frame. It is a missionary approach for the implementation of rural drinking water and sanitation programme with the support of scientific and technical personnel, professionals, management experts, public health engineers, social scientists, economists, NGOs, panchayats, voluntary agencies and the rural community. The guiding force behind the mission has been an integrated, multi-disciplinary and delivery approach with a view to promote low cost treatment and distribution system supplemented by rain water harvesting and improvement of traditional sources. Sufficient input of S&T for source development and supporting water quality monitoring and surveillance were also initiated.

- 2.1 The imperative need for planning, implementing, monitoring, evaluating, replicating and sustaining these activities demanded awareness generation and sensitisation of personnel involved in RWSS sector, and the development of their understanding and skills commensurate to these developing thoughts and technologies. Ghosh* notes, 'the need for a planned human resource development for RWSS sector was considered to be more important than for urban areas as the problems in rural areas were multifarious and solutions widely varied from mechanical to chemical and biochemical to biotechnological. In the Technology Mission (NDWM), the entire gamut of the scientific community in India got to be involved in tackling this problem and developing specific solutions for water purification, water treatment, water recycling and maintenance of hardwares like handpumps. They included mechanical, civil and chemical engineers, scientists and specialists in surface chemistry, biochemistry, biotechnology, geosciences, geophysics, agro-science, space science, etc. Various problems of chemical pollution have been tackled by environmental engineers. Surface chemists helped in improving the life of boreholes. In the water surveillance programme, a large number of chemists and water analysts worked continuously for water quality monitoring. This confirmed that for a nation wide water supply programme, besides the formal structures of

* Ghosh, G. (1988), A case study of the policies and problems, IDWSSD Latin American Seminar on Water and Sanitation for low income rural and periurban populations, Recife, Brazil, October, 1988 pp.14/16

HRD, there is necessity to tap all the resources from national institutions and scientific bodies. With this in view, it was planned to start an integrated course which could provide the entire facet of the S&T and engineering available in the country in the area of public health engineering with the additional inputs of social communication, and training in computerised management system to water supply and sanitation engineering'.

2.3 The Need

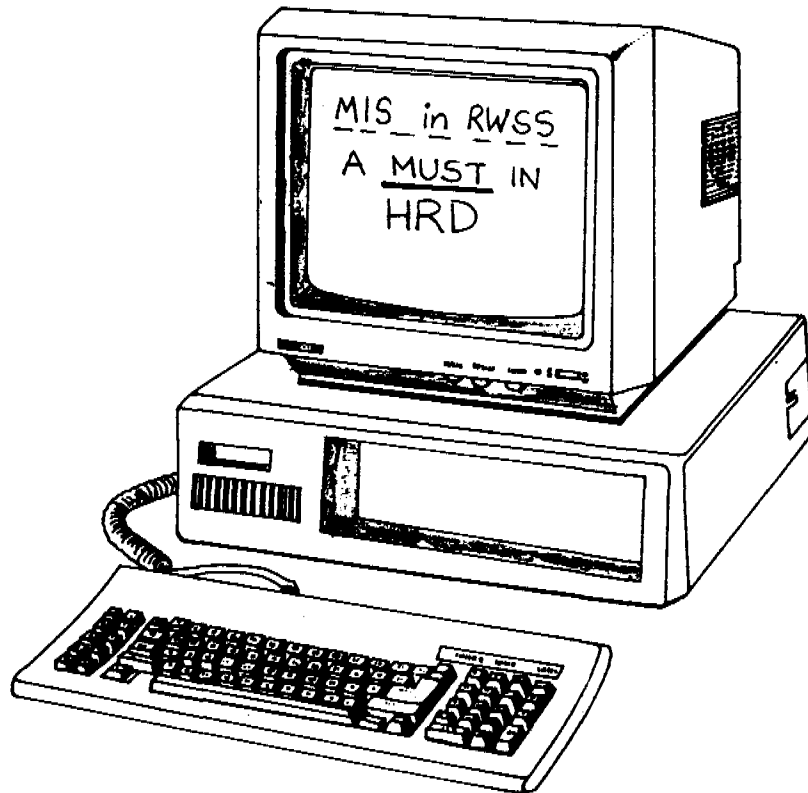
Besides a planned HRD programme, the areas which required awareness, education and skill strengthening are geohydrology, integrated approach to water management, use of satellite imageries, geophysics and system approach in project planning including financial management. In order to achieve this, various national institutions were identified. In certain areas, bilaterals and international agencies were tied up to develop such specialised programmes. All these needed a planned, coordinated and continuing programme well knitted in the totality of the HRD. There is also the need for development of specialised institutions and centres of study exclusively geared to the new thrust and modern concept of HRD in RWSS sector. Ghosh further notes (op. cit.), 'India's rural sector provides an unique scope of integration of rural development programme, activities under health, education, afforestation, water conservation, etc., with drinking water and sanitation and accordingly a new HRD model could be developed. Besides these, village level workers, teachers, pump mistries, TRYCEM workers, women and child development workers could also be trained and made aware the RWSS sector and involved. The role of women is very vital. Thrust should be given to educate and train them in 'water management and sanitation'. Voluntary organisation should be actively involved in the programme by providing adequate training.

Implementation of all these HRD activities required elaborate planning involving a large number of organisations and their networking. Hence, Missions approach achieves significance as it was possible to start implementing some of these programmes'.

2.4 Mission's efforts

Since inception Mission was conscious about human resources development, but it moved cautiously to provide services in all directions without being partial to any one sub-sector. The urgent need was covering the 'problem' villages. In order to achieve this objective, the mission contracted with several scientific and technical organisations of the country who wholeheartedly agreed to support the missions programme with water technologies viz. scientific source

finding, eradication of guinea worm, removal of excess fluoride, desalination, water conservation and water harvesting, use of solar photovoltaic power for pumping water and management information system (MIS). All these were knitted in the fabrics of the Mission approach (see the technological network presented in the form of schematic diagram).



2.4.1 Appreciation visits

The nodal agency at the state level and below has been the network of State Public Health Engineering Department/Water Board. In order to bring them in tune to the concept of Technology Mission, appreciation visits were organised for senior public health engineers to various scientific research establishments. This aimed at exposure to water technologies and face to face discussion with scientists and technologists about the scope of their application in the field. Regional meetings of senior engineers were organised to sensitise them about Technology Mission philosophy and to facilitate a direct dialogue with Mission officials about clarification on mission's innovative management and multi-disciplinary approach.

2.4.2 Preparation of DPR

One of the most important gap recognised was lack of base line data to enable to plan the RWSS programme. A special orientation programme was accordingly organised for public health engineers about importance of baseline survey and preparation of detailed project report (DPR).

2.4.3 Training*

This was followed by training of middle level and rural level engineers in demystification of water and sanitation technologies (identified to be promoted in the villages). The following information presents the initial efforts made by the mission in involving various institutions in organising short-term training courses and orientation in various subjects:

Courses	Institutions
1) Water quality testing and monitoring	NEERI, ITRC, DL(J), AIIH&PH, SJCE (Mysore), BARC, RRL (Jorhat)
2) Scientific source finding	NGRI, CGWB, SAC
3) Desalination	DL(J), BARC, CSMCRI
4) Guinea worm eradication	NICD, SWACH, NCL, CEE

* The author was associated in the programme both in CSIR and DRD (NDWM)

	Courses	Institutions
5)	Fluoride removal	NEERI, NIDC, AIIMS
6)	Iron removal	NEERI, NIDC
7)	Use of ferrocement in water harvesting	SERC(G)
8)	Rainwater harvesting in arid areas (Tankas)	CAZRI
9)	Sanitation	Safai Vidyalaya, ALLH&PH, NEERI
10)	Management Information System	NIDC
11)	Quality monitoring and standards	BIS

2.4.4 In some of the above programmes, representatives of voluntary agencies were also trained. In the training course on water quality monitoring, these trainees were given one portable water testing kit.

2.4.5 **Water management workshop**

Workshops were organised to review the state of art and discuss jointly with public health engineers, experts, scientists, voluntary agencies about water management including water harvesting and water conservation in different geo-climatic zones.

2.4.6 Field level training were conducted by SERC in remote areas, hill areas, in the north-eastern region and Andaman & Nicobar islands. Field level awareness camps were also organised in defluiridation and iron removal in situ where the problem existed.

2.5 THE SHORTCOMINGS

While the above efforts generated a definite sense of appreciation and awareness about the mission's approach, these were taken on an adhoc basis. The shortcomings in the then programmes for orientation and training were identified as under :

- 2.5.1 These training programmes though progressed with mission's field level installations to cover 'problem' villages, it lacked in transfer of skills appropriate to engineers own level of understanding, receptivity, their conventional system of working, lack of in-situ resources, constraints of workplace in term of adaptability, applicability and replicability.
- 2.5.2 The programmes organised were generally confined to training in handling the hardware, they, however, lacked exposure to cost-effectiveness, social aspects, linkages with other disciplines, and O&M aspects. Role of industries was not taken care of and contents. There were different syllabus for the same subject by different institutions with no coordination with each other.
- 2.5.3 While a number of problems existed in the operation and maintenance (O&M) of hardware installations in RWSS, a major gap was recognised of inadequate inservice training and non-availability of required trained personnel in sufficient number at the decentralised level. Inadequate efforts were made in training rural youth and women who could take the responsibility of 'preventive maintenance' and reporting the problems to concerned authorities.
- 2.5.4 There has generally been one way traffic in giving the training, as less attention was given to 'Learning Process' and assimilation of new knowledge and skills which differ from person to person. Little effort was made in generating faith in terms of cost reduction, increased efficiency of performance and practicablity of its application of new skills in trainees own workplace. Such comprehension perhaps lacked among trainers themselves.
- 2.5.5 An important gap was identified about lack of orientation to the senior officials, planners, policy makers, heads of finance and others who control the RWSS sector in the states. This was a major constraint in smooth sailing of mission's projects and their implementation by plant level engineers.



The friend external resource persons are mostly available at airports.

- 2.5.6 The faculty members and resource persons of training institutions and engineering colleges generally have little linkage, exposure and awareness about rural conditions, its infrastructural constraints and social behaviour of the people. Hence, their knowledge were mostly urban oriented. This gap needed orientation to such trainers in rural realities.*
- 2.5.7 There was little feed-back and linkage between S&T institutions, trainers and trainees. There was practically no comprehension of needs, priorities and expectations of consumers and beneficiaries (of RWSS system) specially the underserved and unserved. The same situation was about lack of knowledge and appreciation of tasks performed by various categories of professionals, engineers and craftsmen.**
- 2.5.8 Community women the managers of water supply in villages were never considered as user and beneficiaries and were completely neglected for any consultation.
- 2.5.9 The subject of environmental sanitation for that matter health and hygiene related aspects of drinking water was completely ignored in water supply and orientation programme.
- 2.5.10 The concept of promotion of 'management concept' perse was not thought of in its entirety. this 'management' chain and its linkages from grassroots upwards was not conceived by the planners and managers of water supply.
- 2.5.11 The approach generally remained heavily weighed on hardware. Software was scantily used perhaps due to lack of appropriate knowledge, education and training.

* What do we mean by rural realities in terms of proposed HRD in RWSS? The question was posed to the author during his heart searching meetings with water engineers and decision makers. The subject will be discussed in a subsequent study under the title 'know your environment of work place'.

** The author feels (based on his interaction with field level engineers and technicians) that no formal decision has been taken as who will be responsible for 'rural sanitation'. This is a burning issue needing special attention under HRD planning.

This subject will be discussed in subsequent study.

2.6 Experience

- 2.6.1 In order to bridge some of the above gaps, the Mission set-up coordination committees, evaluation committees, project committees and technology awareness groups (TAGs). In spite of genuine intentions and efforts of the mission, the desired expectations could not be met with. In many cases, these committees did not meet regularly. There was little effort towards follow-up action, resulting in diffusion of efforts.
- 2.6.2 Experience indicated that close collaboration with the space science, geoscience, biochemistry, biotechnology, social sciences, water technologies, management sciences and communication technologies was equally important, along with environmental engineering to make the programme successful. It was, therefore, recognised that the public health engineers be exposed to multi-disciplinary culture of the 'Technology Mission' and in specialised fields to enable them to carry out necessary orientation in approach and content of RWSS programme at the field level.
- 2.6.3 Ofcourse, there was lack of resources at the Mission's level. Due to priorities and commitments for coverage of all 'problem' villages within available resources and time-frame, the Mission could not provide adequate thrust to an organised HRD programme which needed involvement of a large number of institutions, government departments and experts; networking and establishing of inter-linkages between them, the engineers and the rural community; coordination and monitoring at all levels particularly the village, block, district and state level.

This needed a scientific and systematic planning for HRD for RWSS sector on a long term basis. This also needed a sound training base, specialised training institutions and resource persons who could take up the challenging task of qualitative and quantitative upgradation of existing situation.

2.7 Bilateral training programmes

While these efforts were on, bilaterals cooperation came to the rescue of the Mission in providing training to selected public health engineers. Short-term training under ODA (UK) comprising of special courses in water and sanitation, water management, waste water and solid waste management, management of water supply and distribution, etc. organised by the University of Bradford, Loughborough, Reading and New Castle. Long term training course (12-24 months) organised by The Netherland, Government;

3. OBJECTIVES

The broad objectives of the HRD for RWSS system have been identified as under :

- 1) to help strengthen the mission's system approach and achievement to multiply and expand with speed and economy;
- 2) to help sensitisation in management and social mobilisation accountability;
- 3) to help in facing challenges and sharing responsibility for problem identification and problem solving;
- 4) to help acquiring know-how and know-why to generate openness and broad outlook by all the participating community both the managers and the users;
- 5) to help in making the 'best better' of the trainers-trainee and the trainees to develop a detailed understanding in planning, decision making, management of natural calamities, health hazards, social mobilisation approaches and techniques, etc., and their application in work activity; and
- 6) to help development of a cadre of trainers in different disciplines of art and science of RWSS.

3.1 Potential Objectives

While above are the objectives for the prospective, the potential objectives are outlined below :

- 1) to identify different and perceived roles of available manpower and new entrants to establish training in appropriate education, skill and learning;
- 2) to develop competence and capability of imparting training (in the context of rural backdrop and varying social environments) in learning process, and module and curriculum design, aids to help learning and needed action-study;
- 3) to develop an understanding of the concept and practice of training to enable wider application and appreciation of RWSS programme at various levels; and
- 4) to meet specific needs of the trainers/trainees and others.

4. CONTINUING EDUCATION

Continuing education is regarded as part of career education that concerns itself human development and human resources development aimed at development of professional competence and the technical and managerial knowledge. As time passes, the contents of these training and education keep changing and varying from one situation to another as also from job to job. Because of its great diversity, no structured set of educational programmes can be introduced to meet the entire need including specialised needs. Hence, continuing education hinges on the individuals work activity and environment in which they work and their capacity to learn. Sometimes, supervisors ignore the trainees' efforts to employ the new techniques learnt and they have to do according to the wishes of their bosses. This calls for continuing education of supervisor level people also to enlist their support.

- 4.1 A specially designed continuing education for 'change' is expected to focus more on 'LEARNING' and qualitative and quantitative development in the education process and practise. The criteria of success should be an expanded and sustained leadership of engineers and users for action at the field level to promote needed boost in effectiveness of RWSS programme and extension of these services particularly to low-income, low-education and socially weaker sections of rural community including women.

4.2 Application of continuing education

The training in RWSS should be imparted in a free, frank and friendly environment radically different from the participant's own bureaueratic environment. Much emphasis should be laid on application of what is learnt in the 'trainees' own work situation. Provision should also be made to help the trainees to plan application of new learning in their own work place. They should submit such a report duly attested by the Training Director to their Head of the Departments. The Training Director will follow this with the concerned department for implementation.

5. CENTRE OF EXCELLENCE

In order to implement human resources development and related research programme most effectively, it would be advisable to set up Centres of Excellence (COE) for organising training and studies in rural water supply and sanitation. All the components of the human resource development and research could be undertaken by these centres which would also act as nodal catalytic institution for trainers training and faculty development programme of other training Institutes at the post-graduate, graduate, polytechnic and ITI level in the region. These COE should be established in Institutes with traditional background of training and teaching in rural water supply and sanitation with adequate multidisciplinary expertise in public health and environmental engineering and health and social sciences (also refer part 6 of this report).

5.1 Altogether 5 such centres should be established in the country to cover the following zones :

1. Eastern and North Eastern
2. Southern
3. Northern
4. Western
5. Central

Initially, following institutions could be identified as COE :

1. All India Institute of Hygiene and Public Health (AIIPH), Calcutta (West Bengal)
2. Gujrat Jalseva Training Institute (GJTI), Gandhinagar (Gujarat)
3. S.J.College of Engineering, (SJCE) Mysore (Karnataka)
4. Institute of Engineering and Rural Technology, (IERT) Allahabad (Uttar Pradesh).

5.2 DRD should provide necessary resources to these centres in terms of additional faculty support and infrastructural facilities to organise continuing education and trainers training programme.

6. DESIGNING AND PLANNING

The training and education should be designed for professionals, technicians and management personnel at (i) Junior level, (ii) Middle level, (iii) Senior level, and (iv) Decision makers level.

Target trainees are expected to include the following :

1. Policy makers/planners/managers
2. Administrators/Finance experts
3. Economists and statisticians including MIS staff
4. Communication and information personnel
5. Hydrologists/geologists
6. Water Quality Testing Laboratory Technicians, Chemists and Field staff
7. Plant Level mechanics and craftsmen
8. Officials of NDWM at the Centre and at mini mission level
9. BIS
10. Industries associated with supply, installation and operation of plants
11. Medical/health personnel
12. Panchayats and Zilla Parishad
13. Village Level functionaries
14. Institutional - associated with vilage institutions, ICDS, DWACRA, Literacy mission, Immunisation mission, school/college teachers, Krishi Vigyan Kendras (KVK), Community Polytechnics, Para-medical staff, Primary Health Centres.
15. Motivators/activists
16. Voluntary agencies

7. COURSES FOR TRAINING

There should be combination of tailor made programme for specific job and task of professionals, technicians, policy makers/planners and managers for operational convenience in term of multi-disciplinary nature of RWSS sector. Modular programme should however, be subject specific with flexibility in its contents. Such an approach should meet the needs of personnel across various levels, designations and responsibilities. This approach could consist of following type of courses :

- | | | |
|----|--|------------|
| 1. | Orientation workshop | 3-5 days |
| 2. | Refresher courses | 10-15 days |
| 3. | Short courses (Certificate courses) | 12 weeks |
| 4. | Intermediate level course for new entrants for graduate/diploma holder | 5 weeks |
| 5. | Diploma course in Environmental Engineering/RWSS | 2 years |
| 6. | Degree course in RWSS & environmental engineering | 4 years |
| 7. | Post Graduate Course | 2 years |

7.1 Training of trainers

Some of the Public Health Engineering Departments and Water Boards in States like Gujarat, Maharashtra, Tamil Nadu, Kerala and U.P. have already started their in-house training institutes. It is necessary that trainers of such institutes are trained in various aspects of RWSS and in teaching methodologies. For this purpose, trainers training course should be organised at the Centre of Excellence (Participating Institution of ITN) in association with specialised institutions having adequate expertise and traditional background. Similarly, faculty members of Graduate Engineering Colleges, Polytechnics and I.T.I. also need orientation in in RWSS systems along their health and socio-economic implications.

7.2 In order to meet the growing demand of water engineers and low capacity of institutes offering Post-Graduate Courses in Public health Engineering, it is proposed that DRD should sponsor approximately 100 in-service engineers in various institutions for Master of Engineering in Public Health. Urban Development Ministry is sponsoring each year about the same number of candidates in different institutions. DRD could take up this matter with various institutions (presently offering Post Graduate courses in Environmental Education and health Engineering) about their willingness to accomodate candidates sponsored by the Department of Rural Development. These institutes could also be indicated in advance that such candidates would be provided appropriate rural bias teaching which should include vital problem affecting the drinking water supply and sanitation in rural areas.



A training in application of computers in RWSS in progress
at Gujarat Jalsewa Training Institute, Gandhinagar

8. COURSE SUBJECTS

The broad areas of training for various types of courses could consist of the following subjects :

1. Project planning, monitoring and evaluation; expected output and their measurement including operational considerations at village level.
2. Scientific source finding - Remote sensing, Geophysical/ Geohydrological surveys.
3. Source development : drilling, evaluation of aquifer parameters; pumping test, rig monitoring and hydrofracturing.
4. Management of surface and groundwater sources and designing of transmission and distribution.
5. Water quality : Monitoring and surveillance including management of water quality testing laboratory (stationary, mobile and portable kits).
6. Guineaworm eradication
7. Iron - Removal of excess iron
8. Fluoride - Defluoridation
9. Slow sand filtration
10. Disinfection/Chlorination
11. Salinity/Brakishness - Desalination including mobile desalination unit
12. Water Management
 - 12.1 Water harvesting structures
 - 12.2 Roof catchment
 - 12.3 Improvement of traditional sources
 - 12.4 Watershed management
 - 12.5 Use of ferro-cement technology for storage tanks and small check dams.
13. Rural Sociology - social mobilisation, people's participation and involvement of women including motivation, preparedness, culture of ownership, empowerment, formation of water and sanitation committees.
14. Software - communication, media, information, IEC, KAP, etc.

15. Handpump technology, VLOM pumps, shallow wellpumps including Tara' pump, involvement of women in O&M, supply of spares and installation equipment.
16. SPV and its application in RWS
17. Materials management : standards and quality control
18. Management of O&M at village level: operators, mechanics, caretakers and related feed-back mechanism and reporting.
19. Base line survey techniques and preparation of DPR.
20. Legislation and procedures for land acquisition for RWSS assets.
21. Water requirement modeling, water balance studies and pricing of water.
22. System of development of linkages with other development agencies, handling of conflicts, departmental rivalries, problem identification, and problem solving, people's access to water sources specially rural poor and weak.
23. Cost and cost-consciousness - cost estimates, cost benefit/social cost, cost-effectiveness, cost-consciousness, cost recovery, costing of supply of safe water per litre/head including per cattle.
24. Financial management : tendering, identification of entrepreneur, placement of order, inspection at various levels, contract with entrepreneurs for pre and post delivery.
25. Methods of vulnerability assessment and techniques for the development of management strategies for natural calamity and climatological hazard reduction measures aimed at protecting lives and the natural resources base.
26. Management Information System: objectives, concepts and specific techniques for data processing, analysis, presentation of results, use of computers, practical application of system analysis, concepts of simulation, optimisation and decision analysis techniques.
27. Environmental Engineering :
 - i) Health aspect of drinking water,
 - ii) Behaviour for personal hygiene,
 - iii) Low cost sanitation - domestic and community,
 - iv) Waste water disposal including drainage system, and
 - v) Management of solid wastes
28. Involvement of women in RWSS

8.1 COMPULSORY AND COMMON SUBJECTS FOR ALL COURSES

The following subjects should be covered in all courses irrespective of their specialisation :

1. Water Mission, India - an integrated and multi-disciplinary approach.
2. Rural sociology and social mobilisation
3. Role of S&T
4. MIS and use of computer
5. Water quality assurance for health for all
6. Cost and cost-consciousness
7. Preparation of case studies
8. Communication software

8.2 For participatory learning, group discussion, case studies and exchange of experiences would an important system of training. Each trainee would be informed in advance to come well prepared to present a case study in the area of their working, covering subjects of their choice.

9. **INTERNATIONAL TRAINING NETWORK PROGRAMME AT THE ALL INDIA INSTITUTE OF HYGIENE AND PUBLIC HEALTH (PARTICIPATING INSTITUTION)**

A substantial part of the continuing education programme as envisaged would be contributed by the International Training Network (ITN) to be conducted initially at the AIIH & PH Calcutta, with the financial support mainly from ODA. Under this programme, AIIH & PH will run a number of training programmes for trainers. In addition, a number of refresher and short term courses will also be run for engineers, professionals, teachers and instructors of Engineering Colleges, Polytechnics and ITIs. In the long run, institute would initiate for necessary modification in the graduate and post-graduate courses in public health and environment sanitation and engineering to incorporate the much needed rural bias to fulfil the training needs of India's villages.

The ITN programme has already been approved by the Government of India (discussed in detail in part 6 of this report).

10. HUMAN RESOURCES DEVELOPMENT

ASSESSMENT OF CURRENT AVAILABILITY AND PROJECTION FOR VIII FIVE YEAR PLAN

Assessment of current availability of professionals and technicians in Water Supply and Sanitation Sector as on 31 March, 1981, has been determined by the Ministry of Urban Development (CPHEO)*. There has, however, been no separate data available of such manpower deployed for rural areas. The subject was discussed by the Committee (National Drinking Water Mission, Department of Rural Development, Government of India) and it was decided that an assessment in form of current availability and future requirements in VIII F Y P for RWSS sector may be worked out on the basis on human resources status on 31st March, 1981. This approach was required not only to bridge the human resources gaps identified by the Mission in rural areas but also to plan the continuing education and training programmes for the total human resource for rural sector.

- 10.1 It is on the basis of above projections that training programmes be may planned, designed and earmarked to Centres of Excellence, Specialised Institutions and State Institutes for coverage during the VIII Five Year Plan.
- 10.2 To assess the correct position, each state should prepare their human resources data as discussed in part 1 (page 13) of the report.

* Refer : National Master Plan - India, July, 1983

Requirement of manpower for the VIII Five Year Plan - PROFESSIONALS

Percentage - double of existing and % for rural sector
Existing-as on 31 March 1981

Sl.	State/UT	Percentage calculation for rural sector %	Plant Operators		Draughtwomen		Mechanics/ Electricians		Fitters Plumbers		Lab Technicians		Well Drillers	
			Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	Ex.VIIIIP	
1.	Andhra Pradesh	50	812	812	537	537			51	51				
2.	Assam	90	126	239	163	293			17	31				
3.	Bihar	80	426	682	682	940			72	115			3	5
4.	Gujrat	60	450	540	416	499	1	1	38	46			35	42
5.	Haryana	80	133	213	400	640			25	40			3	5
6.	Himachal Pradesh	90	88	158	339	610			26	47			4	7
7.	Jammu & Kashmir	80	174	278	217	347	1	2	25	40				
8.	Karnatka	50	859	859	649	649	2	2	96	96			20	20
9.	Kerala	60	591	709	308	370	2	2	35	42			1	1
10.	Madhya Pradesh	80	484	774	2053	3285			72	115			8	13
11.	Maharashtra	50	1165	1165	1623	1623			57	57			8	8
12.	Manipur	95	55	105	160	304			9	17			2	4
13.	Meghalaya	95	76	144	193	367			11	21			9	17
14.	Nagaland	95	13	25	42	80	1	2	7	13				
15.	Orissa	80	217	347	440	704	1	2	23	37			1	2
16.	Punjab	60	307	364	781	937			86	103			1	1
17.	Rajasthan	80	711	1138	593	949	1	2	75	120			6	13
18.	Sikkim	90	27	49	71	128			7	13				
19.	Tamil Nadu	50	1136	1136	490	490	2	2	131	131			11	11
20.	Tripura	95	21	40	82	156			3	6				
21.	Uttar Pradesh	60	1245	1494	3300	3960	2	2	193	232	3	4	12	14
22.	West Bengal	60	374	449	1259	1511	1	1	62	74	6	7	5	6
23.	A&N Island	95	20	38	18	34			2	4				
24.	Arunachal Pradesh	95	25	48	119	226			2	4				
25.	Chandigarh	-	31	-	84	-			6		1		2	
26.	Delhi	50	164	164	384	384			24	24			45	45
27.	Dadra & Nagar Haveli	90	2	3	2	4			1	2				
28.	Goa, Daman & Diu	90	28	50	21	38			1					
29.	Lakshadweep	90	1	2	2	4								
30.	Mizoram	95	8	15	46	87			6	11			1	2
31.	Pondichery	80	10	16	23	37			1	2				
Total			9779	12056	15755	20757	14	18	1164	1494	10	11	179	216

Professional Personnel - present position (as on 31st March, 1981) and requirements for the VIII Five Year Plan for RWSS sector - Abstract for the whole country.

Sl. No.	Manpower category	Existing as on 31.3.1981 *	Number required for rural sector in the VIII FYP.
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PROFESSIONALS

1.	Engineers (Degree)	9779	12056
2.	Engineers (Diploma)	15755	20757
3.	Financial analysts/ Economists	14	18
4.	Accountants (Divisional)	1164	1494
5.	Social Scientists/ Health Educators	10	11
6.	Sanitary chemists/ Biologists	179	216
7.	Hydrologists/Geologists	72	83
Total		26973	34635

* Refer : National Master Plan - India, Ministry of Works & Housing, Govt. of India, New Delhi, July 1983. pp.59.

Requirement of manpower for the VIII Five Year Plan - TECHNICIANS

Percentage - double of existing and % for rural sector
Existing-as on 31 March 1981

Sl.	State/UT	Percentage calculation for rural sector %	Plant Operators Ex.VIIIIF	Draughtomen Ex.VIIIIF	Mechanics/ Electricians Ex.VIIIIF	Fitters Plumbers Ex.VIIIIF	Lab Technicians Ex.VIIIIF	Well Drillers Ex.VIIIIF						
1.	Andhra Pradesh	50	109	109	154	154	753	753	156	156	2	2	122	122
2.	Assam	80	-	-	21	34	20	32	30	46	-	-	20	32
3.	Bihar	80	120	192	277	443	1120	1344	1650	2640	30	48	45	72
4.	Gujrat	60	496	395	120	144	183	220	200	240	17	20	39	47
5.	Haryana	80	1600	2560	111	178	326	522	400	640	2	3	13	21
6.	Himachal Pradesh	80	10	16	200	320	-	-	180	288	4	6	-	-
7.	Jammu & Kashmir	80	41	66	86	141	80	128	65	104	-	-	6	10
8.	Karnataka	60	462	555	220	264	575	690	150	180	11	18	26	31
9.	Kerala	50	1900	1900	573	573	50	50	130	130	-	-	35	35
10.	Madhya Pradesh	80	215	344	617	967	97	155	81	130	6	10	161	258
11.	Maharashtra	50	423	423	99	99	200	200	183	183	6	6	78	78
12.	Manipur	90	150	270	65	117	117	30	250	450	3	5	-	-
13.	Meghalaya	90	15	27	16	29	29	48	-	-	-	-	7	13
14.	Nagaland	90	-	-	10	18	6	11	50	90	1	2	-	-
15.	Orissa	70	10	14	41	57	354	596	79	111	1	1	27	38
16.	Punjab	60	1624	1949	187	224	187	224	190	228	3	5	12	14
17.	Rajasthan	80	1010	1616	137	219	154	248	674	1078	23	37	9	14
18.	Sikkim	90	-	-	7	13	50	90	500	900	-	-	-	-
19.	Tamil Nadu	50	711	711	547	547	469	469	498	498	9	9	72	72
20.	Tripura	80	4	6	60	76	10	16	100	160	4	6	8	13
21.	Uttar Pradesh	60	591	709	606	727	215	256	200	240	-	-	53	64
22.	West Bengal	50	93	93	123	123	690	690	817	817	15	15	43	43
23.	A&N Island	80	17	27	2	3	4	6	24	38	-	-	-	-
24.	Arunachal Pradesh	90	-	-	30	54	-	-	80	144	-	-	-	-
25.	Chandigarh	-	513	-	15	-	9	-	59	-	-	-	-	-
26.	Delhi	30	175	105	100	60	535	321	-	-	30	18	-	-
27.	Dadra & Nagar Haveli	60	-	-	1	1	2	2	-	-	-	-	-	-
28.	Goa, Daman & Diu	60	130	156	40	48	43	52	37	44	-	-	-	-
29.	Lakshadweep	90	-	-	-	-	-	-	-	-	-	-	-	-
30.	Mizoram	90	2	4	4	13	5	9	36	65	1	2	-	-
31.	Pondichery	60	2	2	7	8	30	36	51	61	-	-	-	-
Total			10423	12449	4506	5693	6245	7249	6870	9661	168	213	776	977

Technical Personnel - present position (as on 31st March, 1981) and requirements for the VIII Five Year Plan for RWSS Sector Abstract for the whole country.

Sl. No.	Manpower category	Existing as on 31.3.1981 *	Number required for rural sector in the VIII FY
TECHNICIANS			
1.	Plant Operators	10423	12449
2.	Draughtsmen	4506	5693
3.	Mechanics/ Electricians	6245	7249
4.	Fitters/Plumbers	6870	9661
5.	Laboratory Technicians	168	213
6.	Drillers	776	977
Total		20,988	36,242

* Refer : National Master Plan - India, Ministry of Work Housing, Govt. of India, New Delhi, July 1983, pp

PART FIVE

**RESEARCH AND DEVELOPMENT (R&D)
IN RWSS**

PART FIVE

RESEARCH AND DEVELOPMENT (R&D) IN RWSS

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INTRODUCTION

Science and Technology (S&T) has been an integral part of the Mission programme with focus on sub-missions and related activities in villages. In order to bridge certain gaps and shortcomings of the programme (op.cit), a number of R&D projects were sponsored by the Mission to various scientific research organisations of the country (See : annexure MOU between DRD and CSIR). While most of these projects have been completed and utilised directly or through commercialisation, a few are in progress.

1. The experience during the Decade showed that with high investments and increasing costs in RWS&S, it would be extremely essential to develop and adopt low cost, low energy, user friendly and affordable techniques, tools and technologies. The WSS system should be cost-effective in terms of its inputs, O&M, and waste management on one hand and in meeting new challenges of varying degrees in hydrogeological conditions and socio-cultural behaviour of rural community on the other hand. This demanded new solutions of emerging problems and of frontier areas.

2. R&D proposals

In tune to above needs, a few R&D projects are suggested below which could be sponsored by the Mission to appropriate research organisations :

1. Development of local infrastructure to fabricate handpumps and well screens;
2. Small and low-cost waste water stabilisation pond design development;
3. Development of household defluoridation and iron removal units;
4. Solid waste disposal system for scattered, congested, and thickly populated and drought prone villages;
5. Crisis management with reference to drought;
6. Water harvesting engineering for higher altitude, hills, arid zone and drought prone areas;
7. Pollution abatement and control due to human activities; and
8. Use of low cost materials and alternate materials in RWS.

3. R&D proposals made by the Planning Commission's Working Group (April, 1989)

The Working Group also discussed the subject and suggested new areas of R&D in RWSS (refer annexure 1 and 2 of this part).

3.1 The Working Group recommended that an allocation of Rs.50 crores be made in VIII FYP for these R&D projects (refer para 8, p.16 of the Working Group report).

4. Action - Research in behavioural science

Experience of working with those empowered and engaged in RWSS system demanded study relating to behavioural aspects of such personnel in relation to their responses to mission activities, social interaction and sanitation programme. The behaviour could be influenced by personal, social, educational, familial, psychological, organisational, bureaucratic and professional, traits of such functionaries.

It would, therefore, be interesting if the Mission sponsors action-research project on 'factors influencing behaviour of a water manager/engineer to activities relating to modern systems of RWSS' and identify those elements which may smoothen their active support and participation in the programme.*

4.1 Behavioural study of rural community

A similar study would be desirable in case of behaviour of rural community and community women towards sector's system. This is generally influenced by socio-cultural heritage, income and education levels, habits, attitudes, resources and awareness.*

4.2 These studies will help in strengthening HRD programme of the sector.

* Details about behaviour sciences in relation to RWSS sector and their linkages with HRD will be discussed in another study later.

Suggested R&D Topics for Rural Water Supply

WATER: Conventional approaches, systems and design criteria need to be reviewed against the background of community participation and acceptance, and low cost technological options. The following topics for research and development are relevant for consideration:

1. Community Participation, Behavioural Pattern and Technology Transfer Aspects of Water Supply

Study the effectiveness of various methods and techniques to involve the communities for effective participation and assess their impact on the people's knowledge, attitude and practice.

2. Evaluation and Assessment of Rural Water Supply System

Evaluation critically and assess the design, construction, performance and operation of rural water supply schemes including the impact of health, social and economic status of community and suggest measures for improvement.

3. Optimum Number of Public Stand Posts vis-a-vis House Connections for Rural Water Supplies

Suggest guidelines for provision of number of standposts and house connections taking into account socio-economic conditions, financial constraints, community participation etc.

4. Field Studies on Preventive Maintenance of Water Distribution System with reference to Leakages & Carrying Capacities of Mains

Assess the wastage of water in distribution system due to leakages, undertake projects for control of wastages and to assess the efficacy of control measures, to measure in the field the carrying capacity of mains as basic input data for design and operation, and evaluate errors associated with estimation thereof.

5. Hydraulic Analysis and Optimum Design of Water Distribution Systems

Develop indigenous electric pipe line network analysers, and follow optimisation techniques and systems approach (use of computers) for analysis and design of distribution systems.

6. Design Norms form Intermittent Water Supply

Work out norms for design and operation of systems with intermittent water supply.

7. Recharge of Groundwater and Conjunctive Use of Ground and Surface Waters Undertake studies on feasibility of recharge of groundwater with surface runoff especially in water scarce regions.

8. Simple, Continuous and Effective Method(s) of Disinfection for Rural Water Supply

Study, assess and develop, if need be, the various simple disinfection devices suitable for small water supplies.

9. Extension of Rapid Bacteriological Techniques

Undertake field trials and inter-laboratory studies of some of the newly developed rapid techniques for bacteriological analysis.

10. Development of Spring for Water Supplies

Study and gather information on effective utilisation of springs.

11. Simple and Effective Water Treatment Methods for Surface Water

Develop systems without or with minimum use of chemicals and mechanical gadgets.

12. Use of Filters without Rate of Flow Controllers and Other Sophisticated Equipment

Carry out field and pilot scale studies on design and operation of filters without gadgets and using alternative simple devices, if need be.

13. Development and Field Testing of Methods for Residual Chlorine Determination

Compare various methods and develop suitable alternative methods to orthotolidine tests for determination of residual chlorine.

14. Development of Natural and Inorganic Coagulants
Identify and develop alternate materials for use as coagulants in place of conventional ones.
15. Use of Solar Energy in Rural Water Supply
Investigate the feasibility of using solar energy for rural water supply schemes especially with reference to removal of dissolved solids from brackish water for pumping.
16. Use of Wind Mills
Carry out field studies on use of wind energy for pumping and for mixing.
17. Studies on Tube and Plate Settlers
Investigate application on tube/plate settlers to upgrade existing plants and develop compact units.
18. Handpumps, Strainers and Substitute Materials
Identify the components of handpumps that need attention, improve the performance, and use of alternate materials.
19. Alternate Materials for Pipes for Species in Water Supply System (to suit different soil conditions to resist chemical action)
Prepare soil maps with reference to corrosivity in different cities and towns, identify materials to suit various soil conditions, and develop inexpensive protective coatings and linings and their field testing.
20. Evaluation and Development of Reliable Rubber Ring Joints & Jointing Materials for Pipes
Develop standards
21. Infiltration Wells, Galleries and Intake Structures
Study the hydraulics of flow through porous media, and develop suitable design and code of practice for infiltration galleries and wells.

22. **Water Meters, Flow-rate and Water Level Measuring Devices**
Develop simple, sturdy and reliable instruments for recording (without use of electricity).
23. **Tube Well Construction and Development**
Evolve proper rational design for tube well, gravel filter pack and strainers and methods for reconditioning derelict tube wells, and explore use of alternate materials for strainers.
24. **Electronic Leak Detectors, Pipe Locators and Valve Box Locators**
Develop simple devices including electronic methods for underground leak detection, location of buried pipes and valve box covers.
25. **Hydraulic Rams for Rural Water Supply in Hilly Areas**
Develop and standardise designs and materials of construction of Hydraulic rams with respect to discharge and high heads for small population in hilly areas.
26. **Reclamation of Backwash Water and Sludge Bleed from Water Treatment Plants**
Carry out field studies on the feasibility of reclamation and reuse of backwash water and sludge bleed from filters and clarifiers respectively.
27. **Reduction in Volume in Waste of Water from Water Treatment Plants**
Evaluate the wastage from existing treatment units, and recommend measures for reduction of waste by proper operation and control.
28. **Control of Evaporation and Seepage**
Evolve practicable cost effective methods for reduction of losses in open storage reservoirs due to evaporation and seepage.

29. Water Quality Management with respect to Water Supply Systems

Assess, rationalise and manage the water quality in the water supply systems.

30. Development of Package Water Treatment Plants

Conduct studies on development of simple package type water treatment plants for hilly areas, and for removal of specific constituents like iron, fluorides, hardness, brackishness, etc.

31. Experimental/Pilot Project Study on the use of Treated Sewage for Recharge of Ground Water at suitable location and its reuse for drinking/domestic needs.

Selected R&D Topics for Rural Sanitation

1. **Development of Sanitary Latrines**
Develop simple inexpensive techniques with different materials for W.C. pan and trap, superstructure, lining of pit, etc.

2. **Operation and Maintenance of Individual/Community Latrines**
Study community attitude and engineering aspects regarding operation and maintenance of individual/community latrines.

3. **Composing of Household Wastes and Nightsoil**
Develop simple and hygienic methods of making compost with household waste and nightsoil.

4. **Integrated Bio-gas System for Treatment of Excreta and Animal Wastes and Utilisation of Gas.**
Develop and undertake field studies on integrated approach for the treatment of excreta, use of biogas and utilisation of effluent for agriculture and aquaculture.

5. **Low Cost Waste Water Collection & Disposal System**
Evaluate and assess simplified collection and disposal system.

6. **Package Wastewater Collection and Treatment Units for Small Communities**
Develop low cost and simplified package wastewater collection and treatment systems for small communities.

7. **Community Latrines Attached to Bio-Gas Plants**
Evaluate the performance of communal latrines directly connected to bio-gas plants.

8. Community Organisation Patterns

Study and develop sociological and health education methods for community acceptance and participation for maintenance and operation of sanitary facilities.

9. Sanitary Latrines Suitable for Rocky/Impervious/Water Logged Areas

Evolve suitable sanitary pit type latrine or alternate devices suitable to rocky and water logged areas.

10. Impact on Human Health

Epidemiological studies on the impact of sanitary facilities on human health.

11. Water Pollution due to Pit Privies

Make detailed field studies on travel of groundwater pollution due to pit privies for different soil conditions.

12. Mechanism for Removal of Human Excreta/Sludge

Develop simple systems, vacuum tankers, etc. for clearing cess pools and septic tank desludging.



Memorandum of Understanding

Between

Council of Scientific & Industrial Research (CSIR)

and

Department of Rural Development (DRD)

Government of India

Related To

Technology Mission

on

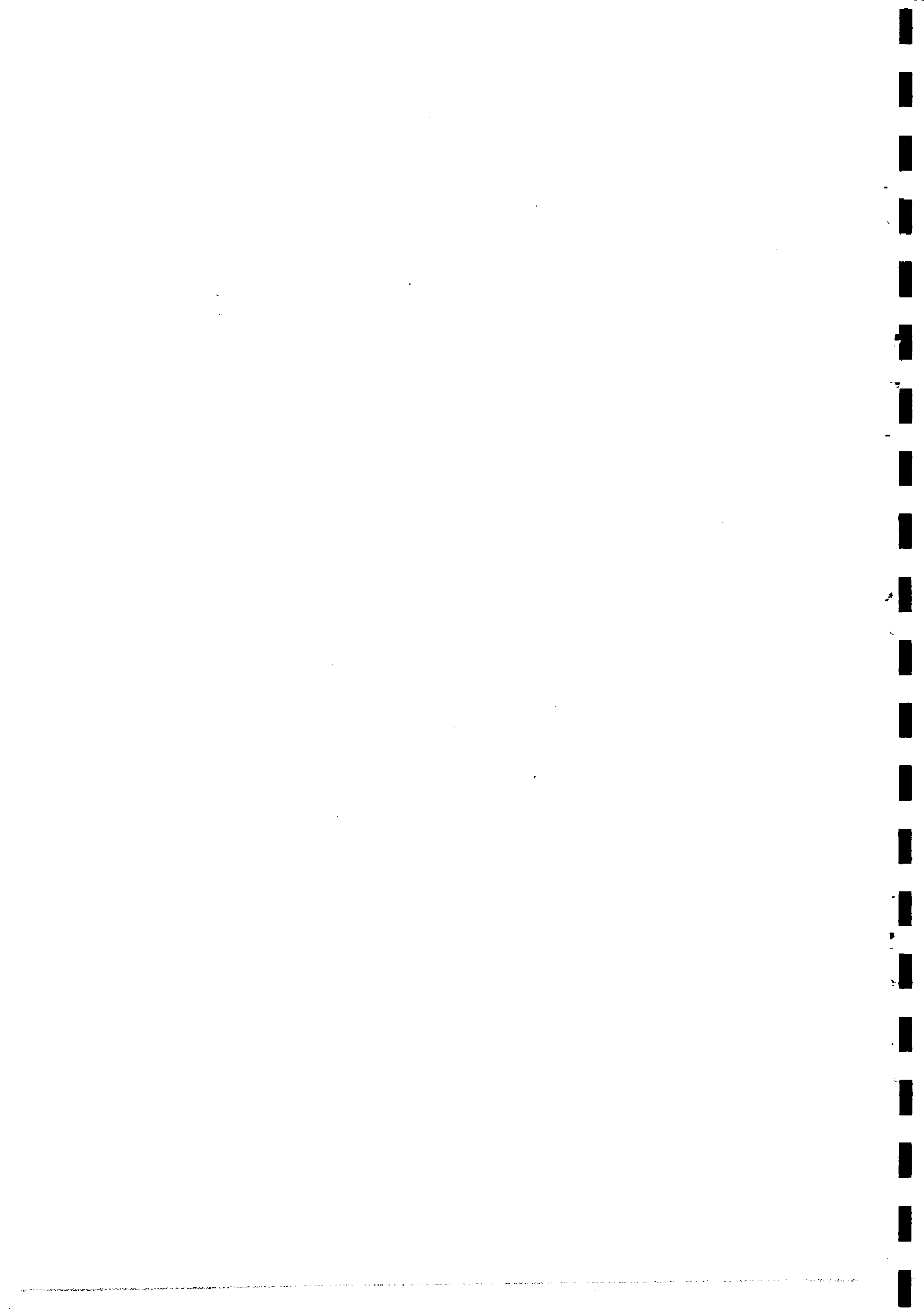
Drinking Water in Villages

and

Related Water Management



27th May, 1987



**MEMORANDUM OF UNDERSTANDING BETWEEN THE COUNCIL
OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR) AND
THE DEPARTMENT OF RURAL DEVELOPMENT
(DRD), GOVERNMENT OF INDIA RELATED
TO TECHNOLOGY MISSION ON DRINKING
WATER IN VILLAGES AND RELATED
WATER MANAGEMENT**

This Memorandum of Understanding entered into on the twenty seventh day of May 1987 between the Council of Scientific and Industrial Research, a society registered under the Indian Societies Registration Act, 1860 and having its registered office at Rafi Marg, New Delhi-110001 (hereinafter referred to as CSIR which expression shall include its representatives, successors and assigns) of the first part.

AND

Department of Rural Development, Ministry of Agriculture, Government of India, New Delhi (hereinafter referred to as DRD which expression shall include its representatives, successors and assigns) of the second part.

PREAMBLE

WHEREAS Government of India has set up a Technology Mission on Drinking Water in Villages and Related Water Management (hereinafter referred to as the TECHNOLOGY MISSION) with the primary objective to improve the performance and cost effectiveness of the on-going programmes in the field of rural drinking water so as to ensure adequate quantity and quality of drinking water on sustainable and long term basis.

AND WHEREAS one of the inputs required to meet this objective is providing low cost, practical and effective solutions to identified problems associated with the supply of safe drinking water in rural areas, through the application of science and technology (S&T).

AND WHEREAS Government of India has selected specific mini-missions and sub-missions in States (hereinafter referred to as Mini-Mission and Sub-Mission).

AND WHEREAS Government of India has made the DRD as the nodal Department for Technology Mission and has assigned CSIR the responsibility of providing cost-effective solutions of specific problems relating to chemical, physical and bacteriological contamination, ground water exploration and related water management in selected mini-mission and sub-mission areas by adequate and timely S&T inputs to the mission project.

AND WHEREAS both the DRD and CSIR are already inter-acting with each other in this regard and now desire to formalise this interaction through a Memorandum of Understanding (MOU) clearly laying down the rights and responsibilities of each party.

Now, therefore, it is agreed through this Memorandum of Understanding as follows :

Clause-1-Responsibilities of CSIR

1.1. The CSIR shall, wherever possible, reorient its normal programme to meet the requirements of the Technology Mission and would undertake its plan activities to dovetail with the work of the Technology Mission.

1.2 CSIR shall provide necessary S&T inputs to mini-mission and sub-mission authorities to enable them to undertake qualitative and quantitative assessment of water in the selected areas identified jointly by the DRD and CSIR.

1.3 CSIR shall coordinate the activities of all research organisations including its own constituent laboratories/Institutes to provide adequate and timely S&T inputs for the solution of specific problems of chemical, physical and bacteriological contamination and underground exploration of water in identified problem villages. CSIR shall also coordinate with other agencies such as CGWB, New Delhi, State Ground Water Boards, Defence Laboratory, Jodhpur, AIIMS, New Delhi, NICD, Delhi, State Department of Irrigation and Rural Water Supply, State Level Coordinators and Executive Directors to carry out mission activities.

1.4 CSIR shall act as nodal agency for sub-missions namely control of fluorosis, control of brackishness and removal of iron.

1.5 CSIR shall assist the Technology Mission in DRD in identifying technology related to selected mini-missions, sub-missions, assist in preparation of Detailed Project Report (DPR) and in technical appraisal, implementation and supervision of pilot projects in selected mini-missions and sub-missions areas.

1.6 CSIR shall participate in selected mini-missions and sub-missions in the following activities :

- * Scientific sources, saving, conservation and recharging of water sources
- * Water quality evaluation of existing sources and new sources
- * Improvement of traditional methods for water collection and storage

- * Treatment of water.
- * Improvement of materials and designs
- * Improvement of maintenance methods
- * Continuous monitoring and evaluation
- * Technology transfer and training

1.7 CSIR shall depute the scientific personnel to provide S&T inputs to DRD and the concerned authorities in selected mini-mission and sub-mission areas in the implementation, supervision and maintenance of the project.

1.8 CSIR in association with DRD shall train the personnel recommended by DRD and State authorities in CSIR technologies.

1.9 CSIR in association with DRD shall undertake concurrent evaluation and monitoring of its technologies.

1.10 CSIR shall provide S&T assistance, to the mini-mission and sub-mission authorities for setting up water testing laboratories/facilities in selected areas for water quality assessment and monitoring.

1.11 CSIR in association with DRD shall undertake technology transfer comprising of the following :

- * Preparation of appropriate low cost technology package including basic engineering design
- * Preparation of specifications and standards
- * Identification of industries for production
- * Workshops and conferences and transfer of technology
- * Training in operation and maintenance

1.12 CSIR shall undertake short, medium and long term S&T programme in the area of drinking water according to the requirements of the TECHNOLOGY MISSION.

1.13 CSIR in consultation with DRD will appoint consultants for performing jobs such as preparation of process package of CSIR technologies and selected turn-key projects wherever applicable. CSIR will define the action programme of such consultants and monitor the same for achievement of targets.

1.14 CSIR shall furnish to the DRD, detailed proposals for provision of funds required by them for discharging the responsibilities under this MOU.

1.15 No expenditure shall be incurred or a financial liability undertaken by CSIR without approval of the DRD.

Clause 2 Responsibilities of DRD

2.1 DRD shall provide funds to CSIR in the areas related to Technology Mission (such as S&T inputs, appointment of consultants, training demonstration of new technologies and other specific activities where the normal activities of CSIR do not cover reoriented activities in connection with the work of the Technology Mission.

2.2 DRD shall help in getting local support in terms of infrastructure and cooperation to CSIR scientists visiting/working in the Project areas.

2.3 DRD shall make available to CSIR the information and programme schedule of the concerned State Government and Central Government agencies related to the TECHNOLOGY MISSION.

2.4 DRD could also use the services of consultants directly within the specified range of activities in consultation with CSIR.

Clause 3 Rights of Technology Information Generated

3.1 CSIR shall have the right to utilise the technologies and information generated through the funds provided by DRD for purposes other than the activity of TECHNOLOGY MISSION in accordance with the norms laid down by the Empowered Committee of the Technology Mission.

3.2 DRD shall have right to use the technologies/information generated by CSIR through funds provided by DRD in accordance with the norms laid down by the Empowered Committee.

7A

4. Duration of MOU

The MOU shall be effective from the date of its signing and shall remain in force till December, 1990 on expiry of which period it shall be reviewed by both CSIR and DRD and its further extension or termination shall be decided accordingly.

IN WITNESS WHEREOF the parties hereto have signed this agreement on the twenty seventh day of May 1987.

For and on behalf of
Council of Scientific &
Industrial Research
New Delhi.

For and on behalf of
Department of Rural Development
Government of India, New Delhi.

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**REPORT ON HUMAN RESOURCES DEVELOPMENT (HRD)
FOR RURAL WATER SUPPLY AND SANITATION SECTOR
IN THE EIGHTH FIVE YEAR PLAN**

**DEPARTMENT OF RURAL DEVELOPMENT
MINISTRY OF AGRICULTURE
GOVERNMENT OF INDIA
KRISHI BHAVAN, NEW DELHI - 110001**

VOLUME TWO

DECEMBER, 1990

VOLUME TWO

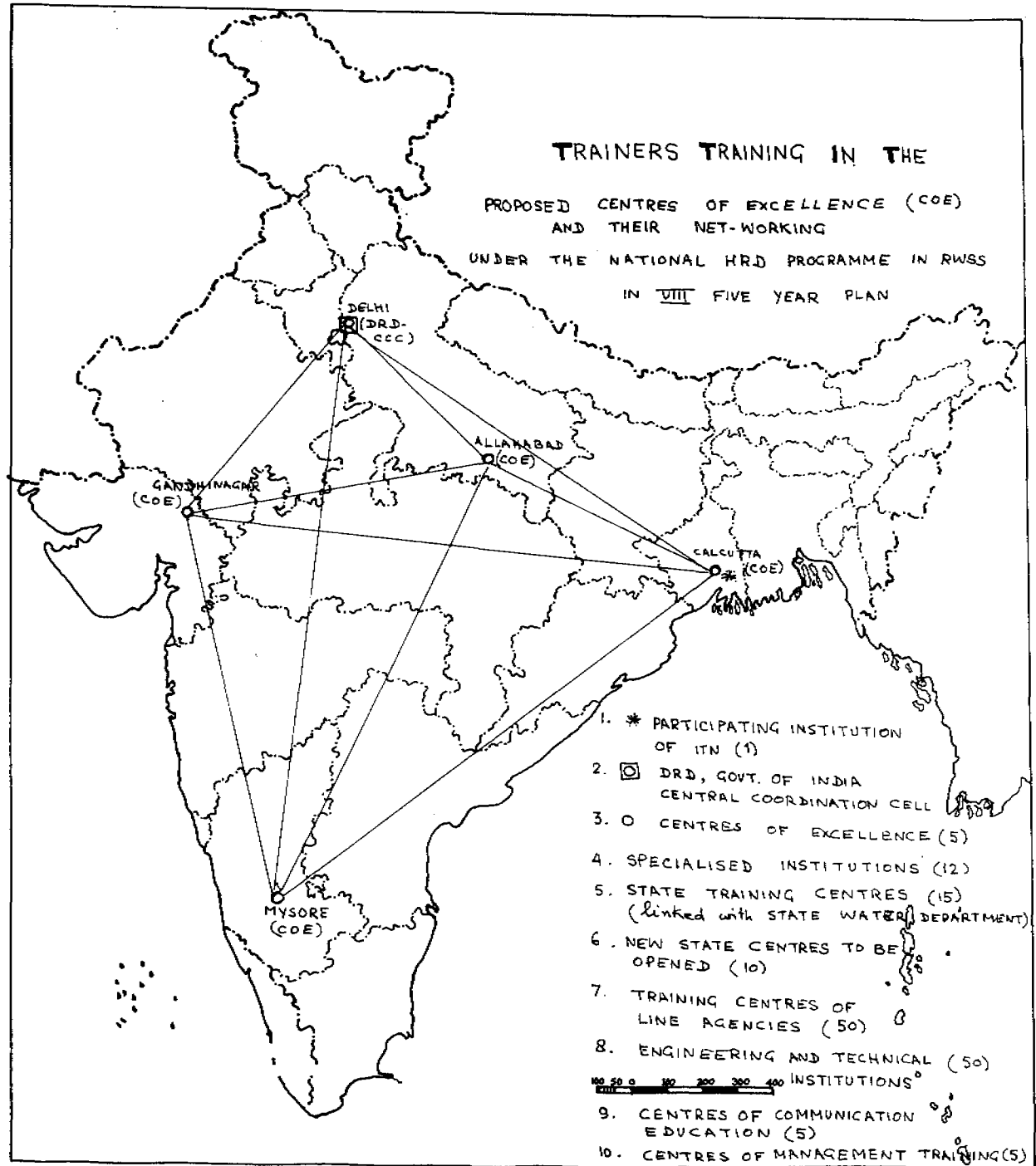
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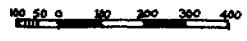
TRAINERS TRAINING IN THE

PROPOSED CENTRES OF EXCELLENCE (COE)
AND THEIR NET-WORKING

UNDER THE NATIONAL HRD PROGRAMME IN RWSS
IN VIII FIVE YEAR PLAN



1. * PARTICIPATING INSTITUTION OF ITN (1)
2. ☐ DRD, GOVT. OF INDIA CENTRAL COORDINATION CELL
3. ○ CENTRES OF EXCELLENCE (5)
4. SPECIALISED INSTITUTIONS (12)
5. STATE TRAINING CENTRES (15) (linked with STATE WATER DEPARTMENT)
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PART ONE

TRAINING OF TRAINERS

PART ONE

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1. INTRODUCTION

TRAINERS have a vital role to play in HRD programme. This role becomes more challenging in training personnels managing Rural Water Supply and Sanitation (RWSS) in different geo-climatic zones and in remote villages.

For the purpose of HRD in RWSS under the Department of Rural Development (DRD), Government of India, the following categories of trainers could be considered for orientation and exposure to realities in rural backdrop:

- 1) The government institutions, including professional training institutes;
- 2) State level institutions;
- 3) Polytechnics providing diploma courses;
- 4) Industrial Training Institutes (ITI) and Community Polytechnics providing technical skills, including vocational training;
- 5) Institutions identified by Ministry of Urban Development for imparting graduate/post-graduate education in public health and environment engineering;
- 6) Universities, IITs and Engineering Colleges imparting education in civil and mechanical engineering (the entry level for public health engineering sector); and
- 7) Specialised institutions (Geophysics, Management System, Administration, Computer Software, etc.).

Other set of training centres are wholly oriented to rural needs like NIRD, Hyderabad, Rural Management Institute, Anand and Gandhi Gram University, Madurai, etc.

2. The Trainers

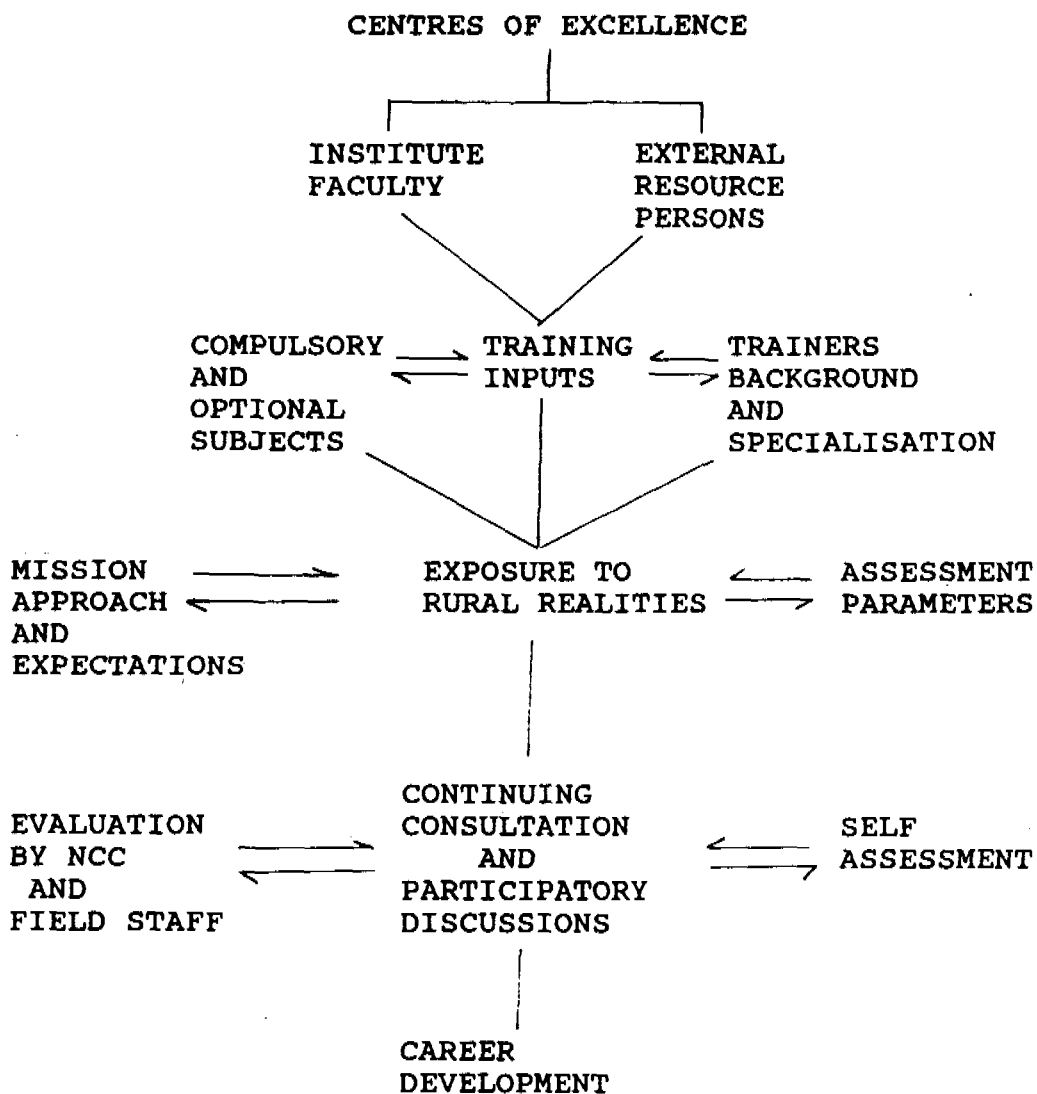
The trainers fall in the following categories :

- 1) faculty members of the professional, technical and specialised institutions;
- 2) faculty members/trainers of state institutions; and
- 3) faculty members providing degree/post-graduate courses in engineering.

- 2.1 Generally, the above faculty members are qualified engineers and professionals, chemists, geo-physicists, biologists, management experts, with teaching experience. All these institutions are, however, located in urban areas and developed towns.
- 2.2 These institutions are linked with some government departments in the centre or state or act as autonomous organisation funded by the government. Thus they are bound by a set of courses which are generally urban oriented.
- 2.3 None of these trainers/teachers have received any formal training in teaching institutions. In India, a post-graduate or Ph.D. is considered to be a self-styled teacher.
- 2.4 Except in a few cases, none of the above institutions are expected to cover rural needs and problems and for that matter the backward and remote areas, the underserved or unserved. There is a general apathy of working for/in rural areas/villages.
- 2.5 Some of the above institutions invite external resource persons, experts, engineers and faculty of other such institutions. It has, however, been noted that these rotate between one institution to other mostly falling under the "personally known category". These external resource persons mostly have urban bias, with little linkages with periurban towns and rural areas.
- 2.6 The foreign experts who participate in HRD efforts also possess similar qualities till they develop the appropriate appreciation for rural sector (rural sociology of India is different from other developing countries).
- 2.7 Some other constraints of training the trainers in RWSS have been discussed earlier. It is with this background that the 'Trainers Training in RWSS' has been conceived. The following diagram projects the programme.

TRAINERS ORIENTATION

(Path for career development)



Note : Special assessment of the performance of Director/ Principal/Heads of COE, SI, and State Centres should also be made.

3. Attributes of trainers

Trainers (faculty of institutions identified for organising training) in RWSS should have the following qualities :

- 1) graduate/post-graduate in engineering, physical, chemical or biological sciences, economics, sociology, management, etc.;
- 2) at least 10 years experience in teaching/research with an aptitude for working in rural areas and/or field level experience of not less than 3 years in any project;
- 3) worked as water/sanitation/environment engineer in rural areas;
- 4) engaged in training or received training in India or abroad;
- 5) frequently visiting villages in connection with field experiments, trials, demonstrations, survey/study and social mobilisation study;
- 6) willing to accept new learning, skills, and technologies;
- 7) willing to work in training institutions located in backward areas and/or in small towns or rural growth centres;
- 8) willing to work in the field to gain first hand knowledge, experience and hardships of work place of field level functionaries; and
- 9) know application of computers; and
- 10) atleast know local language of the State, and HINDI.

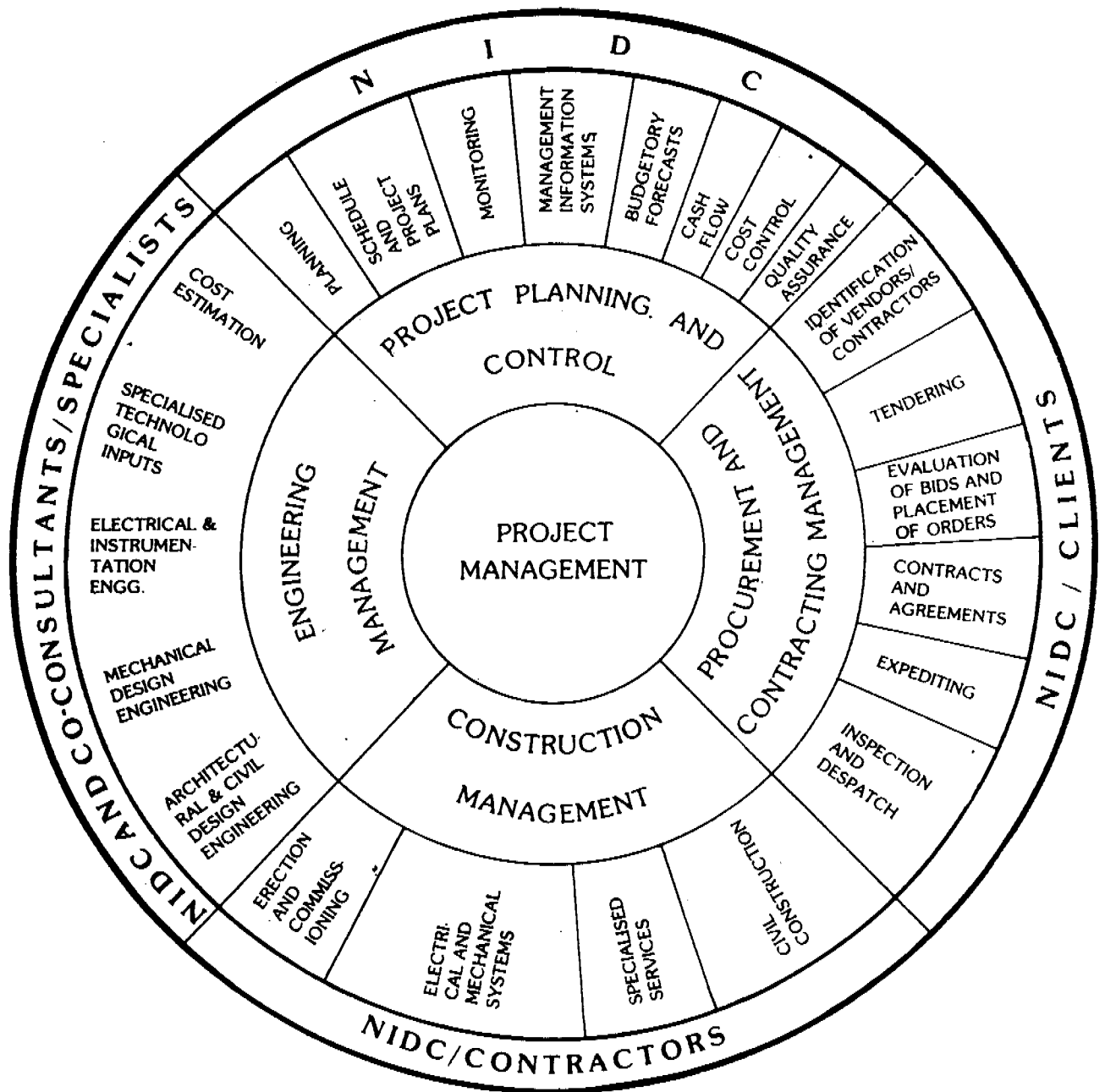
3.1 These attributes though are difficult to achieve, yet they draw attention to sensitise the trainers with 'rural realities'.

4. Training content

To acquire basic skills and to upgrade their knowledge in learning technology, training management and management training, the following areas should be covered in training content :

- 1) system approach to planning for training and HRD;
- 2) role to direct trainers in training functions;

CONCEPT OF
TURNKEY PROJECT MANAGEMENT*



* Designed and applied by NIDC(Consultant to Water Mission)

- 3) selection of instructional techniques;
- 4) principal ways of learning including application of transactional analysis;
- 5) composition of learning units;
- 6) learning by means of doing and repeating;
- 7) planning and preparing visual aids;
- 8) techniques of group dynamics, consultation meetings, participatory discussion, seminar leading, case study preparation;
- 9) direct trainers skills; and
- 10) techniques of self evaluation and assessment by the trainees.

4.1 Other essential areas of training content should include,

- 1) Rural sociology;
- 2) State of art in RWSS in different FYP; the role of water mission, and post-decade policies;
- 3) Relationship between water, sanitation, personal hygiene, health, environment, productivity and development;
- 4) Social mobilisation, participation of community and community women, relationship and linkages with Zilla Parishad, Block, Panchayat, rural institutions and voluntary agencies;
- 5) Social audit and engineering in training different levels and categories different levels and categories of trainees in terms of attitude, behaviour, faith/confidance, assinilation, application, adaptation adoption and replication techniques;
- 6) Project planning, indicators idnetification, locating, implementing, monitoring, evaluating; and use of MIS;
- 7) Financial management including social cost and cost-benefit, cost-effectiveness, cost-concionsness, demystification, etc;
- 8) Water modeling and budgeting;
- 9) Case studies relating to successes and failures;
- 10) Issues formation for participatory discussion;

- 11) Enthusing confidence, faith and missionary spirit;
- 12) Exposure to
 - i) local resource constraints and conditions in geo-climatic, hardcore and remote villages;
 - ii) successful projects where water technologies have been installed; and
 - iii) conditons of RWSS in villages inhabited by poor and socially weak and tribals.
- 13) The latest innovation in management of RWSS, the information system, and communication;
- 14) Taking trainees to field visits for practicals in social mobilisation and promotion of environmental sanitation;
- 15) Materials, quality and standards;
- 16) Role of industries in RWSS; and
- 17) Coordination and inter-relationship between and among line agencies directly and indirectly involved in rural development sectors.

The list is not complete, but indicative. These subjects should, however, be mandetory to all trainees.

5. Orientation to external resource persons (RP)

This category is also considered to be the trainers. Since they belong to higher status in learning and specialisation, there may be psychological aversion for inviting them, even for orientation. In order to sensitise them with the understanding of needs of training in RWSS, a tailor made note be prepared by covering the following subjects :

- i) the state of art and science of RWSS systems and constraints in different geo-climatic zones;
- ii) the composition of trainees (trainers group);
- iii) work already done, being done and proposed to done;
- iv) the VIII Plan approach;
- v) training objective and expectations.

The external resource persons may be advised to prepare their presentation taking the above background into consideration. They should also suggest a bibliography of

the subject of their presentation and prepare necessary visual aids to explain the subject. The presentation should include issues to enable participatory discussion among the trainees.

The RP should be informed that they would be interacting with trainees who may have to replicate their presentation in their own way. Lecture notes be distributed in future courses/presentation or some of these could be tape-recorded. For these inputs the resource persons should be appropriately remunerated.

5.1 The presentation should be heavily weighed with examples, case study, cost, do's and don'ts with rural bias.

5.2 Identification of resource persons

Since the names of training institutions are known (op.cit.), it would perhaps be advisable to invite names of resource persons being invited by them and covering following information :

- 1) name and age
- 2) educational attainments
- 3) experience and present activity
- 4) area of specialisation
- 5) languages they speak
- 6) complete address

These names may be reviewed, finalised and put to computer. List of such specialists be circulated to all training institutions for information. Sometimes experts/engineers working in field could be invited for practical demonstration and training. Similarly, industries involved in RWSS could also be invited for trainers training.

5.3 Each training institution identified should consider adopting some villages for field work by trainees. It would perhaps be advisable to take the external resource persons to these rural centres for interaction. They could make night-halt with the trainees.

6. Application

Another important element in 'trainers training' is (i) learning process, (ii) transfer of the learning to trainees; and (iii) wherever needed to end users.

The techniques of 'extension' should form part of this training. How the learning could ultimately be transformed into practise at micro-level. This element would also need

exposure to delivery system, O&M and feedback mechanism.

The interchange between education/training and the workplace demand of trainees should be emphasised to provide necessary competences to the trainees. The trainees (trainers) should also be made aware about development of infrastructural facilities, information and communication system in their institute.

7. Methodology and media

The following methodology could be adopted :

- 1) Class room - Lecture, demonstration, practicals, group discussion, exercises, preparation of lecture notes,
- 2) Use of equipment - Computers, photocopy machine, overhead projector, VCR, projectors, survey instruments, etc.
- 3) Job assignment exposure - Job assignments of engineers, professionals and technicians, appreciation of trainees own workplace environment,
- 4) Case studies - Special course
- 5) Appraisal, monitoring and evaluation exercises
- 6) Handling visual aids
- 7) Preparation of lecture notes and handouts

7.1 Perhaps a special input would be needed for training women trainers specially their approach to involvement of rural women in WSS.

8. Continuing education

There should be periodical orientation and exchange of experience, and coordination between all institutes identified for RWSS.

9. Evaluation

Trainers training is more than education and training of a general trainee. This aims at improving the trainers individual capacity for continued achievement and helping them to make their best better in transferring the knowledge.

- 9.1 The Centre of Excellence in consultation with experts should, therefore, develop proforma for (i) self-evaluation by trainers (trainees) themselves; (ii) evaluation of trainers/faculty members/external resource persons by the trainees; and (iii) assessment by the Director of the Institute.
- 9.2 With above evaluation, the head of institutions could say as to which area a particular trainee (trainer) would be suitable. Whether the said trainee would need higher education (if diploma holder to degree course or specialisation course), etc.
- 9.3 External referees could also be involved in the above evaluation process.

10. Basic subjects

Each trainer irrespective of their background, specialisation and job requirement in their training institute should be given brief understanding and appreciation of basic/fundamental knowledge about water and sanitation and related technologies covering what, why, and how.

PART TWO

**INTERNATIONAL TRAINING NETWORK
PROGRAMME, INDIA**

PART TWO

**INTERNATIONAL TRAINING NETWORK
(ITN), INDIA**

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Author discussed HPD concepts in Manila with (left to right) [Name] (sitting right) at the All India Seminar on [Name] of Public Health, Calcutta.

INTERNATIONAL TRAINING NETWORK (ITN)*

INTRODUCTION

As part of the Water Decade, the World Bank/UNDP mooted the idea of establishing International Training Network (ITN) for water, and sanitation sector in developing countries to help providing training to trainers (through national participating and key institutions) to enable them to provide further training to policy makers, planners, engineers, technicians, community development and health workers and other field staff. The emphasis of the programme is on an integrated, ecologically balanced and multi-disciplinary approach, socio-cultural, and health considerations, and lowcost technologies and their successful application for safe drinking water supplies and sanitation services for improvement of health, productivity and quality of life.

- 1.1 **INDIA HAS BEEN IDENTIFIED AS ONE OF THE ABOVE ITN BENEFICIARIES FOR RURAL WATER SUPPLY AND SANITATION (RWSS) SECTOR.**
- 1.2 Similarly, Overseas Development Agency, (ODA) proposed similar support to India.

The Government of India (Department of Rural Development) agreed in principle the above support of bilaterals as complimentary to its National Human Resources Development programme (NGRDP) in RWSS sector.
- 1.3 The Netherlands Government also came forward to share the cost of the network coordinating cell to be established in the Department of Rural Development (DRD), Government of India for its HRD programme and of key institutions identified by DRD.
- 1.4 PROWESS/UNDP have also enviced interest for participation in ITN, India.
- 1.5 IRC (International Resource Centre at The Hague) is equally keen to join the ITN, India.
- 1.6 Participation of some other bilaterals in this network is in pipeline.
- 1.7 UNICEF (India) is already participating in training activities in association with DRD.

* In preparing this part, care has been taken to preserve the agreed version of ITN proposal. Some new information has, however, been added to bridge certain gaps.

2. OBJECTIVE

The overall objective of ITN programme is to improve the quality of skills and knowledge of all those empowered and involved in managing the RWSS systems and to sensitise them in the application of 'Water and sanitation technologies' and social mobilisation for community participation in the planning, implementation and maintenance of projects and motivating them for promotion of environmental sanitation and health measures.

- 2.1 The ITN aims at strengthening and developing national institutions and their resources for assistance in the HRD in the sector and in related disciplines such as surface and ground water engineering, source development, hardware technologies for water treatment, water management and software for communication, MIS, and social sciences.
- 2.2 The ITN is expected to provide an opportunity for technology cooperation among developing countries to facilitate the functions the World Bank/UNDP has established "Network Coordinating Unit". This unit is expected to make efforts to identify sources of funds for expansion of the network programme.
- 2.3 The participating institutions of ITN are expected to conduct action-study/research in developing appropriate training, education, awareness, and communication technologies and teaching aids for RWSS and demonstration of the same to trainers, trainees and others engaged in the sector at village level.

3. OUTPUT INDICATORS

The output indicators include the objective/goal, and expectations of the donor, and the benefits accrued (qualitative and quantitative) to HRD programme of DRD for RWSS sector in the VIII Five Year Plan.

3.1 From the point of view of the DRD (Government of India), these indicators include strengthening of existing resources of training institutions to enhance their capacity and capability of imparting training and education on a continuing basis for various categories of trainees; numbers trained as trainers/ trainees in key sector; new skills assimilated with confidence; and an upgradation towards 'will to change' (the cutting edge) both among water managers and users.

3.2 The output indicator also includes participatory action of various developmental functionaries at the district, block and panchayat levels and the extent the training has brought a change in their outlook, behaviour, leadership and decentralised initiative.

3.3 The output indicators have been given in ^{VOL. ONE} Part 1 (p. 21-23 14) ^{p. 21-23} of this report.

4. ORGANISATION

The Network will consist of "Participating Institutions", which will be regional focal points in this training effort, and "Key Institutions" which, will perform similar functions at the state level. The task of Participating Institutions will be to train instructors and trainers of training institutions to train the use of appropriate technologicis to sector agencies, consultants and NGO's. Socio-cultural and community participation aspects which are of great importance, but often neglected will be particularly emphasized. This training will also provide continuing education to professionals from sectors agencies, like administrators, planners, public health engineers, social scientists, environmental scientists, chemists, health educators, etc.

4.1 Participating Institution

The first phase of Network activities for the rural areas of India, include one 'Participating Institution' linked with the Central Coordination Cell of DRD for coordinating the activities with various States and related organisations conducting the courses. In addition, a few Key Institutions and certain Collaborating Institutions will be selected to cooperate with the Participating Institution (also refer Part 2)*.

How quickly all the States/UTs are assisted and programmes in each state are implemented will depend mainly on the availability of resources of the Participating and Key Institutions and the Central Coordinating Cell of DRD will be the main focus. The National Coordination Committee of the DRD will be an apex body.

The All India Institute of Hygiene and Public Health (AIIPH), Calcutta has been identified as the first Participating Institution under the ITN programme.

4.2 Key Institutes

To begin with 2-3 Key Institutions will be identified to implement 'Continuing Education' programmes. (i) Gujrat Jalseva Training Institute, Gandhinagar, (ii) SJ College of engineering, Mysore and Institute of Engineering and Rural Technology (IERT), Allahabad. These institutions are already

* Under the NHRDP of DRD, these institutions have been named as Centres of Excellence, Specialised Institutions and State Training Centres (also refer Part 4). These institutions are expected to adopt nearby villages for field work by the trainees.

conducting training programmes in rural water supply and sanitation.

The GJTI is, however, attached with Public Health Engineering Departments, Gujrat State. These Key Institutions will share with the responsibilities of the Participating Institution (AIH&H).

4.3 Collaborating Institutes*

With the development of Key Institutions, a number of Collaborating Institutes will also be developed for specialised training in different aspects of the sector. To this effect, the following institutions/organisations have been tentatively identified for training in collaboration with Participating/Key Institutions or independently under the proposed NHRDP (including ITN).

i) National Geophysical Research Institute (NGRI), Hyderabad

The NGRI is expected to arrange training in Ground Water Exploration by remote sensing technique with the aid of satellite imagery application. This training will be provided in collaboration of National Remote Sensing Authority, Hyderabad.

ii) Drilling Institute (CGWB), Faridabad (Haryana)

The CGWB would be used for specialisation in modern drilling techniques. This institute could be developed as a CENTRAL INSTITUTE OF DRILLING TECHNOLOGY and is expected to conduct inservice as well as short term training programmes (Diploma Course). The main emphasis will be on training in drilling technology, installation and maintenance of hand pumps as well as maintenance of traditional sources.

iii) Rajasthan Institute of Public Administration (RIPA), Jaipur

There is a need for an input of a professional management approach towards public health engineering projects. This institute is expected to provide training to Public Health Engineers in project planning, implementation, financial management, planning inputs to public health engineering projects, post evaluation and management information system (MIS). These programmes will be short term and intermediate courses not exceeding three months.

This training will also be provided to the administrators, and decision makers in RWSS sector.

* These are tentative identification, subject to consideration and approval of the National Coordination Committee.

The above programme could be undertaken in collaboration with bilateral institutions and national experts.

4.4 There will be strong input of rural sociology and social mobilisation in such programmes (also refer basic subjects listed in part three of the report).

4.5 **Centre for Communication Support***

One of the major needs in the public health engineering education is "Communication Support". This vital input will be provided by the UNICEF and UNDP/World Bank Communication Support. This will include, publicity, health education, door to door approach, mass contact programmes, and awareness generation among rural communities and community women in the proper use and subsequent maintenance of rural water supply and sanitation assets through community mobilisation and participation through people's participation.

Apart from international bodies, following national institutions specialised in communication technology could be involved to provide communication support to ITN programme (including the NHRDP) :

- National Institute of Design (Ahmedabad);
- Jamia Milia Islamia (Delhi)
- National Institute of Rural Development (Hyderabad)
- Chetna (Ahmedabad)
- Centre for Environment Education, (Ahmedabad)
- Film and Television Institute of India, (Pune)

4.6 ITN Participating Institution (AIIH&PH) and key institutions will actively collaborate with the above organisations in running its training programmes. Some of these institutions could also organise specialisation in communications techniques.

4.7 Voluntary agencies and village institutions should also be involved in the ITN programme. (also refer to the schematic diagram presented in Part one of the report).

4.8 The ITN programme and its linkages with and between participating and collaborating institutes and the micro-level institutions has been shown in the following diagram.

4.9 Criteria for selection of ITN institutions*

While considering selection of Participating, Key and Collaborating Institutions under ITN (for that matter under NHRDP), following criteria may be kept in view :

- 1) a recognised institution (under the Govt. of India, Education Act) of repute (government, public institution, non-government/autonomous);
- 2) affiliated to university if imparting degree/post-graduate courses or the same is recognised by Ministry of Human Resources/Union Public Service Commission, Government of India;
- 3) institute should not only be engaged in education aimed at distributing degrees, but should also have training culture of open school;
- 4) institution should be multidisciplinary in nature with scope or provision of addition of public health and environmental engineering and other related subjects; it should be able to bring in cross discipline culture for both engineers and non engineers;
- 5) institutions should have rural linkages in their on going programmes in terms of village adoption for development, or field laboratory for practise; (in such a case, it is not necessary that they are not engaged in providing degree courses); the institute should have social-communication network;
- 6) faculty of such institutions should be not only educationally qualified, but professionally qualified as well with experience of working in field plant, or villages; there should be women faculty to deal with gender specific areas of development;
- 7) institute should not be a commercial centre engaged in marketing education for profit only;
- 8) there should be educational environment in the vicinity like university, regional engineering college, technical institute, institute of social sciences, training institute for rural development, institute of management, computer science, etc. the identified insitute should have linkages and rapport with these institutions for their guest faculty support;
- 9) institute should have campus type infrastructure for providing additional facilities for training under ITN in terms of class rooms, laboratory, group discussion,

* Author felt to add this as a tentative guideline.

library, workshop, common room, residential (boarding and lodging) facilities for the trainees, and guest speakers, etc;

- 10) faculty should be multi-lingual especially with competence of imparting training in the language of the State, and the national language (Hindi);
- 11) faculty of the institute earmarked for ITN training programme should be willing to visit villages, work with trainees in the villages and even make night halts in villages;
- 12) the geographical location should be congenial for outsiders to reach there easily; there should be atleast an important railhead near the institute and preferably well connected road link (easy to reach by train and bus);
- 13) the institute should be willing to sign a MOU with the DRD clearly delineating their roles and responsibilities as per the aims and end objectives of the NHRD programme and to abide with the decisions of the National Coordination Committee (in all matters the sole arbitrator shall be the chairman of the NCC);
- 14) institute should have facility or scope for setting up working models, pilot plants, cut-models and a small museum of WSS systems, in the campus;
- 15) institute should be accessible to rural communities, NGOs, panchayats, voluntary agencies, women groups for consultancy and information relating to sector and its systems (there should be provision of open days for public visit);
- 16) institute should have first-aid/medical facilities at the campus;
- 17) institute should have formal administrative/finance personnel support with an authorised auditor for accounts;
- 18) financial soundness of the institute atleast in running the ongoing programmes;
- 19) institute should not involve in any kind of litigation for its status/recognition;
- 20) there is culture of leadership in the institute where in the presence or absence of the head, the hearts and hands could takeover or share the functions and responsibilities of the head;

- 21) established record of conducting formal and non-formal education and training; and
 - 22) organisational capability of the Director of the institute and his willingness to adapt to the NHRD programme under DRD.
-
- 4.10 Curriculum for all training courses and related aids should be developed, tested, and evaluated by an expert group (constituted by the NCC) in association with ITN institutions. It should have an inbuilt system of exchange of experiences, feedback from selected trainees and resource persons.
 - 4.11 There should be provision of exchange of faculty between one ITN institute to another for short periods.
 - 4.12 It should not be derogatory that all kind of training particularly the specialised training will be imparted by ITN institutions. For such purposes specialised institutions be identified. Even the faculty of ITN institutions should be trained in specialised institutions located any where in India*.

* **Special note**

Efforts are being made to develop separate volume on Trainers training and curriculum development, in the modern concept of HRD in RWS&S sector. This would also include a system approach for organisation of a most cost-effective and task oriented training in India with a number of case studies and interviews conducted by the author at plant level in villages. This is, however, not the part of the present report and will be presented later.

5. HUMAN RESOURCES DEVELOPMENT

While the focus of ITN would be initially training of trainers*, the practising engineers of all levels and other professionals like administrators, planners, social scientists, hydrogeologists, geophysicists, environmental chemists, biologists, etc., will also be brought under HRD training. The main objective is to create a work force skilled in various aspects of management including operation and maintenance of RWSS systems.

5.1 In Central and State Governments, Local Self Government and consulting firms would become cognizant of the various low cost alternatives and related branches of S&T. They will be sensitised about the need for user hygiene education, community participation and the requirement that need to reflect socio-cultural user preferences.

5.2 Decision makers, administrators and planners, would be given orientation to gain better understanding of social, economic, management and technical aspects of the sector.

5.3 Voluntary Agencies

Voluntary Agencies committed to RWSS sector and involved in community mobilisation and participation, would be helped to increase their understanding and knowledge of the appropriate technologies and its maintenance. While some of these agencies may have capabilities in software and some with organisational back up to carry out construction, they lack S&T of the system. Opportunity will be provided to their workers to get the technical knowledge and training.

5.4 Technical training institutes (diploma and certificate courses)

To ensure (wider and faster) dissemination of information and the continuity of training efforts, technical training institutions, ITIs, Polytechnics and community polytechnics levels and sector agencies would be assisted in incorporating RWSS management training programmes through the training of teachers and trainers, provision of training materials and continued technical assistance by the participating and key institutions. They would also be helped to learn design and construction of various technologies and supervise the execution of low cost technology projects, which will be appropriate to their capability and competence to enable them to arrange field work in villages and communicate with user groups.

5.5 Training faculty members of PI and KI

- i) Faculty orientation will include, orientation workshop for institution staff and project staff in position.
- ii) Training resources will follow the above workshop.
- iii) Preparation of course design with rural bias will be carried out concurrently.
- iv) This will also include evaluation of learning process, delivery of trainers/faculty as expressed by the trainers.

5.6 Engineering students of graduate and post-graduate levels

The students of civil engineering, sanitary/environmental engineering and public health engineering would be helped to learn to develop and design programmes and projects incorporating various alternate and cost-effective technologies affordable to specific user groups; to communicate with them alone or together with geologists, hydrogeologists, drilling technologists, chemists, mass communicators, community workers, behavioural and health scientists; and motivate them to participate in project development, implementation and maintenance, and to modify personal hygiene habits.

Faculty members and instructors of selected engineering institutions would be trained in the above aspects of RWSS management with necessary modifications made in the existing course curricula.

6. COURSE PATTERN*

Each training course will have two and half weeks modules, separated by about six months. Course size would be 10 participants per course. Training of the staff of participating and key institutions would be covered in the first year of the project.

6.1 Instructors workshop (Diploma level)

There are over 200 institutions giving diploma in civil engineering. To follow the pattern of the engineering colleges, about 160 instructors from these institutes would be trained during the project period.

6.2 Instructors Workshop (ITI)

An input of low cost water supply and sanitation into some courses for craftsman would be included. Selected staff of Industrial Training Institute (ITI) will be enrolled for practical courses at institutions identified by the participating and key institutions. About five courses a year for ten instructors, each course lasting about 12-15 days for above will be organised to be trained during the project period.

6.3 Practicing Engineers

Ten to twelve continuing education courses for practicing engineers and other professionals would be organised every year with 20-25 trainees per course. Duration of the course would be one week (6 days).

6.4 Decision Makers

Every year one orientation workshop of 3 days duration would be held for the decision makers/planners/senior professionals.

6.5 Inservice Personnel

The training materials on low cost water supply and sanitation suited to rural situations would be incorporated into the existing Master of Engineering (Engineers), Diploma in Public Health (Health Officers), Diploma in Health Education (Health Education) courses, as part of the ITN Programme. Thus training on low cost water supply and sanitation would be imparted to a number of inservice professionals per year.

* also refer Chapter IV (Course Pattern)

6.6 Breakup of course pattern

The breakup of course pattern involving identification of training course, its duration, likely participants/institutions, location of training and total number of various categories of trainers to be trained are given in following Tables :

- 1) Time table of activities (first year) at the AIIH&PH, Calcutta; and
- 2) Courses to be conducted at the AIIH&PH, Calcutta.

INTERNATIONAL TRAINING NETWORK ACTION PLAN

TIME TABLE OF ACTIVITIES (1st Year) at the AIIR&PH CALCUTTA

Activities	1	2	3	4	5	6	7	8	9	10	11	12
	(months)											
A. Organisation and Internal Development of the Centre												
i) Recruitment of Project Staff												
ii) Training and orientation of Project Staff												
B. Training needs Assessment/ Sector Review/Institutional evaluation and Identification of Key Institutes												
C. Training Activities												
i) Orientation workshop for Decision makers												
ii) Continuing Education Courses for Engineers and other professionals												
iii) Training of Trainers of Engg. College/Polytechnics/I.T.Is.												
iv) Incorporation of training material ⁵ in M.E (P.W) D.P.H and D.H.E. courses												

AIH&PH - COURSES UNDER ITN

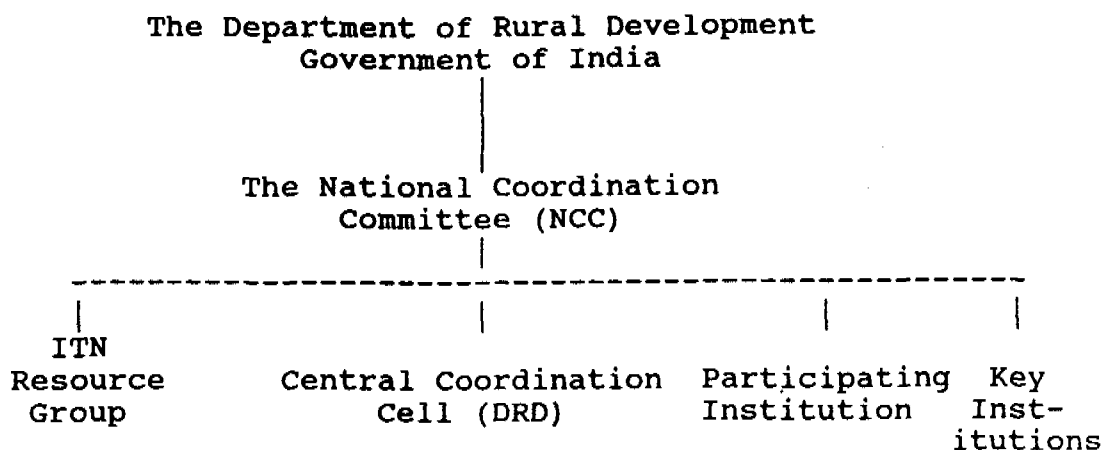
(at a glance)

Course	Total Training days in	Total Subsistence days in	Years					Total people trained
			No. of Courses					
			No. of people trained					
			1	2	3	4	5	
Engineers/other professionals 12 Courses per year 1 Week (6 days) 20 Students per course	72	1440	6	12	12	12	12	1080
			120	240	240	240	240	
Lecturers/Instructore Degree & Post Graduate 3 Courses per year 3 Weeks 16 Students per course	54	864	1	3	3	3	-	160
			12	36	36	36	-	
Lecturers/Instructors Polytechnic 3 Courses per year 3 Weeks 16 Students per course	54	864	1	3	3	3	-	160
			12	36	36	36	-	
Instructors - ITIs 5 Courses per year 2 Weeks 10 Students per course	60	600	1	5	5	5	-	210
			10	50	50	50		
	---							----
	240							1670
	---							----

* In addition about 120 inservice professionals would be trained in the existing M.E. (P.H.), D.P.H., D.W.E. courses and one orientation workshop for decision makers would be held each year.

7. PROJECT ADMINISTRATION

The National Human Resources Development Programme of the Department of Rural Development (DRD), Government of India vis a vis the ITN programme will be administered by a National Coordinating Committee (NCC) under the chairmanship of Joint Secretary & Mission Director of the Department. This will be assisted by a Central Coordination Cell (CCC) in the DRD.



- 7.1 The composition of the National Coordinating Committee would be decided by the Department of Rural Development, Government of India in consultation with its Chairman (Joint Secretary & Mission Director, DRD, GOI).

Member

Secretary : will be nominated by the Chairman (preferably the head of the DRD Central Coordination Cell (CCC)).

7.2 Functions of National Coordination Committee (NCC)

The NCC will direct, and monitor the planning and implementation of network activities in line with its overall objectives. At the request of foreign governments/bilateral agencies, it will also assist them in the monitoring of their support to the ITN, India.

Functions of NCC will include the following :

- 1) policy frame;
- 2) identification of participating/key institutions and supporting institutions;
- 3) special focus on strengthening of these institutions and training of faculty of these institutions;

- 4) establishing linkages between ITN, India and bilateral institutions abroad in terms of complementary cooperation and exchange;
- 5) coordination between Indian HRD programme and ITN, India with special reference to UN agencies (UNDP, WHO, UNICEF, PROWESS) and bilaterals viz. World Bank, Netherlands, ODA, etc.
- 6) policy regarding utilisation of funds for earmarked activities of each institution;
- 7) monitoring in terms of attainment of objectives and expectations of donor agencies;
- 8) considering question of joining other bilaterals in ITN, India;
- 9) clearance to nomination of foreign consultants/advisors (the NCC will draw some criteria/parameter for such assistance);
- 10) social audit of ITN, programme.

7.3 Central Coordination Cell (CCC)

The project will be administered by a Central Coordination Cell which will be located in the Department of Rural Development, New Delhi. The Cell will function under the overall guidance of the Chairman of the National Coordination Committee (NCC) and will act as the Secretariat of National HRD Programme and the ITN. It will be responsible for assistance and monitoring of the programme in such detail as may be relevant and will report periodically to the Chairman of NCC.

The cell will be set up with the financial assistance received from the Government of Netherlands exclusively for this purpose. The cell could consist of an Expert in HRD, and a Dy. Advisor, two Technical Assistants (Computer and monitoring) and secretarial staff.

The pay and allowances alongwith travelling allowances, cost of special component/software, etc., will be met from the Netherlands funds.

7.4 UNDP/World Bank resource group

There will be a 'Resource Group' to be established by UNDP/World Bank to be assisted by a senior consultant. They are expected to liaise with the NCC, The CCC(DRD), the Participating Institution, Key Institutions and Collaborating Institutions on one hand and the donor and bilateral agencies on the other hand.

7.5 Arbitration

The Chairman, National Coordination Committee of ITN, (ref. para 7.2) will be the sole arbitrator of all disputes relating to ITN programme (national institutions, foreign donors, etc.) in India.

7.6 Autonomy

The Chairman, National Coordination Committee will have autonomy for reallocation of donors funding for any other activity (but within the ITN objectives and preview) in consultation with NCC. In case of urgency, the Chairman can take ^{advance} action and inform the NCC accordingly.

7.7 Linkages of ITN with National HRD Programme (refer also part one of the report)

The International Training Network will be a part of the overall National Human Resources Development Programme (NHRDP) of the Government of India (discussed in PART 2 of this report) to meet the existing and future demand of human resources in RWSS sector. As such, there should be a close linkage between the ITN and the NHRDP. This linkage has been aptly presented by Joint Secretary & Mission Director, GOI (refer ^{part 1} para 13.2 of this report). p. 18
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8. ROLE OF INTERNATIONAL WATER* AND SANITATION CENTRE (IRC)

While explaining the framework of the National HRD programme of the Department of Rural Development (Government of India) in RWSS sector, its vertical and horizontal linkages and interlinkages between various institutions, sector agencies and the International Training Network, Mr. G. Ghosh, Joint Secretary & Mission Director, mentioned about incorporating 'IRC' for providing information backup and related programme support to the said programme (refer to the framework diagram).

In view of above, the expected role of IRC has been broadly discussed below.

The IRC form, a comprehensive approach to the management of information. It is an independent and non-profit organisation supported and linked with WHO, UNDP/World Bank, UNICEF and The Netherlands Government. It aims to ensure the availability and use of appropriate knowledge and information to personnel working in water, sanitation and environment sector in its entirety in developing countries, both at policy and implementation levels through the process of communication and application.

IRC stands for 'International Water and Sanitation Centre' with its headquarters at The Hague (Post Box 93190, 2509 AD), The Netherlands.

IRC Activities

The activities of IRC broadly cover the following :

- 1) **Capacity Development** - an important component of the IRC work deals with capacity development for information acquisition and information management for programme support in the sector. The essential action components of information management are included in IRC INFO - IMPACT programme which stands for 'Information Exchange Plan of Action'.
- 2) **Collaboration with ITN** - IRC provides advisory support to ITN (UNDP/World Bank) in low-cost water supply and sanitation projects. To this effect IRC prepared (as part of training series) a module on the 'value of information'.

* The subject was informally discussed with Mr. Hans MG Van Damme, Director IRC in September, 1990 in New Delhi.

This is just a recommendation for consideration of DRD/ITN programme committee.

They have also developed plan for information development support and guidelines for setting up the basic documentation services towards strengthening of the technical information exchange capacity for ITN centres and sub-centres.

- 3) **Programme** - IRC programmes generally comprise of generation and delivery of information in selected areas in the sector and include
 - i) collection of information leading to its systematisation and publication;
 - ii) training in transfer of information;
 - iii) testing and demonstration of community based implementation strategies for the sector; and
 - iv) advise, monitoring and evaluation activities through which information is applied in the implementation of projects.

- 4) **Guidelines** - IRC has prepared the 'Guide for course moderators' and 'course modules' where emphasis has been laid on improving performance in ongoing and new projects in the sector.

- 5) **Role of Women** - IRC in collaboration with PROWESS/UNDP prepared on annotated bibliography and made literature review on the subject. (to come out soon).

IRC also collaborated with PROWESS/UNDP in practical planning to integrated projects and the establishment and testing of suitable indicators which adequately address community participation, community management and hygiene behaviour.

- 6) **Training** - IRC is involved in training engineers in special courses on reasons and means for women's involvement in the WS&S sector. It also provides a useful tool for information generation and management.

- 7) **Input to India** - IRC have reviewed (1989) the progress of Indo - DANIDA - DUTCH Mission on water supply programme. Under this, performance of socio-economic units to enhance an integrated approach to WS&S and to improve sanitary conditions were evaluated. Parameters measurement were also developed for a MIS.

Possible Role of IRC in ITN, India

Keeping in view the above activities, their support and collaboration with ITN, India could be considered initially for 'training of trainers' in Rural Water Supply and Sanitation (RWSS) sector with a clear understanding of India's socio-cultural conditions in villages with varying geo-climatic zones and ofcourse those who are serving the community at the micro-level.

As discussed in the chapter on 'Training of Trainers' in Part II of this report, the IRC support could perhaps include the following :

- 1) teaching and learning methods in the sector for the trainers (preparation of a special course content);
- 2) training of external resource persons in terms of orientation in rural bias to their contribution, case studies, examples, etc.;
- 3) training in achieving fundamental changes in attitudes and behaviour of managers of WSS and the user community (development of course content);
- 4) updating/strengthening the information system/structure of ITN institution as also to act as referral centre for other training institutes;
- 5) special information support in subjects (common and compulsory topics) for training indicated in Part II of the report);
- 6) development of communication action for structured learning in application of knowledge/skills (acquired through training) in the field and in trainees own workplace as also generating in them self-confidence in problem identification and problem solving;
- 7) building information management, programme/projects components for the development of capacities and the application of information with a process of communication - course curriculum development;

- 8) assessment of trainers training programme in terms of communication, understanding, faith generation among the trainers and trainees and bridging the gap - preparation of evaluation parameters;
- 9) development of MIS for trainers training under ITN;
- 10) any other item as decided by ITN/DRD.

In view of above, the areas of collaboration with IRC be identified and defined and they may be told in advance what topics they have to cover during the ITN project period.

Cost of participation of IRC

The cost of participation of IRC should be fully met by UNDP/World Bank.

IRC counterpart in India

DRD should identify an appropriate counterpart institution which could be associated with IRC/ITN programme. Perhaps, CAPART, NIRD and NIDC could be thought for the purpose.

9. ROLE OF PROWESS/UNDP IN ITN*

In the proposed framework of ITN (op.cit.), PROWESS also appears as a bilateral support organisation. While its explicit role has not be indicated in the earlier ITN proposal, it was considered necessary to add here the possible role PROWESS can play in ITN programme in India.

PROWESS stands for "Promotion of the role of women in water and environmental sanitation services". It is an associate activity of UNDP.

PROWESS aims at developing replicable models for involving community women (rural women in RWS&S) in sustainable, effectively used and environmentally sound drinking water supply and sanitation projects.

PROWESS carries out demonstration projects in a variety of situations to illustrate both the value of women's participation and various means of achieving it.

PROWESS activities include

- 1) project planning to incorporate aspects dealing with women's participation in an integrated way;
- 2) technical assistance through training of trainers in participatory methodology in close cooperation with relevant local institutions;
- 3) help in developing approaches at the field level for data collection and action-study including development of indicators and preparation of case study;
- 4) develop instruments for planning, monitoring and evaluation at different levels;
- 5) provide printed and audio-visual support for use; and
- 6) help in identifying and developing a network of institutions with which PROWESS can collaborate.

PROWESS role in ITN, India

The above objectives though quite laudable, yet are challenging in context of rural women in the men dominated society.

* Based on personal discussion by the author with Ms. Siri Melchior, Director, PROWESS (New York) - camp - New Delhi 'Safe Water 2000', September, 1990.

In this regard, while a number of printed materials and a few audio-visuals have been produced, these have not always been possible to motivate the government functionaries responsible for RWSS facilities to seek women's participation in the sector. This is perhaps due to the following reasons :

- i) lack of appreciation and faith among the managers/ decision makers, about the above and even in social mobilisation;
- ii) lack of understanding, confidence and experience on women's role;
- iii) socio-cultural constraints;
- iv) lack of policy and directive of incorporating the above as part of RWSS activities;
- v) lack of support of motivators, animators and those who can pilot the programme; and
- vi) lack of required human development (behavioural) and human resources development.

Keeping the above gaps in view, PROWESS could perhaps provide the following support to ITN, India. (of course all such activities will be rural bias).

1. Department of Rural Development, Government of India will identify a counterpart person in India to associate with PROWESS.
2. Key Institutions (including Participating Institution, Calcutta) or for that matter all five Centre of Excellence shall develop model in their project villages with the assistance of PROWESS;
3. Centre of Excellence (COE) will identify a person (faculty) to collaborate with PROWESS expert, India counterpart and the field laboratory (project villages); and
4. each Centre of Excellence will also identify a local voluntary agency to be associated with the programme.

After institutionalisation, the Department of Rural Development in association with the Secretary (RWSS) in the state will constitute an 'Advisory Committee' of the project in the COE. Consisting of above 1-4, representative of Secretary/Chief Engineer, engineer concerned with the identified project villages and the representative of Central Coordination Cell (DRD).

The above Committee with the assistance of PROWESS will plan the activities, prepare year-plan and calender, persons responsible for each activity and inputs required for this in the VIII Five Year Plan.

Activities

The following steps are suggested :

- 1) one workshop for decision makers at each COE. The subject of women could be incorporated in the already planned orientation workshop for decision makers. This should aim at laying down the foundation and faith and a decision as what they are expected to do in their states and what they should do;
- 2) development of curriculum for training/workshop of (i) trainers of COE; (ii) orientation of engineers; (iii) training of voluntary agencies; (iv) orientation of NGOs (Panchayats); (v) training of women leaders, motivators, animators, etc., with special emphasis on social mobilisation, participatory discussion and communication;
- 3) preparation of course calender and course material;
- 4) development of training aids and field kits;
- 5) planning and implementation of field level action by the trainees and post-training activities; and
- 6) finalising evaluation parameters for training content, presentation techniques, trainees understanding and learning and improvement of the curriculum.

By this time, the PROWESS should gain strength in working with Indian team and helped the NHRDP institutions to initiate their programme of learning by doing in villages with womenfolk.

In the above context, it may be noted that the cutting edge is not only the decision makers, but also the Director of the Training Institute and the Trainer (faculty). Here the role of Director and the concerned trainer must be defined in relation to their responsibility to the success of field level interaction in the project villages.

PROWESS will also plan the process and instruments of monitoring the taking over and assimilation of its cooperative experiences by local institutions which could be followed by the Central Coordination Cell of DRD.

10. BUDGET/FUNDING

The ITN budget for courses to be conducted by participating and key institutions and its break-up has been given in Table 4 (except for IERT, Allahabad).

10.1 Total cost of ITN

The total cost of ITN project is estimated at Rs.59.35 lakhs (Rs. 4.935 million). Out of this, Rs.34.78 lakhs (Rs.3.478 million) will be contributed by the Government of UK (ODA); Rs.7.5 lakhs (Rs. 0.75 million) by the Government of Netherlands; and Rs.25.07 lakhs (Rs.2.507 million) by the Government of India.

10.2 ODA Contribution

The ODA will also contribute (in addition to above Rs.34.78 lakhs), Rs.3.30 lakhs (Rs. 0.330 million) per year towards cost of International Consultants. Selection of such consultants will however, be approved by the National Coordination Committee of ITN, India.

10.3 Contribution of The Netherlands

The Netherland Government's, contribution (Rs.7.5 lakhs) will be used towards cost of Central Coordinating Cell at the DRD, Delhi. They will also contribute Rs.50,000 per year to meet cost of consultant/adviser to the cell (to be approved by the National Coordination Committee). In addition, they will provide Rs.18 lakhs in foreign exchange (US \$ 200,000) for developing two Key Institutions in States to be identified by DRD, Government of India.

10.4 Contribution of the Government of India

The Government of India (DRD, New Delhi) will provide Rs.25.07 lakhs (Rs.2.507 million). This represents the shortfall between the total cost of the project and contributions received from foreign governments/bilateral agencies.

10.5 Cost estimates

The cost estimates for implementing the ITN programme; share of each bilateral agency and the Government of India and their annual breakup for 5 years together with contingencies required for development of infrastructure of the Participating Institution has been given in the following Tables.

ITN BUDGET (AIH&PH)

		(Rs. '000')						
		Full Year		Years				
				1	2	3	4	5
A.	Project Staff							
	1 Project Manager (P.H. Engg.)	40		15				
	1 Guest Professor (Part Time) (PHE/ES)	27		15				
	1 Lecturer (Hydro-geologist)	30		10				
	1 Field Instructor	20		10				
	1 Programme Officer	30		20				
	1 Administrative Staff	20	135	10	80	185	185	185
	1 Field Asstt. cum Driver	18						
B.	Visiting lecturers, Advisers & Institution staff							
C.	Staff Travel National		50		25	50	50	50
	International							
		50						
D.	Training courses subsistence and travel	80	130		65	130	130	130
								115
	Practising Engrs. 1440 m/days @ Rs.150	215		110				
	Lecture Instrs. 1723 m/days @ Rs.150	260		100				
	ITI Instructors 600 m/days @ Rs.100	60		10				
	Travel to & from courses	100		40				
	Seminars	100		40				
	Transport for site visits	100	835	80	380	835	835	835
E.	Equipment		80		80	80		
		1280		630	1280	1200	1200	1185
F.	Contingencies 10% (20% for first year)	126		120	130	120	60	60
		1406		750	1410	1320	1260	1245

**BREAKUP OF FINANCIAL CONTRIBUTIONS
FROM BILATERALS AND THE
GOVERNMENT OF INDIA**

Overall Budget - Rs. '000'

	Years					Total
	1	2	3	4	5	
AIH&PH	750	1410	1320	1260	1245	5985
GOI CONTRIBUTION	220	362	385	665	875	2507
UK CONTRIBUTION	530 (71%)	1048 (74%)	935 (71%)	595 (47%)	370 (30%)	3478 (58%)
UK Contribution for International Consultants	330	330	330	330	330	1650
Total UK Contribution	860	1378	1265	925	700	5128
Netherlands Governments contribution for creating National Coordinating Cell (at DRD, Delhi)	150	150	150	150	150	750
Netherlands Governments contribution for International Consultants	50	50	50	50	50	250
Total Netherland Governments Contribution	200	200	200	200	200	1000

10.6 Disbursement of funds

The funds made available by foreign government and bilateral agencies as well as grant provided by the Government of India will be placed at the disposal of DRD, New Delhi for necessary disbursement as per Government of India rules and as suggested by the National Coordination Committee.

10.7 The World Bank/UNDP/PROWESS will provide technical/management support to ITN activities in form of software/hardware as decided by the National Coordination Committee. This support could include

- i) design of surveys of training needs;
- ii) preparation and implementation of orientation workshops and specialised courses;

- iii) design and development of teaching aids audio-visual aid, technical information and other including communication materials;
- iv) exchange of experience and information with other Network (outside India).

11. MONITORING AND EVALUATION

The Central Coordination Cell in association with Participatory and Key Institutions, Centres of Excellence and Specialised Institutions and the National/International consultants should jointly prepare annual plans for carrying out the objectives of the HRD project.

1. They should also prepare date wise schedule of activities indicating the persons responsible for each activity and sub-activity in form of PERT chart. This should be circulated to all concerned. Specimen of this is placed below.
2. The Coordination Cell will monitor the project based on the formal feed-back from above and the guidelines approved by the National Coordination Committee (NCC). The cell will get a MIS developed for monitoring and evaluation of the National HRD Programme and ITN programme.
3. The evaluation parameters should be prepared and got cleared by the NCC (for this purpose also refer output indicators discussed in Part I and chapter 14 p. 21-27).
4. The Cell will also act as 'Watchman' for 'learning' being imparted by training institutions and pinpointing gaps to respective institutions.
5. For all activities for monitoring and evaluation, the cell will maintain liason with states and institutions.
6. The project should be evaluated at the end of the first year, third year and finally in the 5th year.

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12. OUTLOOK

The ITN project fits well with the Government of India's priorities for human resources development for accelerating and improving the RWSS system in vast rural areas of the country. It is this planned approach which should improve the quality of skills of all those responsible for this sector and expose them to the modern system management and S&T for provision of sustainable lowcost safe water supplies and sanitation.

Human resources development should not be isolated from its management. All efforts must end to increased, safe and sustained drinking water supply. No one model can accomodate such a highly complex subject as discussed in this report, but management models as software can help to analyse sub-systems which may be friendly to water managers (the professionals) and the community women at the receiving end.

It is not possible at this stage to project quantifiable results and benefits. If tomorrow comes intime, the network could have a long way to bridge the gap of continuing education and training to help all to make their best better.

The cutting edge of the HRD is quality of instructors/trainers at the Participating and Key Institutions; their 'will to change' in tune to VIII Plan expectations; the appropriate and task oriented curriculum; and the coopration of state PHEDs/Water Boards responsible for RWSS in States.



Safe Water 2000

**TRAINING NETWORK FOR HUMAN RESOURCES
DEVELOPMENT FOR RURAL DRINKING WATER
SUPPLY AND SANITATION PROGRAMME
(Vertical and horizontal linkages)**

NATIONAL COORDINATION COMMITTEE (NCC)	GOVT. OF INDIA (DRD) FUNDED PROGRAMME	UNDP/WORLD BANK ODA/DUTCH INTERNATIONAL TRAINING NETWORK (ITN)	MULTILATERAL/BILATERALS UNDP/WORLD BANK/PROWESS UNICEF/WHO/NETHERLANDS ODA/DANIDA/OTHERS
CENTRAL HRD COORDINATION CELL (DRD)	REFRESHER COURSES	AIIH & PH, (CALCUTTA) PARTICIPATING INSTITUTION DRD	TRAINING ABROAD UNDER BILATERAL PROGRAMME
GOVERNMENT OF INDIA (DRD) FUNDED PROJECT .CENTRES OF EXCELLENCE .SPECIALISED INSTITUTIONS .STATE INSTITUTIONS	SHORT-TERM PROGRAMMES INCLUDING DIPLOMA AND SPECIALISED COURSES	GUJARAT JALSEVA TRAINING INSTITUTE (GJTI) (GANDHINAGAR) KEY INSTITUTION DRD	TRAINING ABROAD IN CONJUNCTION WITH FIELD TRAINING IN INDIA (PARTICIPATING INSTITUTIONS)/CENTRES OF EXCELLENCE
REFERAL GROUP (IRC) NIDC, NID	LONG-TERM PROGRAMMES GRADUATE AND POST-GRADUATE COURSES	S J C E (MYSORE) KEY INSTITUTION DRD	STRENGTHENING STATE INSTITUTIONS FOR CAPABILITY AND CAPACITY DEVELOPMENT TO MEET NEW TRAINING NEEDS AND ESTABLISHING NEW STATE TRAINING CENTRES

G. Ghosh
12.7.90

The UNDP-
World Bank
Water and
Sanitation Program

*The International
Training Network*

ITN

The UNDP-World Bank Water and Sanitation Program was created in the early 1980s to address the growing need for safe water supplies and adequate sanitation in the developing world. Initially concerned with the development and testing of affordable technologies such as hand-pumps and sanitary latrines, it has broadened its scope and now works with countries to build the national capacity for sustainable delivery of water supply and sanitation services on a large scale. Partners in this venture are the developing countries themselves and multilateral and bilateral agencies that fund the Program's activities.

The Program is managed by the Water and Sanitation Division of the World Bank's Infrastructure and Urban Development Department, and it is funded through interregional, regional, and country projects financed by the United Nations Development Programme (UNDP) and bilateral donors. Regional Water and Sanitation Groups (RWSGs) have been established in Nairobi, Abidjan, New Delhi, and Singapore to provide technical assistance to both governments and external agencies and to support in-country staff and activities.

As focal points for the Program's field operations, the RWSGs assist governments in a full range of sector development: from sector planning and strategy formulation to the design and implementation of large-scale investment projects.

For South Asia, the RWSG is located in Delhi with the following address:

South Asia
Mr. Tauno Skytta, Manager
c/o The World Bank
P.O. Box 416
New Delhi 110001, India
Telephone: (91-11) 626555 or
697162
Fax: (91-11) 694077
Telex: (953) 3161493

HUMAN RESOURCE DEVELOPMENT

When water and sanitation systems have been installed without concern for local understanding, participation, and belief, they have had limited effects and have been unsustainable in the long run. In poor communities, this lack of understanding has often resulted in systems that cannot be maintained by communities and that are neglected by central authorities. While the UNDP-World Bank Program became aware of the need to improve levels of local understanding and participation early on, methods for attaining such improvements proved much more difficult to grasp than the answers to initial engineering challenges. Much more was required than simply educating individuals; entire schools of thought needed to be changed. While education and training among sector professionals and government decision makers obviously was called for, the Program was not in a position to use its limited resources in broad-based direct instruction.

The International Training Network (ITN) was set up in 1984 as its primary means of building human resources and providing sectoral training. The ITN has promoted the establishment of a network of collaborating local, regional, and international institutions in order to strengthen and enhance their internal capacities for training, education, information dissemination, and research activities on appropriate, low-cost water supply and sanitation. While the process has required an intensive and long-term commitment, it has been crucial to increasing the sensitivity of sector professionals to meeting the needs of the poor through alternative technologies.

The International Training Network has made steady progress in developing national and regional centers for its activities and in attaining external support agency backing. Thus far, eight network centers have been established: two in Indonesia, one in India, one in Ghana, regional centers in East Africa, Francophone West Africa, and Southern Africa, and the newest center in the Philippines. An additional 11 centers are in various stages of preparation. In total, the network now includes over 100 participating institutions in 20 countries.

As the network expands and individual centers become well-established, participating institutions have become increasingly able to gain from the experiences of the other organizations involved in the network. There is a great deal of common ground for collaboration and exchange of information on teaching and research activities between agencies and between network centers. The ITN is increasing efforts to encourage and facilitate such collaboration.

In the area of global human resource activities, new ITN training materials were developed during 1989-90, such as a module on the use of technical information, developed in conjunction with the International Reference Center, with the backing of the Netherlands government. A final version of another module on rural water supply treatment, developed by the International Reference Center for Waste Disposal, is now ready for mass production, and a module on strategic solid waste planning has been drafted. In addition, an instructors' guide for the information and training films was developed and is under production.

The Program continues to expand its human resource development abilities beyond the realm of the ITN, as it increases its effort to address the broader concern of building capacity. The National Professionals Training Program, formulated in 1989, is a major initiative. The project aims to develop a corps of well-trained professionals and managers from developing countries through their direct participation with the Program, allowing them to learn to plan and implement water supply and waste management systems using appropriate, low-cost technologies and community-based approaches.

INDO-DUTCH BILATERAL COOPERATION

Indo-Dutch cooperation in the rural drinking water supply and sanitation sector dates back to 1978. This cooperation has developed rapidly to cover projects in the States of Andhra Pradesh, Gujarat, Kerala and Uttar Pradesh. In March 1989 agreement was reached to extend this cooperation to the State of Karnataka.

The average annual contribution of the Netherlands to this Sector is approximately 20 million Guilders (about Rs.18 crore), and constitutes approximately 10% of the total annual bilateral cooperation allocation for India.

The emphasis in the Indo-Dutch project is on an integrated approach to rural drinking water supply and sanitation. In effect this means that in addition to identification of sources, testing capacity and water quality, construction of headworks and distribution networks, construction of water treatment plants, construction of latrines and other technical works, there is also an intensive and systematic effort to involve the local communities, specially the women, in every aspect of project planning, designing, implementation and maintenance. Intensive health and hygiene education programmes both at community and school levels are intended to bring about improvements in personal and social practices which will contribute to the improvement of the health status of the people. Programmes of income generation for women constitute an important component of the projects.

A significant characteristic of the projects is that all the materials required are purchased in India out of Dutch funds.

The implementing agencies are the appropri-

ate departments of the respective State Governments, which, in turn send regular progress reports to the Government of India. These reports, including the statements of expenses, are transmitted to the Royal Netherlands Embassy for reimbursement to the Government of India.

A significant feature of the bilateral cooperation is the system of "pre-financing" which facilitates the start up of projects without imposing a strain on the financial resources of the implementing agencies.

A Water Programme Coordinator is stationed in the Embassy in New Delhi by the Government of the Netherlands to interact with the Government of India, the State Governments and the implementing agencies in respect of the projects in this Sector. He is responsible for facilitating the achievement of the overall objectives of the programme as agreed to bilaterally, and for identifying new projects. He coordinates the support services to the implementing agencies such as the biannual Review and Support Missions, training of engineers, evaluations, and workshops on common problems such as desalination, defluoridation slow sand filtration etc.

The Netherlands Government fields half-yearly Review and Support Missions to Andhra Pradesh, Gujarat and Uttar Pradesh. These Missions review the on-going progress of the projects and identify areas in special need of additional support. They offer technical advice as well as assistance in project monitoring, management and training.

In Kerala, a Netherlands Technical Liaison Officer has been appointed to assist the Kerala Water Authority with project design, technical supervision of implementation, quality control of materials and adherence to agreed norms to ensure cost effectiveness of the projects. To assist with the non-technical, socio-economic aspects of project implementation, the Netherlands Government supports two Socio-Eco-

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conomic Units and a Coordinating Office in Kerala. The Danish International Development Agency, DANIDA, participates in the support to the Socio-Economic Units and the Coordinating Office. These SEUs promote community participation in project planning and implementation, health and hygiene education, training of local people for operation and maintenance and cost recovery.

The technical and management support services provided by the Netherlands Government have been widely appreciated by the implementing agencies and the State Governments. A recent evaluation of the performance of these

support services revealed that the quality of the technical, management and organizational support can be enhanced by making them available as close as possible to the implementation level on a day-to-day basis. Accordingly, the Netherlands Government has decided to set up State level Project Support Units (to be called NAPSUs) to provide the implementing agencies with assistance in project management, monitoring, performance evaluation, organizational development and training. These services will be provided using indigenous expertise.

This brochure provides a broad over-view of the projects being implemented in the States of Andhra Pradesh, Gujarat, Kerala, Uttar Pradesh and of the project to be implemented in Karnataka.

THE POLICY

The basic thrust of Netherlands development policy is to consider the drinking water supply and sanitation sector as one of the means of improving the living conditions and the health of the people: specifically, to fulfill one of the basic needs of the disadvantaged sections of the population, particularly, though not exclusively, in the rural areas.

Consistent with this basic thrust, some of the guidelines which have been formulated for the selection of projects are:

- * Focus on population groups most in need of assistance. Priority will be given to the poor in rural (and semi-urban) areas where the drinking water supply and sanitation conditions do not meet even the local minimum health standards.
- * Improving the health of the people will be the primary objective of the projects. Therefore, sanitation, health education and other health related components will receive due emphasis.
- * Community participation from the earliest stages of designing of the projects, as well as during implementation and operation will be insisted upon. Emphasis will be on the participation of women, who are the primary users of the facilities; and who are the major influence in determining the attitudes and practices in the community.
- * Long term viability of the projects has to be ensured. This will be done by:
 - enhancing local project management capacity;
 - adopting locally available, appropriate technology;
 - training local people in the proper use of the facilities;
 - training local people to maintain the equipment;
 - organizational development of the implementing agencies;
 - promoting community organization;
 - education and motivation for community participation.
- * In order to reach as many people as possible, the lowest investment and maintenance cost per capita will be criteria for selecting the technology to be applied, and for the selection of locations.
- * To ensure sustainability of the projects, users have to accept responsibility for the recurring expenses on operation and maintenance.
- * To conserve scarce water resources, and to keep costs to a minimum, consumers may have to accept relatively low, but economically feasible supply standards and simple technologies.
- * Inter-sectoral coordination is essential to maximize the benefits of the projects. The supply of potable water or the provision of latrines will not be considered as ends in themselves; nor will they be provided in isolation from other factors impinging on the development of the local communities.

PART THREE

**COMPETENCE AND CAPABILITY
OF PROPOSED
CENTRES OF EXCELLENCE (COE)**

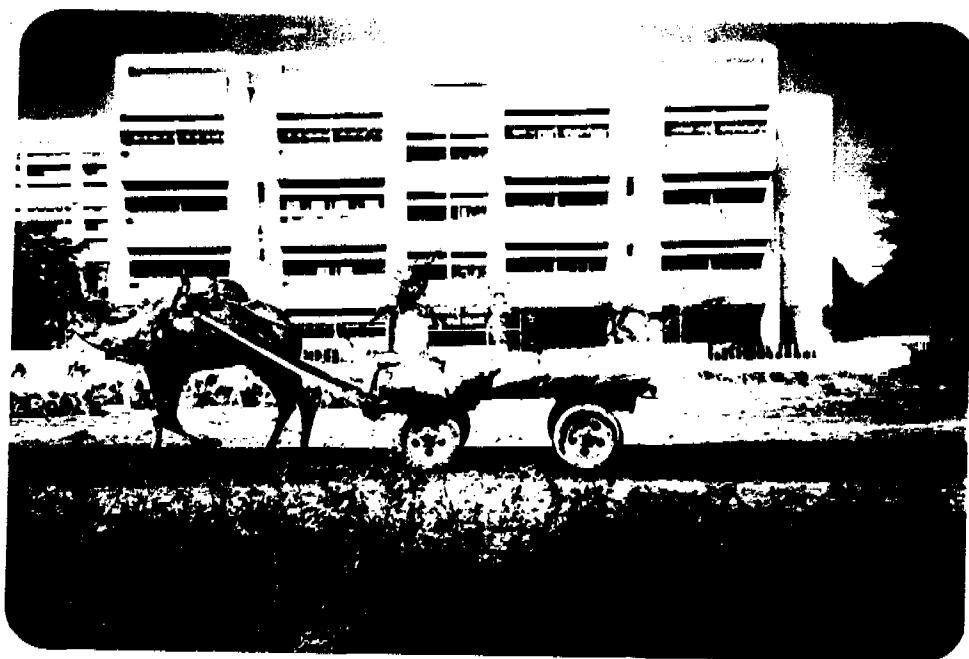
PART THREE

COMPETENCE AND CAPABILITY OF PARTICIPATING/KEY INSTITUTIONS

1. All India Institute of Hygiene *
and Public Health, Calcutta
(AIIH&PH)
2. Gujarat Jalseva Training Institute,
(GJTI), Gandhinagar, Gujarat
3. SJ College of Engineering, Mysore,
Karnataka
4. Institute of Engineering and
Rural Technology, Allahabad
Uttar Pradesh

* Information about AIIH&PH, Calcutta
could not be included

The competence and capability of such and other institutions to be identified as Centre of Excellence, however, need to be served through criteria of their selection duly finalised by the NCC/DRD.



Gujarat Jalsewa Training Institute, Gandhinagar

Capability and competence of GJTI to become All India Training Centre under the International Training Programme.

1.0 Introduction :

Gujarat Jalseva Training Institute (GJTI) was founded in 1988 with the funds from IDA 1280-IN. At this moment Government of Gujarat provide financial support for training needs of Gujarat.

GJTI has been set up at a capital cost of Rs.302 lakhs at Gandhinagar. This is the first of its kind in India exclusively for training needs of water supply and sanitation sector. The decade experience has taught a lesson that the operation and maintenance of the assets created needs the very essential input of trained manpower which is lacking so far. Awareness on the part of planners, implementers and beneficiaries is increasing for water supply and sanitation as a result the scope of training is becoming larger and larger day by day. A vast coverage of rural population with hardwares and also innumerable problems in growing urban centres calls for well trained crews for each and every water and sanitation unit spread over large areas. The GJTI is designed to meet with local needs of Water Supply Board as well as Panchayats, Municipalities and NGOs. The benefit of GJTI can be made available for the needs of the nation.

2.0 Location and Building

A piece of land in the Sector 15 (exclusively reserved for educational activities) in Gandhinagar was allotted by Government of Gujarat. The plot area is 10,000 sq.m. The Institute building with infrastructure is appended vide Annexure-I.

3.0 Organisational Capacity

The Institute is headed by a full time Director in the rank of Chief Engineer and is assisted by two Joint Directors in the rank of Superintending Engineers. Seven Senior Training Officers in the rank of Executive Engineer alongwith nine Training Officers in the rank of Deputy Executive Engineer are the faculty members for various courses. The organisational set up is appended vide Annexure-II. In addition to this expatriate members outside Institute are also invited for taking some of the classes/courses. The details of the trainers at GJTI are appended vide Annexure-III. Following Institutes of National/International repute are existing in the vicinity of GJTI and their services can be availed as and when necessity arises.

1. Sardar Patel Institute of Public Administration, Ahmedabad.
2. Gandhi Labour Institute, Ahmedabad
3. Space Application Centre, Ahmedabad
4. Indian Institute of Management, Ahmedabad
5. National Institute of Design, Ahmedabad
6. National Institute of Occupational Health, A'bad
7. Udaybansingji Cooperative Training Institute, G'nagar
8. Water & Land Management Institute, Gandhinagar
9. Sardar Patel Institute of Social & Economic Research
10. Institute of Rural Management , Anand
11. Entrepreneurship Development Institute, Ahmedabad
12. Physical Research Laboratory, Ahmedabad
13. Ahmedabad Textile Industries Research Association, Ahmedabad
14. University School of Architect, Ahmedabad
15. Centre for Environmental Engg., Ahmedabad
16. Vikram Sarabhai Community Centre, Ahmedabad
17. Gujarat Cancer Research Institute, Ahmedabad

18. Institute for Plasma Research, Ahmedabad
19. Environmental Research Institute, Ahmedabad
20. Self Employed Womens Association, Ahmedabad
21. Centre for Health, Environment, Training and Nutrition

4.0 Training Courses conducted

The Institute started functioning by conducting pilot training programme for first six months at the instance of World Bank Mission. In the first six months of pilot training programme 16 courses were conducted for 11 various subjects. The total number of personnel trained during that period was around 300. Details appended vide Annexure-IV. On the successful completion of pilot training programme, the first regular training course was conducted during the year 1989-90. Total number of 23 courses spreaded in 60 batches were conducted to train 2776 persons. The details of the programme is annexed vide Annexure-V.

GJTI also conducts training at field level to train grass-root level staff at various taluka and district places in Gujarat. The current year training programme is appended vide Annexure-VI and it is planned to train 20,000 persons upto 1993-94.

5.0 National Level Training Courses conducted

GJTI could successfully conduct 11 national level courses on different subjects as under :

- | | |
|--|--|
| 1. Defluoridation | 20-22 Feb.88 at Gandhinagar |
| 2. " | 7-8 Oct. 89 at Himatnagar |
| 3. " | 20-21 April 90 at Bhuj |
| 4. " | 23-24 April 90 at Palanpur |
| 5. Scientific Source Finding | 22.8.89 to 8.9.89 at G'nagar |
| 6. Rural Water Supply Feasibility study & report | 4 courses Dec.89 to Feb.90 at Gandhinagar (WHO. sponsored) |
| 7. Water Quality Monitoring | 16-20 Oct.89 at Gandhinagar
17-20 April 90 at Gandhinagar |

In the above courses participants from various places in India took part and showed their satisfaction.

GJTI has also submitted a proposal to Government of India for conducting 16 national level training courses at an estimated cost of Rs.6.81 lakhs. GJTI has also sent proposal to Govt. of India for conducting 11 national level refresher courses from 1991-92 onwards annexed vide Annexure-VII.

6.0 Details of Training Courses

GJTI conducted various courses for different categories of personnels engaged in water supply and sanitation activities. The profile of some of the courses conducted by GJTI is appended vide Annexure- VIII.

7.0 Trainers' Training

To aquiant and update the knowledge of the trainers with the modern management techniques and technical development in the field of water supply and sanitation, the trainers are sent for training in India and abroad.

8.0 From the foregoing details it can be seen that GJTI has enough infrastructrue with organisational set up for developing training programmes in the field of water supply and sanitation sector for national level needs. In the recent past GJTI could organise an International Workshop for SAARC countries on 'The Use of Local Materials for Water Supply and Sanitation Projects'

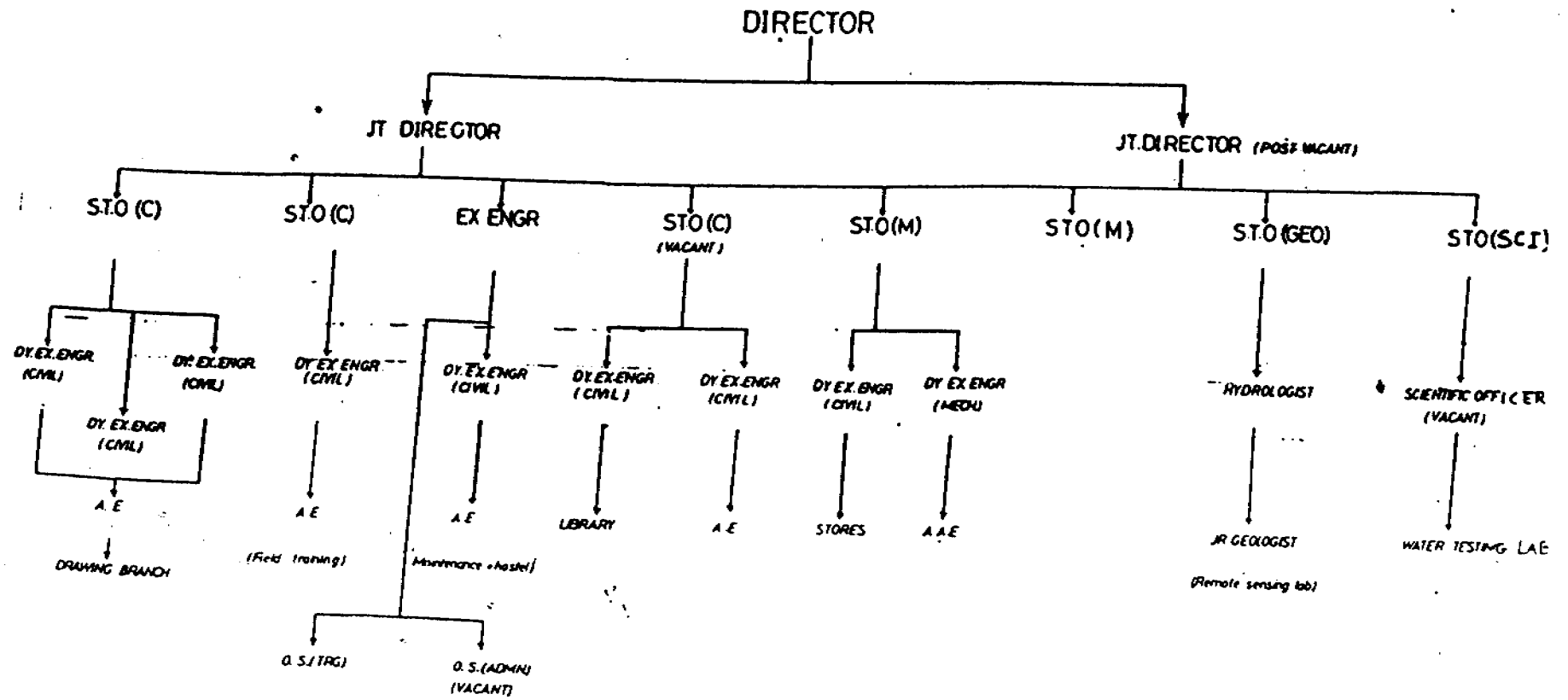
From the above, it emerges that the GJTI is capable and competant to take up any training programme of National level if entrusted.

ANNEXURE - I

Infrastructural Facilities available GITI.

1.	Class Rooms	-	4 No. (1 A/c)	
2.	Hostel Rooms	-	6 Single bed,)	Total Capacity
			24 Three beds,)	100 Persons
			7 VIP(3 beds))	
			2 VVIP)	
2.A.	Canteen	-	1 No. To cator 100 persons at a time.	
3.	Laboratories			
	1. Remote Sensing	-	1 No.	
	2. Water Quality Testing	-	1 No.	
	3. Waste Water Testing	-	1 No.	
4.	Demonstration Rooms	-	2 Nos.	
5.	Conference Room	-	1 No.	
6.	Seminar Room	-	1 No.	
7.	Library	-	1 No.	
8.	Staff Quarters	-	18 Nos. (18 families)	
9.	Equipments	-	Tape Recorder	2 Nos.
		-	Television	2 Nos.
		-	V.C.R.	1 No.
		-	Overhead Projector	4 Nos.
		-	Slide Projector	2 Nos.
		-	Screens	4 Nos.
		-	Projection T.V.	1 No.

STAFF SET-UP CHART OF GUJARAT JALSEVA TRAINING INSTITUTE GANDHINAGAR



STO = Senior training officer
 C = Civil
 M = Mechanical
 GEO = Geological
 SCI = Scientific
 AE = Assistant engineer
 A.A.E. = Assistant Assistant Engineer

ANNEXURE - III

Details of Trainers at Gujarat Jalseva Training Institute

Sr. No.	Name & Designation	Educational Qualification	Experience	Special Training undergone if any
1.	2.	3.	4.	5.
1.	Shri K.G. Dave Director	M.E.(PH)	33 yrs.	5 months WHO fellowship study tour to Austria, Philippines, Malaysia & Singapore.
2.	Shri J.M. Barot Joint Director	M.Sc (Chem)	12 yrs.	Training on Water Quality Monitoring at Netherland (6 weeks) (1984)
3.	Shri C.M. Christi Senior Training Officer	B.E.(Civil)	25 yrs.	Project Planning & formulation of Water Supply & Sanitation at UK. (12 weeks) (1987)
4.	Shri S.N. Pathak Senior Training Officer	B.E.(Mech.)	18 yrs.	
5.	Shri C.C. Shah Senior Training Officer	B.E.(Civil) up to M.E.	24 yrs.	Undergone 12 weeks course on Planning, Implementation, & Appraisal of Water Supply Project at Bradford University, UK. (1985)
6.	Shri R.J. Suthar Senior Training Officer	B.E.(Civil)	21 yrs.	
7.	Shri S.N. Bhatnagar Training Officer	M.E. (Env.Engg.)	19 yrs.	1. Training for Trainers at TTTI, Madras. 2. Project, (21 days course) Formulation, Appraisal, Monitoring & Evaluation at UK. 1989 (12 weeks)

1.	2.	3.	4.	5.
8.	Shri A.K. Shah Training Officer(C)	M.E. (Env.Engg.)	21 yrs.	Training course on Project, Formulation, Appraisal, Monitoring & Evaluation at UK.
9.	Shri M.N. Mehta Training Officer(C)	M.E. (Env.Engg.)	19 yrs.	<i>Undergone training as per Sr. No. 5</i>
10.	Shri R.J. Joshi Training Officer(C)	B.E.(Civil) PG Diploma (Sani.Engg.)	15 yrs.	Post Graduate diploma in Sanitary Engg. from IHE, Delft the Netherland.
11.	Shri J.M. Trivedi Training Officer (C)	D.C.E.	26 yrs.	
12.	Shri A.J. Devasthali Training Officer(C)	M.E. (Env.Engg.)	17 yrs.	Training for Trainers at TTTI, Madras.
13.	Shri A.K. Shukla Training Officer(C)	B.E.(CIVIL)	20 yrs.	
14.	Shri M.D. Patel Training Officer(C)	D.C.E.	13 yrs.	
15.	Shri B.B. Shah Training Officer(M)	B.E.(Mech.)	7 yrs.	
16.	Shri R.N. Bhandari Training Officer(C)	D.C.E.	25 yrs.	
17.	Shri S.M. Patel Asstt. Training Officer(C)	B.E.(CIVIL) <i>Dip. Management</i>	<i>8</i> yrs.	Diploma in Management
18.	Shri R.S. Naik Asstt. Training Officer(C)	M.E.(Civil)	6 yrs.	<i>Advanced Diploma & specialization Diploma in HRD</i> Diploma in Construction Management from NICMAR, Bombay.
19.	Shri R.M. Kabaria Asstt. Training Officer(C)	B.E.(Civil)	4 yrs.	
20.	Shri A.S. Pandit Asstt. Training Officer(M)	D.M.E.	17 yrs.	
21.	Shri R.M. Purohit Senior Training Officer(S)	M.Sc(Chem.)	15 yrs.	

1.	2.	3.	4.	5.
22.	Shri R.N. Shukla Senior Training Officer(G)	M.Sc(Geo.)	15 yrs.	
23.	Shri C.S. Bumrah Training Officer (G)	M.Sc(Geo.)	7 yrs.	
24.	Shri U.N. Pandya Asstt.Training Officer(G)	M.Sc(Geo.)	6 yrs.	
25.	Shri N.R. Gandhi Asstt.Training Officer(C)	B.E.(Civil)	4 yrs.	
26.	Shri M.K. Maheshwari Asstt.Training Officer(C)	B.E.(Civil)	6 yrs.	
27.	Shri V.S. Kathrani Asstt.Training Officer(C)	B.E.(Civil)	4 yrs.	Shortly Completing M.E.(Env.Engg.)

ANNEXURE - IV

Details of Training conducted at Gujarat Jalseva Training Institute during Pilot Training Programme lecture October '88 to March '89.

Sr. No.	Name of Course	Duration	Conducted on dates	Total course conducted
1	2	3	4	5
1.	Caretaker	3 days	17.10.88-19.10.88	1
2.	Mistry	3 days	1.12.88- 3.12.88 23. 1.89-25. 1.89	2
3.	Source Development	3 days	10. 1.89-12. 1.89	1
4.	Hand Pump Mechanic	3 days	2.11.88- 4.11.88 2. 3.89- 4. 3.89	2
5.	Pump Operator	3 days	15.12.88-17.12.88 16. 2.89-18. 2.89	2
6.	Scientific Source Finding	5 days	5.12.88- 9.12.88	1
7.	Water Quality Monitoring	3 days	25.10.88-27.10.88 7. 2.89- 9. 2.89	2
8.	Filter Plant Operation	3 days	7. 3.89- 9. 3.89	1
9.	Low Cost Sanitation	3 days	5. 1.89- 7. 1.89	1
10.	Project Planning & Management	2 days	24.11.89-25.11.89 18. 1.89-19. 1.89	2
11.	Preventive Maintenance of Distribution system	3 days	21.12.89-23.12.89	1
Total				16

ANNEXURE - V

TRAINING COURSES CONDUCTED BY GJTI UP TO MARCH 1990.

Sr. No.	Course	1988-'89		1989-'90		Remarks
		Course	Trainees	Course	Trainees	
1.	2.	3.	4.	5.	6.	7.
A. <u>PROJECT FORMULATION</u>						
1.	Remote Sensing	1	26	--	--	
2.	Project Planning & Management	2	44	1	21	
3.	Basic course in Water Purification	--	--	1	14	
4.	Scientific Source Finding	--	--	1	29	National level course
5.	Geophysical Technique for Ground Water Investigation	--	--	1	18	
6.	Rural Water Supply Feasibility report	--	--	4	66	National level course
7.	Sewerage Treatment Processes	--	--	1	27	
8.	One day workshop on Hydrofacturing	--	--	1	32	
B. <u>PROJECT IMPLEMENTATION</u>						
1.	Low Cost Sanitation	1	17	1	15	
2.	Development of Source	1	17	--	--	
3.	Water Harvesting Structure	--	--	1	29	
4.	Introductory course of AEs & AAEs.	--	--	4	89	
5.	Desalination	--	--	2	34	
6.	Preservice Training for Junior Clerk	--	--	3	135	
7.	Transmission & Distribution of water	--	--	2	38	

1.	2.	3.	4.	5.	6.	7.
C. <u>PROJECT O & M</u>						
1.	Water Quality Monitoring	01	21	2	66	One out of two is National level course
2.	Valveman/Lineman	--	--	3	134	
3.	Handpump Mechanic	2	28	2	34	
4.	Pump Operator	2	37	2	34	
5.	Mistry	2	38	4	79	
6.	Preventive Maintenance of Distribution system	1	09	--	--	
7.	Filter Plant Operator	1	11	--	--	
8.	Store Management	--	--	2	51	
D. <u>MASS AWARENESS & PEOPLES PARTICIPATION</u>						
1.	Rural Water Supply Caretaker	1	26	8	365	
2.	* Handpump Caretaker	--	--	11	722	
3.	Defluoridation Camps	1*	109	2	744	*National level course
Total:-		16	383	60	2776	

J. M. BAROT
Joint Director



**GUJARAT WATER SUPPLY
AND SEWERAGE BOARD**
Gujarat Jalseva, Training Institute
Sector-15, GANDHINAGAR.

PB/TRG/205/4500

1990

Shri Jagdish Chanderji
Deputy Secretary
Ministry of Agriculture
Department of Rural Development
Government of India
Krishi Bhavan
New Delhi 110 001

**Sub : Proposal for conducting National Level Training Courses at
GJTI, Gandhinagar(Gujarat).**

**Ref : Member Secretary, GWSSB's letter No.PB/TRG/90-91/1094
dated 3.5.1990.**

Sir,

A proposal for conducting 16 National Level Training Courses during 1990-91 amounting to Rs.6.81 lakhs has been submitted vide letter under reference. Since the proposal was prepared with reference to the appeal by Government of India, the tentative dates for each course has also been fixed in the calendar 1990-91 of the Institution. It is now requested to kindly convey the approval at the earliest so that already lapsed courses can be re-arranged and accommodated in the calendar. We have a very tight schedule for current year and hence finding a room for these courses at later stage will be impossible.

Your early approval and allotment of funds accordingly are requested.

Thanking you,

Yours faithfully,

(J.M. BAROT)
Jt. Director

Encl: Calendar of courses during 1990-91.

Telephones . 23305, 23306, 23307 (P), 23243 23576 (R).

ANNEXURE VI

GUJARAT JALSEVA TRAINING INSTITUTE, (GUJ WATER SUPPLY & SEWERAGE BOARD) - Sector:15, G'nagar

CALENDAR OF TRAINING COURSES FOR THE YEAR 1990-91

Sr. No.	Name of the course	Days	Capacity	April Venue	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Medium of Instruction	Designation	Minimum Eligibility Qualification
1	Hand Pump Caretaker	2	50	25-26 Godhra	24-25 Valsad	21-22 Himatnagar	26-27 Jamnagar	28-29 Bharuch	20-21 Narswadi	11-12 Palanpur	22-23 Bahod	20-21 Bavnagar	24-25 Rajpura	21-22 Bodeli	21-22 Rajkot	Gujarati	Handpump Users	Read & Write Guj
2	Village W/S Caretaker	2	50	17-18 Dwarika	22-23 Valsad	19-20 Surat	11-12 Himatnagar	8-9 Dabhoi	11-12 Palitana	25-26 A'bad	6-6 G'nagar	27-28 Anjar	9-10 Sankarapur	13-20 Una	6-7 Dahod	Gujarati	Sarpanch Vaiaati Gramsevak etc.	Read & Write Guj
3	Maintenance of Zigs Compressors	3	30			12-16 Surat			11-15 Rajkot			12-15				Gujarati	AS, AAS, Drilliers Fitters, Foreman etc	Read & Write Guj
4	Pump operator	3	50	17-19			17-19				13-15			7-9		Gujarati	Pump Operator, Electrician	ITI-Certificate
5	Valve-man/Lineman	3	50		16-17 Surat	6-7 Radhanpur	25-26 Khamhat	30-31 Baroda	26-27 Jamnagar	4-5 Ahmedabad	27-28 Himatnagar	13-14 Morvi	23-24 S'nagar	6-7 Porbandar	12-13 Nakhatrana	Gujarati	Valve-man, Lineman etc	Read & Write Guj
6	Hand pump mechanic	3	30		8-10			7-9		4-6		5-6 Godhara				Gujarati	Hand Pump Mechanic, Fitter Helper etc.	Read & Write Guj
7	Chemist	9	30				4-13 Baroda									English	Chemist, Plant Inspector	B.Sc.
8	Water purification technologies	4	30		1-11											English	EEs, DEEs, ASs, AASs, Overseer	D.C.E.
9	Mistry	4	30	17-22		5-8			25-28		27-30	26-29	16-19			Gujarati	Mistry, Sitekarkoon	S.S.C.
10	Introductory course for AEs & AASs	11	50				16-27		10-21		12-21	10-21				English	ASs, AASs & Overseer	D.C.E.
11	Procurement of stores and its management	5	30			26-26 tech		16-16 non-tech								Guj/Eng	DEEs, ASs, AASs, Overseer Storekeeper, Clerk etc	D.C.E./D.M.E. S.S.C.
12	Water Quality Monitoring	4	30	17-20				20-23		3-6		26-29 Rajkot				English	DEEs, ASs, AASs & Chemists	B.Sc./D.C.E. D.M.E.
13	Low Cost Sanitation	1	30		22-25									5-6	5-6	Guj/Eng	ASs, AASs, Sanit. Inspector	Read & Write Guj/Eng
14	Project Planning & Management	4	30					7-10								English	AASs to BEs	B.C.E./D.M.E.
15	Leak detection	4	30	22-26												English	ASs to EEs	D.C.E./D.M.E.
16	Desalination	4	30							6-11						English	ASs to EEs	D.C.E.
17	Course on Pumping main	4	30											19-22		English	Overseer to EEs	D.C.E.
18	Transmission & Distribution of Water	4	30			13-16	4-7						26-31		13-16	English	Overseer to EEs	D.C.E.
19	Water Treatment Plant Design	4	30	9-12										15-28		English	ASs to EEs	D.C.E.
20	Low Cost Sewage Treatment Technologies	4	30					28-31								English	ASs to EEs	D.C.E.
21	Defluoridation	3	30									18-20				Eng/Hindi	Overseer to EEs & Chemist	B.Sc./D.C.E.
22	Evaluation of Aquifer Parameters	10	30								13-21		1-11			English	ASs, AEs, DEEs, Geologist	MSc(Geo)/DCE
23	Quality Monitoring of Hand Pumps	5	30		8-13								3-6			Eng/Hindi	ASs, AEs, HP-Mechanic	S.S.C.
24	Involvement of Women in Maintenance of HP	3	30			26-28										Eng/Hindi	AASs to BEs, Sci. Officer	BSc/DCE/DME
25	Water Harvesting Structures	3	30													English	AASs to BEs	MSc(Geo)/DCE
26	Computer application	3	30															
27	Chlorination & Use of Chlorinators	5	30						4-6 Baroda							Eng/Hindi	ASs, AASs	
28	Course on Guinea worm Eradication	3	30				18-20									Eng/Hindi	AASs, AEs, Paramedical	BSc/DCE/DME
29	RWSP Feasibility Study & Reports (WZ)	5	30										7-11			English	AASs to BEs	D.C.E.
30	Remote Sensing Techniques	3	30			13-15										English	AASs, AEs, DEEs, Geologist	MSc(Geo)/DCE
31	Scientific Source Finding	9	30						17-27							English	AASs, AEs, DEEs, Geologist	MSc(Geo)/DCE
32	Critical Review of Reg. WS Schemes	5	10			12-16 Junagadh								12-16 Radhanpur		English	Overseer to ASs	D.C.E.
33	Course for Drivers	3	15				4-6									Gujarati	Drivers	Read & Write Guj
34	Pre-service Training for Clerks	22	40	29/3-26	21-----16		4-31	27-----21			5-----1			18-----16		Gujarati	Clerks	S.S.C.

note: Wherever the venue is not mentioned, it is to be understood that it will be at GTI, G'nagar.

Annexure - VII

Details of Govt. of India sponsored Short Term Refresher Courses proposed to be conducted at GJTI from 1991-92 onwards

Sr. No.	Name of course	Duration
1.	Water Works Supervisor	4 weeks
2.	Hydrologists/Engineers on Ground Water Well Techniques	1 week
3.	Water Treatment & Plant Design	1 week
4.	Public Health Engineering Structures	1 week
5.	Care & use of chlorinators	1 week
6.	Pipes and Conduits	1 week
7.	Rational Design for Water Treatment Facilities	2 weeks
8.	Low Cost Sanitation using pour-flush Water seal latrines	1 week
9.	Sewage Treatment Plant Desing	9 days
10.	Preventive Maintenance and Leak Detection	10 days
NEW COURSE		
11.	Water Quality Surveillance	1 week

Note : The proposal is submitted to the Deputy Director(PHE), CPHEEO, Ministry of Urban Development, Nirman Bhavan, New Delhi vide No.GJTI/PB/TRG/844/4954 dated 28.8.1990.

GUJARAT JALSEVA TRAINING INSTITUTE
(Gujarat Water Supply & Sewerage Board)
'G' Road, Sector-15, Gandhinagar-382 015.
Gujarat (India)

TELE Nos
23305
23306
23307
23243

ELIGIBILITY FOR RECOMMENDING THE FRAINEEES

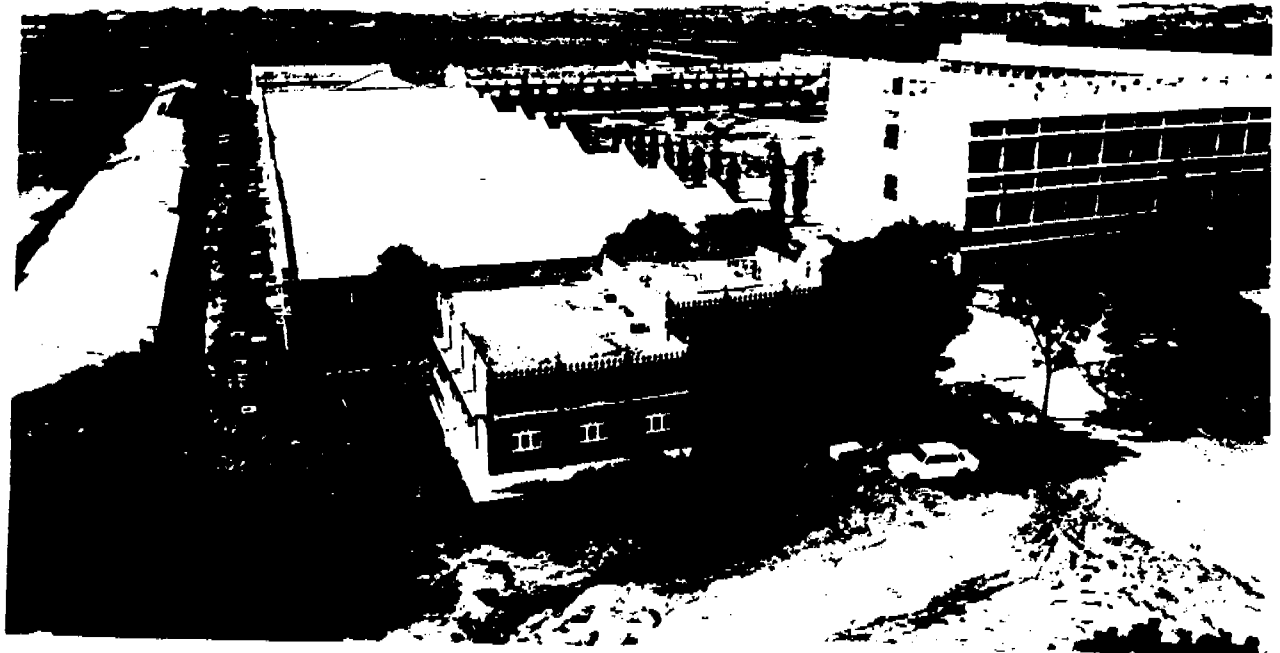
Sr. No.	Name of the course	Duration in days	Capacity	Persons eligible for training		Medium of instruction
				Designationwise	Qualificationwise (Minimum requirement)	
1	2	3	4	5	6	7
1	Hand Pump Caretaker	2	50	Person taking care of hand pump, preferably from the users.	Desirable if can read and write Gujarati	Gujarati
2	Village W/S Caretaker	2	50	Sarpanch, Talati, Gramsevak, Pump Operator or any person associated with water supply.	As above	Gujarati
3	Hammer repairing & bit grinding	2	15	Driller, Asst. Driller, Helper, Fitter, Oilman, Foreman.	As above	Gujarati
4	Maintenance of Rigs & compressors	5	15	Driller, Asst. Driller, Helper, Fitter, Oilman, Foreman, AE & AAE	As above	Gujarati
5	Pump Operator (Oilman/Fitter, Pump Operator/Incharge Sup. or Mistry)	3	50	Pump Operator, Electrician, Oilman, Fitter, Supervisor or Mistry	Wireman's certificate	Gujarati
6	Valveman/Lineman	3	50	Valveman/Lineman, fitter	Desirable if can read and write Gujarati	Gujarati
7	Hand Pump Mechanic	3	30	Fitter, Handpump Mechanic, Helpers etc.	As above	Gujarati
8	Chemist	15	15	Chemist, Fitter Operator, Water works superintendent/plant inspector	B. Sc.	Gujarati/ English
9	Geophysical Survey & water well logging technique	21	30	Hydrologist, Jr. Geologist	M. Sc. (Geology)	English
10	Filter Plant Operator	5	30	Filter Operator, Plant Operator W. W. Supervisor.	Can read & write Gujarati	Gujarati
11	Mistry (W/S & Sew)	6	50	Mistry, Site Karkoon	S.S.C. or I. T. I.	Gujarati
12	Introduction course for Departmental Asst. Engrs./AAEs. only	10	30	AE, AAE	DCE	English
13	Pre-service Training Course for Clerks	30	50	Junior Clerk	SSC	Gujarati
14	Procurement of stores and its Management (Technical)	2	30	EE, DEE, AE, AAE, Overseer Store Keeper	BE, DCE/DME or who is handling stores	English
15	Water Quality Monitoring	4	30	EE, DEE, AE, AAE, Chemist, Bacteriologist, Overseer	BE, DCE/DME, B.Sc. Or Certificate Course	English
16	Low Cost Sanitation (For Supervisors & Masons)	4	30	AE, AAE, Sanitary Inspectors, Health Supervisors, Masons, Mistries	Can read & write Gujarati	Gujarati
17	Project Planning & Management (Civil+Mech.)	4	30	EE, DEE, AE, AAE	BE, DCE, DME	English
18	Leak Detection & Prevention in water distribution	4	30	DEE, AE, AAE, Overseer	Certificate course or DCE	English/ Gujarati
19	Desalination techniques & O&M of plants	4	30	EE, DEE, AE, AAE/Chemist	BE (civil & Mech), DCE/DME/BSc.	English
20	Design, construction and O&M of pumping mains including water hammers	4	30	DEE, AE, AAE, Overseer	BE (Civil), DCE, Certificate course.	English
21	Transmission & distribution of water	4	30	EE, DEE, AE, AAE, Overseer	BE (Civil), DCE, Certificate course.	English
X 22	Basic course in water purification	4	30	EE, DEE, Chemists, AE, AAE	BE (C), B.Sc. (Chem/Bact.)	English
23	Design of Sewage treatment plant	4	30	EE, DEE, AE, AAE	BE (Civil), DCE.	English
24	Departmental Examination for AE + AAE	4	-	AE, AAE	BE (C & M), DCE/DME	English
25	Departmental Examination for DEEs	4	-	DEE	BE (C & M), DCE/DME	English

GUJARAT JALSEVA TRAINING INSTITUTE
(Gujarat Water Supply & Sewerage Board)
Sector-15, Gandhinagar.
Gujarat (India)

ANNEXURE IX

CALENDER OF TRAINING FOR THE YEAR 1989-90

Name of the Course	Duration in days	Capacity	April Venue	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hand Pump Caretaker	2	50	20-21	16-17 Godhra	6-7 Dohad	-	-	-	16-17 Luna- wada	9-10 Rajkot	20-21 Amreli	24-25 Himat- nagar	21-22 Modasa	21-22 Juna- gadhd	450
Village W/S Caretaker	2	50	25-26 Rajkot	19-20 Surendra nagar	2-3 Bhav nagar	12-13	18-19	18-19	20-21 Mehsana	23-24 Bhuj	7-8 Mandvi (Bhuj)	11-12 Dwarka	8-9 Jam- nagar	6-7 Kheda	600
Hammer repairing & bit grinding	2	15	-	-	-	-	-	-	-	-	12-13 Baroda	30-31 Rajkot	26-27 Godhra	15-16 Ambaji	60
Maintenance of Rigs & compressors	5	15	-	-	-	-	-	-	-	14-28 Surat	26-30 Juna- gadhd	15-19 Himat- nagar	12-16 Baroda	-	60
Pump Operator (oilman/filter, Pump operator/incharge Sup. or Mistry)	3	50	-	8-10	-	-	21-23	-	4-5-6	-	4-5-6	-	-	-	200
Valveman/Lineman	3	50	4-5-6	-	6-7-8	-	-	13-14-15 Deesa	-	2-3-4 Bharuch	-	4-5-6 Junagadh	21-22-23	-	300
Hand Pump Mechanic	3	30	-	-	21-22-23	-	2-4-5	-	-	21-22-23	-	4-5-6	-	-	120
Chemist	15	15	-	-	-	-	-	-	-	-	26-10 Baroda	-	-	-	15
Geophysical Survey & water well logging technique	21	30	-	-	-	-	-	11-30	-	-	-	-	-	-	30
Filter Plant Operator	5	30	-	22-16	-	-	-	-	-	14-18	-	22-26	-	-	90
Mistry (w/s + sew)	6	60	24-29	-	12-17	-	-	25-30	-	11-16	-	1-6	-	-	250
Introduction course for Departmental Asstt. Engrs /AAEs. only	10	30	-	-	19-30	10-21	1-11	19-30	-	-	-	-	-	-	120
Pre-service Training Course for Clerks	30	50	-	-	-	1-31	28-30 Exam.	1-30	24-26 Exam.	1-30	6-8 Exam.	1-30	19-21 Exam.	-	200
Procurement of stores and its Management (Technical)	2	30	-	-	-	-	-	1-2	-	-	-	-	1-2	-	60
Water Quality Monitoring	4	30	-	2-5 Baroda	-	-	-	-	4-7 Rajkot	-	-	-	-	-	60
Low Cost Sanitation for Supervisor & Masons	4	30	-	-	-	4-7	-	-	-	27-30	-	-	-	-	60
Project Planning & Management (Civil + Mech.)	4	30	-	-	-	-	28-31	-	-	-	26-29	-	-	-	30
Leak Detection and prevention in water distribution	4	30	-	-	-	-	-	-	-	-	-	15-18	-	-	30
Desalination techni- ques & O&M of plants	4	30	-	-	-	-	8-11	-	-	-	19-22	-	-	-	60
Design, construction and O&M of pump/ps, mains including water hammers	4	30	-	-	-	-	-	-	-	-	-	-	6-9	-	30
Transmission & distr- ibution of water	4	30	-	-	-	-	-	-	-	7-10	-	-	-	6-9	60
Basic course in water purification	4	30	-	-	-	24-28	-	-	17-20	-	-	-	-	-	60
Design of Sewage treatment plant	4	30	-	-	-	-	-	-	-	-	-	-	-	13-16	60
Departmental Exmi- nation for AE + AAE	4	-	-	-	-	-	-	-	-	-	-	-	13-16	-	-
Departmental Exami- nation for DEEs	4	-	-	-	-	-	-	-	-	4-7	-	-	-	-	-



Panoramic view of SJCE campus, Mysore, where the Institute for Studies in Rural Water Supply and Sanitation is proposed to be set up

A BRIEF WRITE UP *
ON
SRI JAYACHAMARAJENDRA COLLEGE OF ENGINEERING
MYSORE 570 006. KARNATAKA STATE.

Sri Jayachamarajendra College of Engineering (SJCE) founded in the year 1963 is one of the constituent colleges of J.S.S. Mahavidyapeetha. This institute is affiliated to the University of Mysore and is governed by the Grant-in-Aid Rules of the Govt. of Karnataka. The Governing council consists of nominees from All India Council for Technical Education (AICTE), Govt. of India, Govt. of Karnataka, University of Mysore, Faculty representative and Management representatives.

FORMAL EDUCATION PROGRAMMES: S.J.College, of Engineering is running Nine undergraduate(UG) and Nine Post-graduate(PG) courses in Engineering and Technology. The UG Courses include Civil, Mechanical, Electrical, Civil(Environmental) Polymer Science & Technology, Industrial Production, Electronics & Communication, Computer Science & Technology and Instrumentation Technology. The PG Courses include Master's Degree programmes in Environmental Engineering, Industrial Structures, Industrial Electronics, Computer Engineering, Maintenance Engineering, Computer Application and Engineering Management, as well as PG Diploma Courses in Computer Science and System Analysis.

* Information provided by Prof. M.H. Dhananjaya,
Principal, SJ Collage of Engineering, Mysore 570006
Telephone: (0) 21468 Telex: 846-246 SJCE - IN

Research facilities leading to M.Sc (Engg.) in all branches of engineering are also available. The divisions of Electrical Sciences, Computer Science and Engineering, Civil Engineering Sciences, Mechanical Engineering Sciences, Chemistry and Mathematics are recognised as RESEARCH CENTRES for Ph.D. degree from the University of Mysore. The Department of Electronics and Communication has been recognised under the Quality improvement programme.

NON-FORMAL EDUCATION PROGRAMMES: The institution has launched several non-formal programmes through Continuing Education Courses, Correspondence-cum-Contact Programmes and Summer and Winter Schools. S.J.C.E. has been organising long-term and short-term courses in continuing education programme for industries, Govt. Departments and other user agencies. Some notable beneficiaries under this category include the Public Health Engineering & Public Works Departments of Govt. of Karnataka, Karnataka Electricity Board, Karnataka Power Corporation, Ahmedabad Electricity Corporation, Bharath Earth Movers Ltd., Bharath Heavy Electricals Ltd., PCL Computers, HCL computers.

The Continuing Education Division of the institution has conducted 70 short term programmes for the working professionals from different industries, public departments and research organizations during 1990. Also proposed to organize around 30 more programmes during this year.

INTERNATIONAL PROGRAMMES: Several international programmes have been conducted for the Professionals sponsored by the Governments of Tanzania, Zambia and Nepal in the fields of Environmental, Civil, Electrical & Mechanical Engineering.

FACILITIES OF COMPUTER CENTRE

The computer centre is a centralised facility. It provides computing facilities for the students, researchers and faculty members of all the departments of the College. The Computer facilities are well utilized for computer oriented under-graduate and post-graduate courses, student and faculty research, data processing for the administration information of the college, consultancy work, computer awareness and computer-training programmes. The basic philosophy of the development of the computer center is to augment and update the existing systems whenever demand for computer facility arises and modernisation becomes essential; further, to keep abreast of new developments in hardware and software technologies.

The computing facilities available at this computer centre are as follows:

Mini Systems

1. **HORIZON III:** The 32 bit System is based on M68020 Microprocessor. It operates on a time-shared multiprogramming environment utilising UNIX 4.2 BSD. The main memory is 6 mega bytes with secondary storage of 300 mega bytes disk storage and a Cartridge Tape Drive. For Graphics and CAD support Mouse and

Plotter(HP 7475A) are available. It supports a total of 24 terminals, some of which are PC's/PC XT. The software available for this System includes FORTRAN 77, BASIC, PASCAL, COBOL, LISP and C. The Data Base System is Unibase.

2. **FORMULA 386** : This is based on INTEL 80386 processor with 8 MB RAM. The secondary storage capacity is (1) 300 mb disk,(2) 1.2 MB floppy drive, and (3) cartridge tape drive 125 MB. This UNIX based system is interfaced with MSDOS using ALTOS software. The system has 19 terminals some of which are PC AT's and PC's.

This system is gatewayed into the Superlan Network. The software available for this System includes LPIFORTRAN 77, BASIC, PASCAL, COBOL LEVEL2, LISP and C.

3. **PERSONAL COMPUTER NETWORK SYSTEM**: This network system includes 60 nodes spread around the campus. Having a wide range of software from language processors to Graphics, this system supports a diverse set of activities which include college administration, student training, research and development activities. The hardware comprises of 60 nodes which are a mixture of PC/AT's, PC/XT's and diskless PCs, Communications with a Central file server. The network is Zeniths' SUPERLAN and runs the NOVELL network operating system.

4. **NEXUS 3500/3000 SYSTEM** ring network consists of 2 NEXUS NX 3000 COLOUR WORKSTATIONS and a NEXUS NX 3500 COLOUR WORKSTATION with Domain ring interface, with license to use both AEGIS,UNIX System V and BSD 4.2 Operating Systems. The system also supports powerful application software like AUTOCAD, ANSYS

(Finite Element Analysis), SDRC, GABLE and extensive graphics function libraries for 2D and 3D graphics application development, besides compilers for languages such as Pascal, C, Fortran and Common Lisp.

5. Microprocessor Development System: This Hewlett Packard 64000 System having one host and one target stations is utilised for developing hardware subsystems. Emulation on M68000, INTEL 8085 are possible. With a host of assemblers and a number of high level language processors microprocessor based projects are made easy during development and testing phases.

NATIONAL CENTRES AT SJCE: The South Zone Regional Centre under the National Drinking Water Mission, Ministry of Rural Development, Govt. of India, has been established at SJCE. The Centre provides technical expertise in setting up District Level Labs, conducting awareness programmes, monitoring and surveillance of rural drinking water quality in the States of Karnataka, Tamil Nadu, and Kerala and Union Territories of Pondicherry and Lakshadweep Islands. The Centre is working in close collaboration with the respective Public Health Engineering Departments and the Ministry of Rural Development, Govt. of India.

Continuing Education Project Centre of the Indian Society for Technical Education, New Delhi is being operated from SJCE Campus. This centre is providing necessary instruction materials and expertise for running refresher courses for govt. departments, public sector organisations and industries. This is one of the most successful centres in the field of continuing education programmes.

The institution also has a Science & Technology Entrepreneurs Park (STEP) sponsored by the Department of Science & Technology, Govt. of India, New Delhi. This Park is helping Engineering Graduates and other selected individuals to become Entrepreneures.

INDUSTRY INSTITUTION INTERACTION CELL: This cell is promoting interaction with the industries and identifies the projects which can be taken up in consultation with them. The cell also arranges Vocational training for students and Staff in reputed Industries and Technological institutions. It arranges camps, interviews for the placement of our students and also scrutinises and recommends personnel for direct employment on request from potential employers.

The Department of Education, Ministry of Human Resource Development, Govt. of India is helping in certain activities of the cell.

RESEARCH & DEVELOPMENT: Most of the disciplines in the institution are actively engaged in Research & Development programmes. The major research projects presently going on are in the areas of Polymer Composites, Artificial Intelligence, Image processing, Robotics, Non-conventional Energy Sources, Environmental Engineering and Rural housing. Several industry sponsored projects are also undertaken on a regular basis from the Faculty.

TESTING & CONSULTANCY: A closer liaison between the institution and industry is also made possible by establishing a testing and consultancy centre. This centre is helping many industries and Govt. departments through analysis, testing, evaluation and proper design.

OTHER FACILITIES: The institution has good Laboratory and Library facilities, Placement & Training Centre, Student Amenities Centre, Campus Health Service facility, Meditation Centre, Extensive sports grounds and Hostel facilities. It also has Electronics Service Centre, Product Development Centre, Audio visual cell and a Ham Radio Centre.

COLLABORATING ORGANISATIONS: S.J. College of Engineering has an active collaboration with institutions like Indian Institute of Science, Bangalore, Indian Institutes of Technology, Madras and Bombay in the areas of Research & Development; EDCIL, New Delhi, for international programmes; UNESCO for Industry Institution Interaction; TTI in the areas of training; CPHEEO in the areas of Environmental Engineering; ISTE in the areas of short-term courses and continuing education programmes; DST & DRDO in the areas of Research Projects; Department of Electronics in the areas of Computer Science etc.

ENVIRONMENTAL PROGRAMMES INCLUDING WATER SUPPLY AND SANITATION
Environmental Technology Centre(ETC) came into existence in the Department of Civil Engineering during 1987 the Silver Jubilee Year of Sri JAYACHAMARAJENDRA College of Engineering (SJCE). ETC is one of the many centres created in the campus for the purpose

of formal and non-formal educational programmes. The departments of Chemistry, Mathematics and Computer Science are collaborating with the Centre.

Expertise in the area of preventive Medicine, Communicable diseases & control and related aspects is available at the two Medical Colleges situated in Mysore city.

Under formal educational programmes, three semester post graduate degree leading to M.Tech. (Env.Engg.) is being offered, and intake for M.Tech. is fifteen seats. Among these, ten seats are sponsored by CPHEEO, Ministry of Urban Development, Govt., of India from PHE departments, Pollution Control Boards, Water Supply and Drainage Boards and related governmental organisations all over India. Five seats are sponsored from reputed Engineering colleges and Consulting Engineering organisations. An eight semester under-graduate degree leading to B.E.Civil(Env.Engg.) is also offered. Research programmes leading to M.Sc.(Engg) and Ph.D. Degrees are available aswell.

Under nonformal educational programmes, a Three month short-term course in Environmental Engineering, Sponsored by CPHEEO, Ministry of Urban Development, Govt. of India, is conducted three times each year on regular basis to impart training to employed technical and scientific personnel. The intake for this course is thirty seats.

Under National Drinking Water Mission, Refresher courses are being conducted to Senior Executives, Superintending Engineers, Executive Engineers, Asst. Executive Engineers and Junior

Engineers, who are involved in Rural Water Supply and Sanitation. Training courses for District level lab chemists and field personnels involved in Water Quality Analysis are also being conducted.

The centre is also offering several short term courses and training programmes for working professionals. The intake for short-term courses is thirty. Organization of seminars and conferences is also a part of the activities of the centre. Specialised courses for overseas students are also being offered. The faculty is involved in delivering specialised lectures at various seminars and conferences at the National and International levels.

R & D ACTIVITIES

Research interests of the faculty include:

1. Rural Water Supply and Sanitation
2. Water Distribution System Modelling
3. Pollutant Transport/Fate Studies
4. Industrial effluent treatment and reuse
5. Solid wastes-collection and disposal
6. Mathematical modelling of environmental systems
7. Characterization and Treatability studies of waste waters
8. Computer Applications in Environmental Studies

Various developmental activities have been undertaken in close collaboration with the department of computer science and engineering, S J C E, like:

* Development of software package for Population Projection and Water Treatment Plant Design.

* Software for Management Information Systems, CPHEEO, Ministry of Urban Development, Government of India.

CONSULTANCY SERVICES

1. Monitoring and Analyses of Environmental samples
2. Characterization and Treatability Studies
3. Performance Studies of Treatment Systems
4. Design of Water and Waste water Systems
5. Air pollution and Control Studies
6. Noise Pollution and Control Studies
7. River, Lake and Ocean Water Quality Assessment
8. Computer Applications in Environmental Systems
9. Environmental Impact Assessment

CONSULTANCY PROJECTS

1. Rural Water Supply and Sanitation Project for Government of Karnataka (through NIDC) World Bank - Aided Project
2. Ocean Water Quality Studies for Mangalore Chemicals and Fertilizers Limited, Mangalore, Karnataka
3. Composting of Distillery Wastes using Pressmud for Karnataka State Pollution Control Board

The Environmental Engineering Laboratory of ETC has been recognized for Environmental sample analyses by the Karnataka State Pollution Control Board.

FACILITIES AT ETC

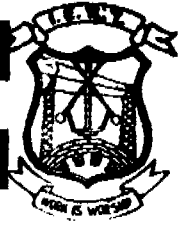
The Centre has well equipped laboratories comprised of both conventional and advanced analytical instruments financed by Ministry of Human Resources and Development, Government of India.

Specialized instrumentation consists of:

1. UV-VIS Spectrophotometer with Microprocessor based scanning capability
2. Plasma Emission Spectrometer with totally automated computerized capability
3. High Performance Liquid Chromatograph with UV and RI detector coupled to a CRT and Integrator
4. Automatic Titrator with CRT and data handling capability
5. Digital Viscometer with thermostat and recording capability
6. Exhaust gas analyser
7. ION 85 ION ANALYSER for the analysis of Fluoride in drinking water under NDWM Programme, DRD, Government of India

HAND PUMP MAINTENANCE PROGRAMME

The SJCE STEP in collaboration with Zilla Parishad, Mysore has established a programme for maintenance of bore well hand pumps in rural areas of Mysore District. Under this programme unemployed persons were trained at SJCE and are presently employed in the main tenance of hand pumps.



Phone : 601402 ; PBX : 601063
Gram : APOLY : Telex : 540-260 I.E.R.T.

Institute of Engineering & Rural Technology

26, Chatham Lines (Near Prayag Rly. Station), Allahabad-211002 U. P. (INDIA)

Ref. No. IERT/GDRT/A-1/19046

Date.....1-11-90.....

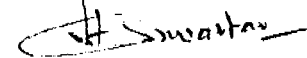
H.C. SRIVASTAVA
DEAN R&D/ HEAD CORT

Dear Dr. Srivastava,

This refers to our telephonic discussions of 30th Oct '90 regarding preparing a detailed note on competence and capability of I.E.R.T. as a National Institute for HRD programmes in the field of Rural Water Supply and Sanitation for consideration by Govt. of India. I am sending a copy of the note prepared by me for your kind perusal and necessary action.

With best regards,

Yours sincerely


(H.C. SRIVASTAVA)

Encl: As above

Dr. J.C. Srivastava,
R - 1 Green Park Extension,
(Yusuf Sarai),
NEW DELHI.

C.C. for kind information to:-

Prof. R.N. Kapoor,
Deen Dayal Research Institute,
7 E, Swami Ramtirth Nagar,
Rani Jhasi Road,
NEW DELHI.

COMPETENCE & CAPABILITY
O F
INSTITUTE OF ENGG. & RURAL TECHNOLOGY, ALLAHABAD.
AS A NATIONAL INSTITUTE FOR TRAINING OF TRAINERS
UNDER
THE NATIONAL H.R.D. PROGRAMME AND INTERNATIONAL
TRAINING NETWORK OF THE GOVT. OF INDIA
FOR
RURAL WATER SUPPLY & SANITATION.

October, 1990.

COMPETENCE AND CAPABILITY OF INSTITUTE OF ENGG. & RURAL TECHNOLOGY,
ALLAHABAD AS A NATIONAL INSTITUTE FOR TRAINING OF TRAINERS UNDER
THE NATIONAL HUMAN RESOURCE DEVELOPMENT PROGRAMME AND INTERNATIONAL
TRAINING NETWORK OF THE GOVT. OF INDIA FOR RURAL WATER SUPPLY &
SANITATION.

1.0 IERT-GENERAL & HRD CAPABILITY

The Institute of Engg. & Rural Technology, Allahabad the only autonomous technical education of its kind in the Northern Region of the country has, in ^{its} existence of over three decades established a number of innovative and pioneering activities particularly in the area of Human Resource Development through a broad spectrum of formal, non-formal and short duration training programmes. For instance :

- (1) Three Years Engg. Diploma courses in 18 disciplines of study including specialised ones like Plastic Technology, Production Technology, Electronics, Computer Applications, Instrumentation, Public Health Engg. etc.
- (2) 2 Yrs Advance Diploma Courses in Rural Technology Development & Management and in Renewable Sources of Energy (the only ones in the country and supported by Ministry of H.R.D, Govt. of India).
- (3) 2 Yrs. P.G. Diploma courses in Personnel Management and in Rural Management.
- (4) Specialised Formal & Non-Formal Courses for girls (like: Electronics, Computers, Business Management, Textile Design, Interior Decoration etc.)
- (5) Over 2 dozen trade courses/artisans' courses in the

Institute's Main Campus as well as in three Rural Campuses (providing a range of self-employment oriented training programmes specially designed for rural youth)

- (6) SHORT TERM IN-SERVICE TRAINING PROGRAMMES for:
- (a) Polytechnic Teachers-in specific areas of curriculum design, educational technology, Engg. & Technology, Rural Development/Technology etc.
 - (b) Industrial Personnel-in the area of Energy Conservation, Supervisory Development, Alternate Sources of Energy etc.
 - (c) Administrators & planners-in the area of Rural Development/Technology, Technology Transfer to rural areas, e.g. for officers of Karnataka Govt. in 1984 and for Officers of Himachal Pradesh Govt. in 1983.
 - (d) Field/Extension workers, in the area of Community Health, Technology Transfer, Rural Industries, Low Cost Housing etc.

2.0 RURAL WATER SUPPLY & SANITATION

2.1 HRD PROGRAMMES

On Topics like Environmental sanitation, Water & Waste Water Analysis, Rural Water Supply, Low Cost Pour Flush Latrines, Biogas Technology - skill based as well as comprehensive theoretical or a combination of both for - Polytechnic Teachers, Rural Extension Workers/TRAINERS, Masons, Health Workers and for Villagers - Rural Sanitation Awareness Camps (under UNICEF's RURAL SANITATION PROJECT - ONGOING) etc.

(In recent months 250 Villagers were given orientation

through such camps). Nearly 300 Personnel have been trained in the last 10 years through above programmes.

2.2

EXTENSION EXPERIENCE:

Besides HRD work, IERT, is actively engaged for the last 10 years in extension of low cost water supply and sanitation technologies like household filters, soakage pits, pourflush latrines, well water chlorinators etc. in rural areas.

2.3

TRAINERS TRAINING:

IERT's HRD Programme have a strong component of Trainers Training not only in the field of Rural Water Supply & Sanitation but in many other developmental fields like: Community Health, Technology Transfer, Rural Industries, Biogas Technology etc.

2.4

INFRASTRUCTURAL FACILITIES:

In the above field the Institute is well equipped with the necessary infrastructure like:

- (1) Environmental Engg. Laboratory for conducting Analytical tests as per I.S/W.H.O. Standards for Water & Waste Water covering nearly 50 Parameters/substances - physical, chemical, Bacteriological (including Latest M.F. technique & Rapid Bacteriological Tests). All necessary Laboratory equipment including L.T.R.C. Portable Test Kit (with battery back up), Thermo-Electric Incu-bators, Digital PH & Turbidity meters, Centrifuge, Electronic Balances, Autoclave, Quartz Double Distillation apparatus etc.

- (2) Faculty (from Dean to Lecturers), many with Post Graduation in Environmental Engineering and supporting Technical Staff associated with the 3 Years Diploma in Public Health Engg. Specialisation (the only course of its kind in the country).
- (3) Well-equipped Library containing, books, journals, research papers, extension literature in rural water supply, sanitation including many WHO Publications.

3.0. INTERNATIONAL INTERACTIONS:

IERT has been very actively involved in international cooperation through a range of developmental programmes.

- 3.1. Volunteer Attachments: Specialised engineers/technicians in the areas of Architecture/Structural Design, Modern Carpentry Shop for knock-down furniture, Production Technology etc. from abroad have worked for varying periods—few months to an year.

3.2. R & D/TECHNOLOGY TRANSFER PROJECTS:

IERT collaborated with TOOL Foundation of Netherlands (1979 - 1981) in the field of Water Pumping Wind Mill Development, with German Appropriate Technology Exchange (GTZ) FRG, in Development & Extension of Improved Water Mills (1987 - '88, and 2nd phase under negotiation), International Development Research Centre, Ottawa, Canada in RURAL TECHNOLOGY INFORMATION SERVICE PROJECT - 3 Years duration, started in June 1989, Indo-Danish Cooperation Project, DANIDA sponsored, in the field of Renewable Sources of Energy - under advance stage of negotiation.

3.3 HRD for Foreign Organisations:

- (i) For School Teachers from Birmingham, U.K. A.T. Orientation Programme in 1979.
- (ii) For Engg. undergraduate students of Harvard University, U.S.A - 1980.
- (iii) For participants from Central & South Asia Region - 2 Weeks' Regional Training Programme on A.T. sponsored by UNESCO - Dec. 1983.
- (iv) For Officers of SCIENCE POLICY CENTRE, OF GOVT. OF IRAN, A.T. Orientation Programme - May 1984.

3.4 FACULTY EXCHANGE: With Teachers Training University of Flensburg, Federal Republic of West Germany, since 1984, in the field of Appropriate Technology and Renewable Sources of Energy.

3.5 PARTICIPATION IN INTERNATIONAL EVENTS:

IERT's Faculty has participated in International Workshops/Conferences, presented papers and chaired sessions e.g.

-- Water for Human Needs, International Conference, New Delhi - 1975.

-- A.T, Intercultural Learning & Rural Development, International Seminar, Flensburg, FRG - 1986.

-- Renewable Sources of Energy, International Conference, Hurup Thy, Denmark - 1988

-- Relevance of Technical & Vocational Education to Changing Employment Pattern, (University of

-- Western Sydney, Hawkesbury, Australia - 1990
(slated for Dec.)

4.0 RURAL DEVELOPMENT - ADOPTION OF VILLAGES ETC.

IERT pioneered in 1979 involvement of technical institutions in development of surrounding areas - which was later in 1979 adopted as a policy/programme by Ministry of HRD, Govt. of India through establishment of a chain of COMMUNITY POLYTECHNICS (Numbering 110 now) for which IERT's work was taken as a model and also IERT has been, all through, involved by Govt. of India in helping other institutions for:

- (1) TRAINING OF TRAINERS
- (2) INFORMATION DESSINATION
- (3) TECHNOLOGY TRANSFER
- (4) HRD in General.

Under this programme IERT has adopted 100 villages of Allahabad District for their Integrated Development with special emphasis on a-pplication of S & T, through a compliment of a-bout 200 full time staff (in villages) and a chain of 13 GROWTH CENTRES/SUB-CENTRES - which are focal points of development of adjoining villages. Activities pursued in this programme are:

- (1) Establishment of Rural Industries
- (2) Extension services in Water Supply, Sanitation, Health, Education, Vocational Training etc.
- (3) Repairs/servicing of machines (equipment in villages).
- (4) HRD for Project Managers, Extension workers, technicians etc - Broad based and area - specific.

5.0 IERT'S OTHER RELEVANT INFRASTRUCTURAL FACILITIES/
CAPABILITIES

- (i) **Computer Centre:** This Centre has training, development and consultancy facility. For educational programmes there are nearly 2 dozens PCs and other peripherals.

- (ii) **Auditorium:** A well equipped auditorium of 750 seating capacity.

- (iii) **Conference/Seminar Halls, Modern Reprographic and Audio Visual Equipments.**

- (iv) **GUEST HOUSE** with 10 furnished suites and two dormitories.

- (v) **CURRICULUM DEVELOPMENT CENTRE** - This centre was set up in 1970, by Ministry of HRD, Govt. of India. It undertakes, on All India basis, Curriculum, design, development of new technical/management courses, faculty development, development of instructional materials, learning packages, text-books, teacher's guides, laboratory manuals etc.

- (vi) **COOPERATION WITH LOCAL INSTITUTIONS:** In many of the foregoing activities IERT has established a 2-way cooperation with local institutions like: Allahabad Agriculture Institute, Naini, J.K. Institute of Applied Physics, G.B. Pant Institute of Social Science, Motilal Nehru Institute of Research & Business Management, MLN Regional Engg. College.

Of special reference is IERT'S active collaborations with the Faculty of Environmental Engg.

(Civil Engg. Deptt.) of MLN Regional Engg. College and officials/staff of U.P. Jal Nigam/Ganga Action Plan in various HRD and developmental activities in the field of Rural Water Supply & Sanitation.

(vii) CENTRE FOR DEVELOPMENT OF RURAL TECHNOLOGY

This Centre too was set up as an IERT's innovative pioneering activity in 1978 and later recognised and given core support by the Ministry of HRD, Govt. of India (since 1980). This Centre has a compliment of 50 Development Engineers/Scientists, supervisory and technical supporting staff. It undertakes:

- (1) Technology Development
- (2) Technology Transfer to rural areas
- (3) HRD Programmes for various levels-Planners, Administrators, Project Personnel, Extension staff etc.
- (4) Documentation & Information Dissemination: Networking, Computerised Data Bank, Development, Publication & Dissemination of Manuals, Do-it-yourself literature, handouts, etc. for technical institutions, NGOs in rural development etc.
- (5) Collaboration with International Organisations for the above (e.g. Tool Foundation, Holland; IDRC Canada; GATE, FRG; VITA, USA; SATIS, Holland etc.)

This Centre also has country's one of best library on Rural Technology with a section on Rural Water Supply & Sanitation and Reprographic and Computer Facilities to help in its on-going activities.