Government of India & Government of The Netherlands

Technical Assistance
HYDROLOGY PROJECT

DHV CONSULTANTS &
DELFT HYDRAULICS
with HALCROW, TAHAL,
CES, ORG & JPS

HIS Sustainability
and
Organisation Culture

in the states of
Andhra Pradesh, Karnataka and Maharashtra

March 2003

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1 Introduction

With the HP entering in the crucial final stage of its cycle, concern for sustainability of the HIS in the post-project period was getting heightened. Among various factors that have been identified as crucial to sustainability, *organization culture* is the one that stands out in significance. The need to ensure cultural compatibility of the participating agencies to the technology and processes introduced through the Hydrology Project, thus, assumes a critical importance.

To assess the cultural environment of the agencies' organizations, and to ensure that the culture of these organizations is supportive of the HIS, the Consultants undertook an institutional development intervention by holding workshops. In the first stage, the Surface Water and Groundwater departments in the three states of Andhra Pradesh, Karnataka, and Maharashtra were addressed.

In all, six workshops have been held, in which senior and middle level officials and professionals from these organizations participated. The Heads of Departments of these organizations lended seriousness to the purpose of these workshops by their presence, involvement and visibility. A flexible approach was adopted in the conduct of the workshops, by using varying formats in different organizations, such as questionnaires, individual exercises, group exercises, perception sharing, pictorial expressions, etc. Group presentations followed by plenary discussions was a common feature of all the workshops. The workshops were essentially kept participation-centred and interactive in nature. Conceptual inputs were drawn from the McKinsey's '7-S Model' and 'Herman's Iceberg Model', shown in Figures 1.1 and 1.2. For analysis of the organizational elements and processes, the participants were taken on a journey into the Organizational Universe, guided by the framework shown in Figure 1.3. These concept are explained in Chapter 2.

The workshops explored and identified main areas of concern in the context of HIS sustainability, and set the direction for change. A decision was taken at each workshop to constitute designated Task Forces to examine and analyze in detail the identified areas, based on facts and opinions. The Task Forces were constituted accordingly by formal orders of the state agencies, giving clear mandate to them via specific Terms of Reference. A Core Group was also constituted in each agency to finally discuss the findings and recommendations of different Task Groups and consolidate the recommendations. The findings and recommendations of the individual Task Forces were then finally discussed in plenary sessions with the Core Group and higher management, leading to finalization of an Action Plan by each agency, indicating actions for change towards HIS Sustainability.

This report records the outcome of the above process. Chapter 2, explains the concepts and principles used in undertaking this study. Chapter 3 captioned as Summary, describes major outcomes of all the workshops in generic terms as also the final output of the efforts of Task Forces, conclusions and the future agenda. Chapter 4 comprises of detailed reports of each workshop. Chapter 5 presents (i) 'Action Plan' in the form of 'Matrix of Change-Action', (ii) 'Values statements' and, (iii) 'Mission statements', developed by each agency through an interactive process.

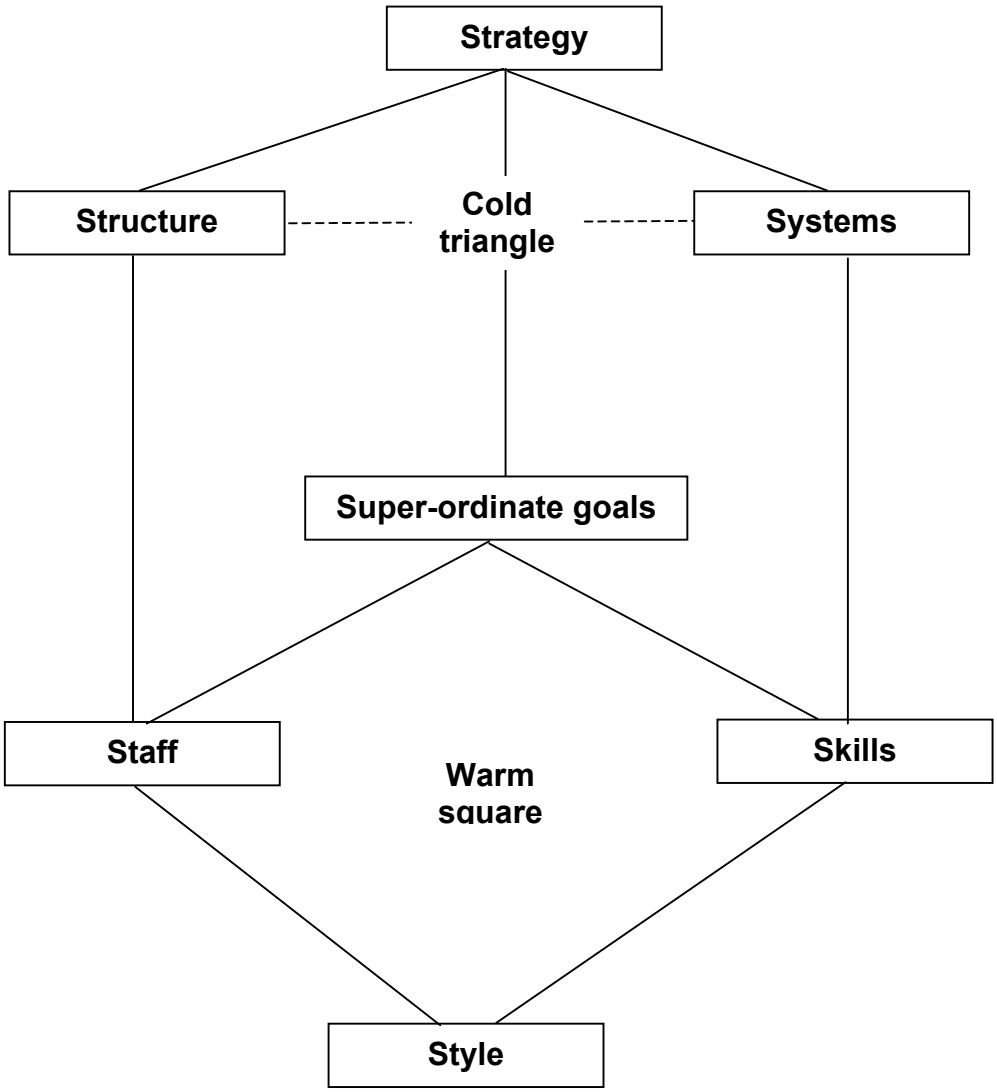


Figure 1.1: The McKinsey's 7-S Model

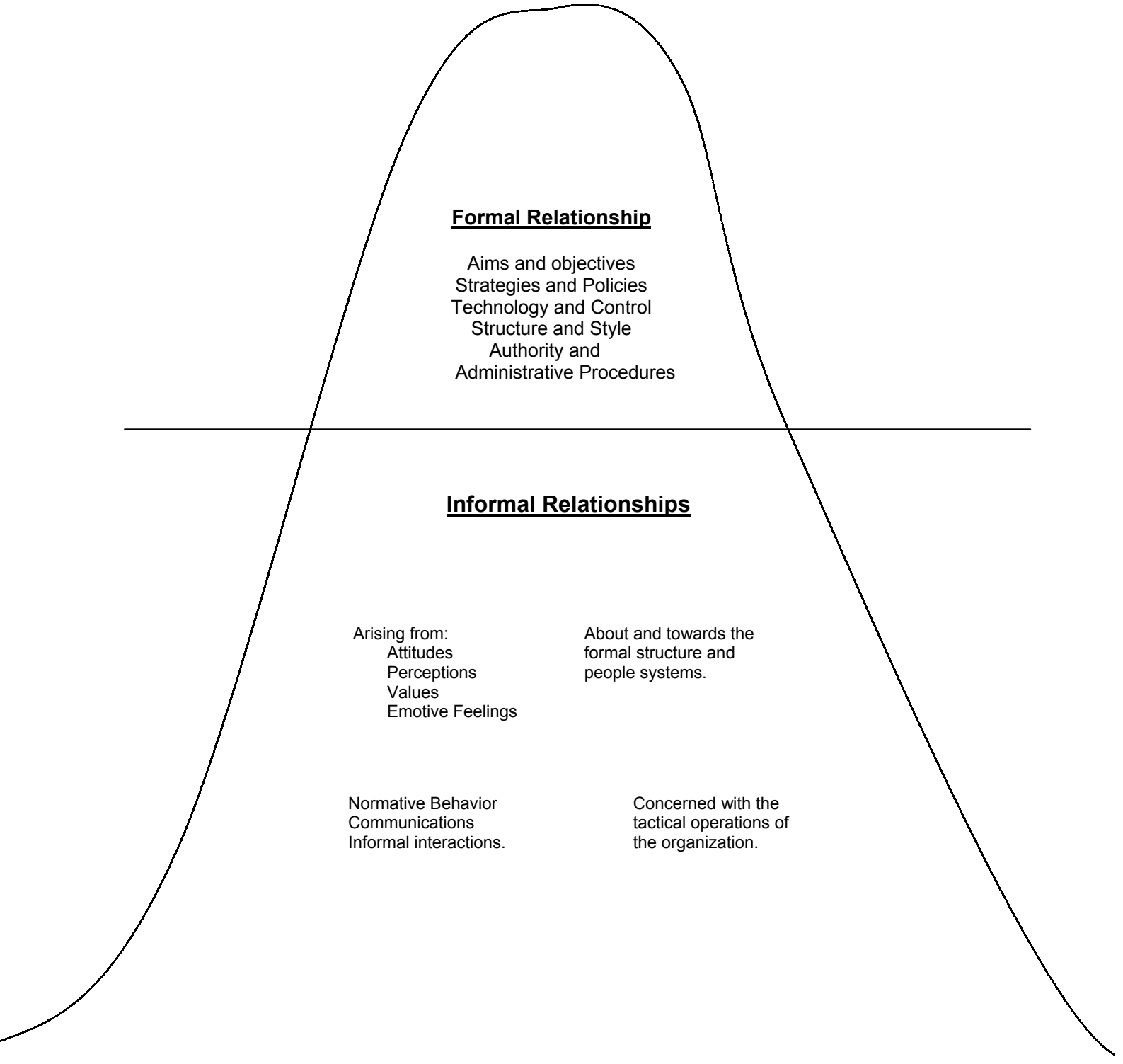
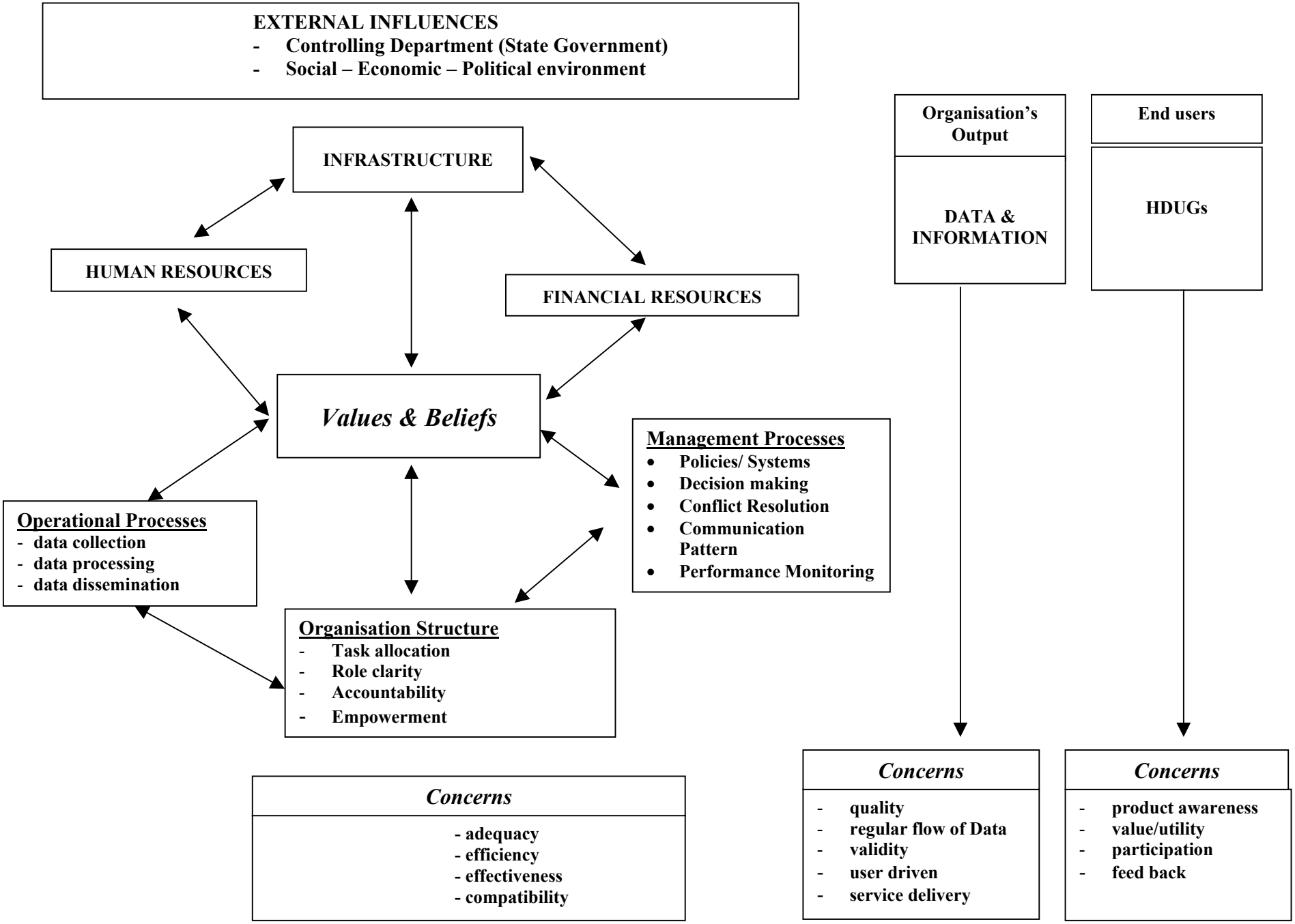


Figure 1.2: HERMAN'S ICE-BERG MODEL


EXTERNAL INFLUENCES
- Controlling Department (State Government)
- Social – Economic – Political environment
INFRASTRUCTURE
HUMAN RESOURCES
FINANCIAL RESOURCES
Values & Beliefs
Management Processes
• Policies/ Systems
• Decision making
• Conflict Resolution
• Communication Pattern
• Performance Monitoring
Operational Processes
- data collection
- data processing
- data dissemination
Organisation Structure
- Task allocation
- Role clarity
- Accountability
- Empowerment
Concerns
- adequacy
- efficiency
- effectiveness
- compatibility
Organisation's Output
DATA & INFORMATION
End users
HDUGs
Concerns
- quality
- regular flow of Data
- validity
- user driven
- service delivery
Concerns
- product awareness
- value/utility
- participation
- feed back

2 The Concepts and Principles

The conceptual inputs for this study, as stated in the preceding chapter, were taken from the '7-S McKinsey's Model' and the 'Herman's Ice-berg Model', and were finally intertwined into the framework of Organizational Universe, to provide a sound and realistic base for conducting the study on the internal health of the agency organizations. This chapter attempts to explain those concepts for facilitating a better understanding and appreciation of the focus and direction of the study.

The internal health of the organization and the influence of the external environment constitute the two most critical factors that impact on excellence of an organization. Since this report relates to the study on the internal environment of Govt. agencies, it does not reflect the position regarding external factors, like national perspective, commitment of the concerned state governments, existence of supportive policies, and priorities of the state governments for allocation of human and financial resources, which are critical for sustainability of the HIS.

It has for a long time been believed that strategy, structure and systems are the determinants of organizational excellence. Real life experience, however, revealed that changes in strategy, structure and systems by themselves did not lead to sustained improvement in organizational effectiveness. It was seen that changes in these dimensions could bring about an initial upsurge in the organizational performance, but also that the momentum was subsequently not maintained or the rate of progress declined. Further research identified various other dimensions as factors that affected organizational effectiveness like, long term organizational goals, culture and values, management style, business strategy, organization structure, management systems, quality of human resources, working climate and leadership. These, however, remained more or less generalized and no framework was provided for weaving these dimensions into a coherent and consistent fabric of organizational reality.

It was in the early 1990s that a study on organizational effectiveness was mounted by McKinsey - a premier international management consulting organization which identified four new dimensions viz. style, staff, skills and super-ordinate goals that influenced organizational effectiveness besides strategy, structure and system. These came to be known as 'soft' and 'hard' factors, the four new as 'soft' as these relate to belief, style, value and culture and are somewhat ephemeral, and the latter three - strategy, structure and systems - as 'hard' due to the possibility that these permitted change by managerial direction or decision. The study also pointed out that an interaction and balance between these seven factors was important, as each of these seven factors affected the other six and got affected in turn. This established a need for monitoring and directing the interaction purposively and positively to attain the required level and quality of organizational effectiveness. The McKinsey's 7-S model arose out of this sustained study and is now universally acclaimed as an extremely valuable and effective tool for carrying out organizational diagnosis. The model, as may be seen from Figure 1.1, clubs the new factors in the 'warm square', and the other three in the 'cold triangle', suggesting a need for harmony between the two sub-sets. The terms: structure, strategy, system, staff , skills, and style are not being explained here, as these are commonly used and it is presumed that the managerial class has familiarity with these terms. As, concerns the concept of 'super-ordinate goals', simply speaking, super-ordinate goals refer to 'Mission' and 'Values' that shape organizational behaviour, constitute the cause to which people can commit, provide a central force to all other factors, and above all inspire the members to work in unison to achieve the goals.

The ‘Herman Iceberg model’ developed in 1994 reinforced the impact of culture on organizational effectiveness. Herman attributed failure of organizations to lack of management concern and neglect of invisible factors, like attitudes, perceptions, values, emotive feelings and normative behaviour of organizational members. Using an iceberg as metaphor for the organization, Herman maintained that an organizational life has two areas: one, the area above the surface which is visible and is represented by elements of formal relationship, like structure, strategies, policies, control etc., and the other, the area below the surface which is not visible and is represented by elements of informal relationship, like perceptions, beliefs and normative behaviour of organizational members. The area above the surface is only a tip of the iceberg. Unless this is supported by the area below the surface which constitutes the bulk of the iceberg and forms the stabilizing mass, the whole of the iceberg i.e. the organization is in the danger of collapse.

The above concepts and principles have guided the approach of the Consultants in carrying out this study, using the process of workshops in assessing the passion of the people, the behavioral norms, the position of resources, the quality of policies and practices, the strength of processes and leadership style, which constitute the spectrum of organization culture. The over-riding objective has been to make these organizations good as a whole, or make them better in areas these organizations did not do as well. The reports on the workshops in the following chapter throw up what is not firmly in place and what has to be strengthened for achieving organizational excellence and HIS sustainability.

3 Summary

This chapter describes in general the outcome of the workshops (as reported on in detail in Chapter 4) and provides a reference on common areas identified for action, in the context of HIS sustainability.

3.1 Major outcomes of the Workshops

Perceptions and Beliefs of organizational members towards 'HIS'

Perceptions and beliefs of the organizational members towards HIS are strong. HIS is seen as an extremely useful system for the development and management of water resources. In some measure, the strength of this perception and belief vouches for HIS sustainability.

Critical factors for sustainability of HIS

The following factors have been seen critical to the success of HIS:

- Availability of adequate 'technical' and 'specialist ' experienced staff
- Stability in staff postings for HIS functions
- Continuous training for up-gradating of skills
- Proper maintenance of instruments and machines
- Adequate budget provisions for O&M functions
- Regular and timely flow of funds
- Motivated and committed workforce
- Inspiring Leadership

Identification of key areas for action

The workshops identified the following key areas for action by the agencies to achieve sustainability:

Human Resources

- recruitment to meet the shortfall, particularly in the category of Specialists, i.e. Chemists and IT professionals
- recruitment of technical staff to replace those who retire
- policy initiative for making specific HIS posting a requirement for career advancement
- reward for performance
- introduction of incentive and motivational schemes

Quality of Data

- accessibility of sites during rainy seasons
- availability of vehicles for effective supervision
- motivational workshops for quality consciousness
- timely up-gradation of software
- refresher courses for data collection staff

- instant availability of consumables

Infrastructure and technology

- effective and workable system for AMC
- strengthening of agency's 'Help Desk'
- simultaneous development of organisational capability for sustaining the level of technology
- stand-by equipment and spares
- in-house training to technical staff for maintenance of hardware and instruments
- protection of piezometers

Internal Communication

- promoting communication through e-mail
- promoting exchange visits
- wide sharing of success stories

Strategy for increasing Users' base and Users' awareness

Many suggestions came up in the workshops for developing a strategy towards broadening the Users' base and enhancing Users' awareness. Apart from the commonly talked of actions, like using local media, cable network, IEC programme (Information, Education and Communication), distributing posters in local language and hosting HIS Data on web site, the following strategy was recommended by one of the workshops:

Action at Directorate level

The Directorate office should organize seminars and workshops, and publish book-lets and magazines for the benefit of Engineering and Research Institutions, like MERI, Central Design Organizations, Heads of other Departments, and HDUGs in the district.

Action at field level

Field offices should organize district level workshops and exhibitions, undertake visits to units of other departments (e.g. Collectorate, Tehsils, NGOs, Schools, Colleges), display important data on display boards at Tehsils and District HQs, and actively participate in co-ordination meetings, where officers from other departments are also normally present.

Some of the other recommendations made were

- Presentations should be made on water resources problems and practical solutions at the workshops, seminars and exhibitions, sharing the importance of data with the participants
- Utility of HIS data should be propagated during the co-ordination meetings at District/Tehsil level
- Sound technical support should be provided to Tehsildars and Collectors, during periods of natural calamities, like drought, floods, etc.

- Guidance should be provided to the concerned authorities during the spread of epidemics, in using water quality data from the HIS monitoring network; information on the level of contamination and safe limits should also be displayed on notice boards at District and Tehsil headquarters
- Support should be provided to industries to get pollutant levels checked in their effluent, through HIS Labs.
- Research scholars should be encouraged to take up projects in Hydrology and support may be provided for the same.

3.2 Deliberations and interactions of the Task Forces

Nearly all concerned agencies formally announced constitution of the Task Forces with well defined Terms of Reference. The target areas for Task Forces generally included: Human Resources, Finance, Infrastructure, and Quality. In some agencies groups were also constituted to look into areas of 'Internal Communication' and 'Users Groups'. The members of the teams were made aware of the need to consult all levels and locations for wider participation, involvement and ownership. Core Groups were constituted in each agency to consider the recommendations of individual task forces and consolidate the recommendations on considerations of feasibility and likely outcome. The Core Groups were also mandated to develop, through participatory process, the 'HIS-Mission' and 'Values' statements for their agency, with the intent to use them as management tool for transforming the culture of the organization.

The Task Forces have performed their designated tasks, by holding internal discussions amongst the members, and consultations with other employees at all levels and functions at their respective locations. The recommendations of the Task Forces, in each organization, have been discussed in plenary sessions with the Core Groups and with the higher management. Based on these inputs, the agencies have finalized their 'Action Plan' in the form of a 'Matrix of Change-Action', included in Chapter 4. The statement indicates the responsibility center for initiating action for change and managing the change process for sustainability of the HIS. The agencies have instituted their own mechanism and system for following up implementation of the planned action, to accomplish the intended results. The Consultants also actively interact with the agencies for status review and activating progress.

The Core Groups in their discussions with the members of the Task Forces have succeeded in developing 'Values' and 'Mission' statements for their agencies. These are included in Chapter 5. The most important variable in shaping the organization culture is *'Values'* as reflected in Organizational Systems, Processes and Practices. The motivation, morale, and satisfaction of the employees depend to a large extent on the culture of the organization, which contributes significantly to achievement of the goals. *Mission* is a powerful tool which creates synergy in the efforts of the organizational members and builds commitment and cohesiveness in the organization.

While specifics on 'Actions for change', 'Values' and 'Mission' statements, as developed by each agency, are incorporated under Chapter 5 of this report, a general reflection of the outcome is given hereunder:

Actions for Change

Some of the specific actions included in the matrix are -

Human resource and capacity building issues

Holding of Workshops on 'Management of Change' to facilitate organization members in building appreciation of new realities; preparing them for change in cultural and skills areas; increased focus on developing capabilities of the staff on wider basis; building competencies in the organization for downloading and analysis of data, and maintaining of hardware; introduction of motivational schemes; developing appropriate placement policy; introducing succession plans; adopting innovative approaches for attracting people to join HIS functions; approaching the Govt. for sanction of additional posts in specialist categories, and seeking the Government to declare 'HIS' as an essential service, to take it out of the ambit of the bans on recruitment, etc.

Operational facility issues

Approaching the Government for specific budget allocation for O&M of HIS, on annual basis; provision in the budget for pathways for accessibility to each Gauge-Discharge and Full Climatic Station; installation of SCADA system; e-mail connectivity to SDDPC; wireless network from GD/FC to CE, HP; special pay for HIS staff for six months period during monsoon due to arduous duty; comprehensive insurance of labour working at gauging sites and rain gauge sites; release of 100% grants at the start of the year for T.A, and Maintenance and Repairs, etc.

Technical quality issues

Obtaining NCL certification of HIS laboratories; installation of mechanized automatic water level recorders to replace manual monitoring of water levels on fortnightly basis; reorganization of Full Climatic Station and Water Quality labs; to have at least one Full Climatic Station, at each District headquarters; setting-up in each Region a mobile maintenance unit equipped with spares, standby equipment and a skilled technician from the available staff; arranging workshops on quality consciousness; staff training and orientation program for building appreciation of basics in maintenance; etc.

Managerial and structural issues

Empowerment to field level officials; development of goal-setting and accountability systems; introduction of healthy work practices; improvement in internal communication system; development of effective strategy for external communication; strengthening the material management system, annual maintenance contract system, HIS Help Desk services; constituting O& M committees; introducing program for regular visit of hqrs. staff to field locations; rescheduling collection of water level data and water samples; developing an annual plan for civil works maintenance, etc.

Values Statement

Appreciating the imperatives for creating a compatible culture in their organizations, the agencies have developed their own 'Values' statements, which in general show:

- Quality in work
- Promptness in service
- Timeliness in supply of data

- Excellence in Technology
- Professional approach in working
- Respect for talent
- Healthy/Positive work culture
- Accountability

Mission Statement

The 'Mission' statements developed by the agencies tend to inspire their organizational members in achieving a better domain position, excellence in service, quality orientation in the collection, processing and dissemination of data, building users' awareness and reaching out to them with efficiency and a friendly outlook, and serving the Nation and Society to attain the goal of utilizing water resources on an optimal basis. Some of the expressions used in the mission statements are:

- To become nationally an organization of excellence for quality and cost effective data
- To take the organization to newer heights through a changed work culture
- To strive to become an organization with an identity of excellence, built through quality leadership and a positive, healthy and improved work culture
- Fulfilling social needs and bringing happiness to society through technological excellence and prompt service
- Proper planning, development and management of water resources as per competing user needs, aiming to achieve planning at village/micro basin level for storage of surface water and apportioning its use for drinking, irrigation and recharge purposes
- To support national efforts in solving water problem and conservation of water
- To provide value-added HIS services for sustainable qualitative and quantitative water supply
- To control groundwater development for preserving groundwater resources at safe levels, to cope with likely drought situations
- To move from developing stage to developed stage, eliminating disparities in supply and providing equal opportunities to all category of water users for utilization of resources, to meet their demands.

3.3 Conclusions and Future Agenda

The intervention has created sufficient sensitivity in the participating agencies toward HIS sustainability. This has triggered the process of change in the mind-set and attitudes of the members of the organizations. The change initiative will result in the strengthening of internal processes, structural dimensions, inter-dependencies and competency building. The 'Mission' and 'Values' statements will infuse motivation in the staff, provide unified direction for cohesive efforts, and build pride and identity of the organization.

The exercise gives a reasonable hope that given appropriate skills and requisite funds for operation and maintenance, the HIS will sustain in maintaining the orientation and work ethos of quality consciousness and time-efficiency.

This intervention completes only the first-stage effort, in the direction of transforming the organisation culture to support sustainability of the HIS, in the States of Andhra Pradesh, Karnataka, and Maharastra. The essential tools have been developed in 'Values' and

'Mission' statements. Though developing 'Values' and 'Mission' statements is essential, it is not sufficient in itself, and it is necessary to go beyond simply developing them. 'Values' and 'Mission' must give insight and liveliness into the working of the organizations. The values should shine through the agencies, to give a sense of pride in their organizations and provide tangible guidance for organizational behaviour.

In the second stage of the sustainability intervention, we now have to move from the 'statement' to 'a way of life'. We have to make the 'Values' statement a living reality. The HIS Mission has to become the employees' mission. A sense of 'mission' has to be developed in the entire organization. The mission has to be clarified to the lowest level. Common understanding of the 'purpose' and direction' has to be built at all levels, and acceptability created across the organization. It is well established that individuals with a strong sense of mission are more effective at their jobs and make their organizations more successful. Members of the organization have to internalize the 'values', which requires sustained effort and strategy. The leadership has to become aware of their role in fostering the *Values* in their organizations. Culture cannot be changed through dictates and orders. For changing work style and relationship pattern, employees have to be motivated through the process of enrolment. A complementary effort in developing the *Mission/Objectives* for each function may also be desirable.

It is generally seen that most of the time organizations fail at the implementation stage, the planning part being as such effective. It would, therefore, be necessary that these agencies take effective steps and expeditious measures to bring to implementation the changes that have been envisaged by them as necessary for HIS sustainability. This would require external influence to give impetus to the process.

The future agenda has two parts. The first is to implement the 2nd stage of the activities to lay the foundation for sustainability in the three pilot states. This would in summary include: (i) implementation of the actions, as identified in the 'Matrix of Change-Action' by each agency, (ii) creating a sense of *Mission* among members of the agency organizations, and (iii) bringing about internalization of *Values* across the organization, covering Surface Water and Groundwater Departments in the States of Andhra Prades, Karnataka and Maharashtra, where the first stage activity is complete. Additionally, it would be necessary to support the effort of these agencies in giving a re-look into their pattern of 'Empowerment' and pattern of 'Internal Communication', which are seen vital for creating vibrancy in these organizations. The second part of the agenda would be to undertake similar interventions in some of the other participating agencies, for example in the States of Gujarat, Madhya Pradesh, and Tamil Nadu. No doubt, this would require a good deal of efforts and strategic capability, but it can be achieved given the intent of participating agencies and selective support of the Consultants.

4 Workshops on HIS Sustainability and Organisation Culture

4.1 Andhra Pradesh, Surface Water

4.1.1 Objectives of the Workshop

The objectives of the workshop were:

- To facilitate the agency in analysing cultural realities of its organisation, and
- To help the agency in building an appreciation of the impact of organisation culture on sustainability of the HIS.

Participants

Senior and middle level officials associated with the HIS, from Headquarters, Regional and Sub-Regional offices.

Process

A multiple-choice questionnaire was used to assess the manner in which organizational processes are carried out to deliver the HIS. The manner in which these processes are carried out significantly affects the work culture, with implications for sustainability. Essential elements of organisational processes were selected for this questionnaire. It was sought to capture the perception of the organizational members as to what is their focus in the organization, how they are treated by the organization, how they are controlled and influenced, what is their motivation for work, what makes them to collaborate with other members and work in a team, how their conflicts are resolved, decisions taken and communication effected.

A second questionnaire was 'open-ended' in nature, and was intended to capture nuances that might have been left through the instrumentality of 'multiple-choice-questions'. Besides serving the additional purpose of supplementing the earlier responses and permitting test check of their consistency, the instrument was designed to essentially collect perceptions, feelings and opinions of the participants on three dimensions - i) commitment towards HIS, ii) operational difficulties, and iii) emotive feelings.

4.1.2 Diagnostic results

The participants' responses are discussed in the following section:

Focus of organization members

A sizeable number of the respondents (67 %) indicated their focus on 'duties, responsibilities and requirements of the role'. A small number (20 %), however, indicated their focus on 'requirement of task'.

Organization's treatment of its members

Majority of the respondents (60 %) indicated that the organization treats them as 'a member who has committed his skills and abilities to the common cause of the organization'. A small number of respondents (20 %) indicated that the organization treats them as employee whose time and energy is at the disposal of person higher in hierarchy.

Control and influence

Significant number of the respondents (53 %) indicated that they are controlled and influenced by 'communication and discussion of the task requirement'. A section of respondents (27 %), however, indicated that they are controlled and influenced by 'procedures and standards'. A small number (13 %) indicated that they are controlled and influenced by 'reward and punishment'.

Motivation for work

A significantly large number of the respondents (80 %) indicated that their motivation for work is 'satisfaction in excellence of work'. The remaining 20 % indicated that their motivation for work is 'enjoyment of activity'. Significantly, none indicated 'reward or punishment' as a factor motivating their work performance.

Team work and Collaboration

A sizeable number (73 %) indicated 'compulsion for progress of work' as a drive for teamwork and collaboration. Significantly, 'requirement by higher authorities' or 'requirement of system' was attributed as in- significant consideration for team working and collaboration.

Conflict Resolution

Majority of the respondents (60 %) indicated that their conflicts were resolved through 'discussion of the merit of the issue'. Some (23 %) responded that they resolved their conflicts through 'open and deep discussion of personal needs and values involved'. Significantly, a very small number reported resolution of conflicts either through 'intervention of higher authorities' or ' suppression by rules, procedures and defined responsibilities'.

Commitment towards HIS

The responses clearly reflected that the organizational members viewed the HIS as important and significant activity, worth to be associated with. An illustrative description is: "HIS work is very important. It is an information required to design and manage the water resources system of irrigation department, with a better effectiveness."

Work Climate

The feelings ranged from - 'satisfactory' to 'very warm, efficient and supportive'.

Some of the expressions were:

- not bad, but average due to non-availability of staff at field level.
- if we make the team-work, then only it may succeed.

Relationship at workplace

Relationships at workplace were reported as 'good' at the one end and 'work oriented with positive approach' at the other end.

Some of the expressions were:

- the work allotted at each level should be adhered with a feeling of collective responsibility.
- equal responsibility and dedication to work cultivates proper relationship.

Problems in effective performance

Commonality of expression points to the following problems in the operational area:

- in-adequate staff at site
- ill-motivated staff, no incentive
- lack of sincerity in deployed staff
- control of deployed staff with authority outside the HIS wing
- absence of decentralization of power and responsibility
- lack of discipline at lower levels
- delay of govt. orders, to implement the project objectives
- non-cooperation from other organizations in communicating and observing data.
- weak facilitation for 'problem solving'
- in-sufficient training for data validation.

Characteristic features of HIS organization

The participants identified the following features as characteristic of the HIS organization:

- specialized organization - requiring interest and dedication in work
- good infra-structure; advanced technology and equipment; and training facilities
- less support from higher levels
- dominant 'finance' control
- demands close supervision to extract reliable data
- evasive workers (operatives)
- thrilling IT work environment
- willing employees for sharing responsibilities, team-work, and rising to the occasion.

Focus for happiness/unhappiness

The participants related the following features contributing to their happiness/unhappiness:

Happiness

- good infra-structure
- latest technology
- opportunity to learn.
- challenging job
- good working environment.

Unhappiness

- non-availability of required staff
- non-cooperative deployed staff
- non-supportive govt. policies
- absence of clear accountability and responsibility
- insufficient higher level support

Knowledge of 'Mission' and 'Values'

The participants did not have a clear idea about ‘Mission' and ' Values' of the organization.

Summary of the findings

Listed below, in summary, are the ‘positives’ and ‘negatives’ of the organisation:

Positives

- Members show commitment to HIS
- The work climate is good
- Relationships at workplace are functionally constructive
- Focus of members is on their duties, responsibilities, and the requirement of role
- Members are treated by the organization as ones who have committed their skills and abilities to the common cause of the organization
- Members' work behavior is conditioned by task requirement, procedures, and norms
- Motivational drive is 'satisfaction in excellence of work'
- Members have willingness and appreciation for teamwork
- Conflicts are normally resolved through merit-based discussions
- Members are excited about good infra-structure, technology, training opportunities, challenging job, and good working environment.

Negatives

- Inadequate staff and improper skills at site locations for data collection;
- Administrative control of deployed staff outside HIS authority
- Lack of discipline amongst lower level staff
- Instability of HIS organization, due to frequent transfers without transfer of knowledge;
- Non-availability of financial incentives for attracting people to join and stay with HIS;
- Insufficient training in 'data validation'
- Lack of empowerment and accountability;
- Complex administrative and financial procedures
- Insufficient support of top officials
- Lack of supportive Govt. policies
- Absence of govt. orders on protocols for implementation.
- Lack of shared goals and values.

4.1.3 Prescriptive results

An exercise was carried out by the participants, first individually and later in two groups, to identify optimum and feasible options in respect of change areas, which could offer the basis for determining the deliverables, in order to achieve sustainability of the HIS. The two groups shared their conclusions with the full house for discussion. The workshop identified the following interventions for improving effectiveness and sustainability of HIS:

- Positioning of staff, as per norms
- Ban on transfer of trained staff from HIS unit
- Authority with HIS for administrative control of deployed staff
- Financial incentive to HIS staff
- Provisioning of adequate transport facility for inspection
- Positioning of specialised staff for I.T and W.Q.
- Concurrent posting of substitutes, with promotion orders
- Training of alternate personnel for 'data entry' and 'data validation'
- Availability of in-house expertise for maintaining state-of-the-art communication system
- Strengthening of monitoring system for 'regular data-flow'
- Finalisation and stabilisation of HYMOS and SWDES
- Expeditious finalisation of 'Data Exchange Protocol'
- Activation of 'Data Users Feedback Mechanism'
- Acceleration of training for 'Data Interpretation of Hydrological Characteristics'
- Expeditious finalisation of 'Regulations and Procedures for supply of data'
- Promotion of public awareness about HIS
- Govt. declaration about independent entity of HIS to avert the possibility of diversions of its assets and resources for alternate use.

Organisation Culture for HIS Sustainability

Best organisations place high importance on culture. It is the most critical factor shaping managerial process.

While organisations do give attention to the 'hard factors' viz. Structure, Strategy and Systems, it is hardly realised that the stabilising mass of organisation is represented by 'soft area' of the organisational life, viz. Staff, Skills, Style and Shared Values. With every change in the Aims and Objectives, Strategy and/or Technology of an organisation, it is important that the existing culture of the organisation is assessed to see if this would sustain the change. Every change in organisation demands a corresponding change in its culture, for sustaining the change. Cultural assessment study points to the direction of change in the culture.

The Hydrology Project has introduced change in the Strategy and Technology of Hydrological Information System under the Water Resources Department of the State Government. The Project has devoted itself considerably to the 'hard factors' of the organisation. If HIS has now to sustain itself in the new mode, organisational efforts will need to assess and ensure that the culture of the organisation is supportive of the change.

This has promoted the participants to collectively deliberate and discuss as to what would be the appropriate culture of the organisation to sustain HIS, particularly to ensure that HIS does not slip back to its old mode after the conclusion of Hydrology Project. The '7-S McKinsey Model' and 'Herman's Ice-berg Model' provided conceptual clarity to the workshop. Building appreciation of the above, the workshop discussed the current realities of the organisation; recognised certain limitations in the current culture and identified the *change areas*, for being worked upon by the organisation as follows:

- Proper staffing policy, so that loyal and committed staff with requisite skills are available to HIS
- Change in the attitude of lower level staff for better discipline and responsibility
- Recognition and importance to talent
- Field of interest to be taken into consideration
- Policy and scheme for improving motivation
- Concern for personal life
- Enabling leadership for guidance from higher level
- Stability of the organisation with low rate and frequency of transfers of skilled/experienced staff
- Empowerment with Accountability and Responsibility
- Operational flexibility with work leaders
- Reward for merit and skill
- Punishment for non-conformance in performance parameters
- Involvement of staff in problem solving and decision making in operational areas
- Respect for other's ideas
- Seriousness in Data Management
- Effective performance monitoring
- Technology savvy
- Simplified systems for 'performance' and 'employee' services
- Training and orientation to staff for building 'external' orientation
- Discouraging influence of external forces
- Habit building for collection of data on regular, real-time basis and regular flow of data for data entry and validation
- Goal sharing.

4.1.4 Consultant's conclusions and recommendations

'HIS' is beset with a host of issues and concerns in the context of its sustainability. This has been revealed during the workshop and summarised in the report here-to-before. Some of the issues are indeed critical, such as in-adequacy of staff and basic skills. Staff and skills are the core constituents of any organisation and hardly need any emphasis. Some others are little less critical, but significant enough to warrant timely attention, as for example dysfunctional transfer practices, lack of empowerment, irregular flow of data, etc. An issue of fundamental importance is the absence of shared 'Mission and Values', that contribute to culture building of the organisation. A heartening feature, however, that surfaced and was well articulated during the workshop was that the 'HIS' membership have enough intrinsic strength and willingness to meet the challenge and stand up to the occasion.

The agency is, by and large, alive to these issues. Pre and post workshop discussions also indicated that certain action initiatives have already been taken by the agency, which are awaiting their fructification. Limitation of the government system and resources are alluded to as the factors for this suspended status. Undoubtedly, the perspective of 'HIS' – being an integral part of the Water Resources Department and not a stand-alone organisation has to be appreciated. It has also to be recognised that 'HIS' has to operate under the rigors and

discipline of bureaucracy and within the parameters of the govt. system. The question, therefore, that needs to be debated is – how to harmonise the needs of 'HIS' with the system constraints of the government !! Innovative approach and leadership influence will address this concern.

Keeping the above context and background in view, the Consultants recommend the following:

Brain-storming session

Top and Senior officials of the agency may brainstorm to search for alternative solutions that become feasible within the confines of the govt. system. This would essentially address the issues of 'staffing'; 'incentives', and 'rewards for talent/skills/performance'.

Policy formulation

The agency may develop/influence formulation of an appropriate policy, so as to provide for (i) ascertaining incumbent's interest before he is transferred-in for 'HIS' function, (ii) placement of a substitute before the incumbent is transferred-out of 'HIS' function, and (iii) mandatory handing over of the charge to the new incumbent before he/she is released, for subsequent smooth operation.

Review of administrative and financial systems

The agency organisation may commission a review of existing practices relating to administrative and financial systems at Regional and Sub-Regional locations, and stream-line these to make the processes employee-friendly and performance-oriented.

Sub-delegations

The agency may undertake an exercise to determine functional needs of Regional and sub-Regional Heads, and appropriately sub-delegate the powers to them, to improve efficiency and effectiveness of 'HIS'. This would obviate the necessity of referring day-to-day matters to higher levels and enable those who work to do their jobs well. Empowerment would also create a sense of accountability and promote involvement of people in decision-making.

'Mission and 'value' statement

The agency may take steps to develop a 'Mission' and 'Value' statement, which should be shared widely amongst its employees and other stakeholders.

A Mission' statement is necessary to generate a missionary feeling amongst organisational members. The statement provides critical frame of reference to the employees for unison of direction and efforts, and their commitment to the organisational goal. In the absence of a well defined and clearly articulated and accepted 'Mission', the employees have no definite anchor to align to. Goals and objectives reasonably flow from the 'Mission' statement, and provide focus to the staff for a directed effort. Employees develop keenness to co-operate with others to achieve the common goal and become clearer about the significance of their own role.

A 'Value' statement gives clarity to the employees on what it is that the organisation values. For example, in the case of 'HIS' the organisation would value 'regularity and accuracy of hydrological information', 'creating and providing such hydrological information as the users demand and has value for them', 'cost-effective and efficient service to the user', 'reward to employees for accomplishment and punishment for non-conformity', 'concern for employees' etc. Similarly, a statement of employee's values can also be developed, such as –Discipline,

Dedication, Loyalty to organisation, Respect for others' ideas, etc, which moulds and shapes employees' behaviour.

'Mission' and 'Values' have powerful effect in influencing the culture of an organisation and would undoubtedly go a long way in sustaining 'HIS.

4.1.5 Action Strategy

To facilitate the agency in initiating change action, the following strategy is recommended:

OUTPUT OBJECTIVE	ACTION	ACTION-STEPS
'Mission' and 'value' Statement. - North star for guiding organisational members in unison of efforts and appropriate behaviour for achievement of the goal. Organisational members develop appreciation of their role contribution.	Development of' Mission' and 'Value' statements; and wider circulation to the members of the organisation associated with 'HIS' for their under-standing and agreement.	• Leadership support • Top and Senior Officials– Workshop to Generate 'Mission' and 'Value' statement, with the help of external facilitator. • Develop communication strategy for wide circulation of the 'Mission' and Value' statement. • Communicate widely, amongst Organisational Members, as per Strategy. • Display the statement at all work places, and widely share for understanding and acceptance in all training and development programs.
Quality-oriented requisite manpower at all data collection centers.		• Study exact needs and actual availability of manpower, in term of quality and numbers, at each data collection center. • Fill the deficiency • Assess capability and interest of each member at each location. • Identify causes of disinterest and in-discipline in performance. • Provide organisational responses for general factors, and specific responses for individual factors. • Position adequate manpower and maintain interest and Performance discipline through better supervision; training and sharing of 'Mission' and 'Values'.

Effective organizational Processes, and simplification of administrative and financial systems.	Empowerment – so that reference to higher authorities could be avoided in day-to-day operational matters.	• Constitute a 'Task Force' to study and determine functional needs of Regional and Sub-regional Heads. • Process appropriate sub-delegations. • Train the concerned incumbents on exercise of powers, reporting requirements and accountability.
	Co-ordination and Communication mechanism.	• Constitute a 'Task Force' for studying the existing co-ordination and communication mechanism and suggest measures for improvement. • Take administrative decisions and issue appropriate orders. • Constitute a committee at regional level to visit all functional units, discuss with the people there and identify difficulties faced by them in administrative and financial matters, connected with employee servicing and performance support.
	Simplification of administrative and financial procedures	• Discuss the pointed difficulties in a joint meeting with administrative and financial heads and work out an agreed simplified procedure for adoption.

4.2 Andhra Pradesh, Groundwater

4.2.1 Objectives of the Workshop

The objectives of the workshop were:

- To identify issues that can affect sustainability of 'HIS', and
- To deliberate and recommend ' framework for action' and 'change process'

Senior and middle level officers of Groundwater Department participated.

The program was designed and delivered to cover the following aspects and dimensions:

- Identification of issues affecting sustainability
- Crystallizing a few (three or four) key critical areas warranting focused attention
- Group discussion on each critical area, and presentation of group recommendations, followed by open discussion
- Mission and Values
- Appropriate organization culture supportive of 'HIS'
- Freezing 'change-areas' for action initiative
- Change–process and management of change

4.2.2 Summary of the results

Issues inhibiting sustainability

The following factors that can threaten 'HIS' sustainability were identified:

- Budgetary support - financial resources crunch
- Users' demand - Lack of awareness among users
- Quality of data – needs to be effectively monitored
- Availability of skilled/trained manpower
- Improper and in-effective utilization of trained manpower
- Attitude and approach of the existing manpower
- Security of instruments
- Timely and proper updating of data – quality dimension
- Storage mechanism for data
- Infrastructure: strengthening, maintenance, and timely upgradation

Organisation culture supportive of HIS sustainability

The participants contributed to developing a model profile of 'Organisation Culture' that would be compatible with the 'HIS', as developed under the Hydrology Project. The suggested characteristics of the desired culture are:

- User-friendly organisation
- Value for money to the users
- Excellent teamwork
- Transparency
- Responsibility and accountability
- Openness and information sharing
- Efficiency
- Quality orientation
- Cordial relationship and co-operation

4.2.3 Participants' analysis of critical areas

Five specific areas were identified as key critical areas. The participants were divided into five groups to discuss various issues in the identified areas, and make a presentation thereon. A summary of the status and significant recommendations made by the groups, is give below:

Internal Communication

- Information sharing should be enhanced through increased use of e-mail, fax, video-conferencing, tele-conferencing, etc.
- Periodicity of regional meetings should be increased
- Cell phones and laptops should be provided to Dy. Directors for effective monitoring.

Quality of HIS work

The following views were presented by the group:

- Policy should also allow to have piezometers in non-command areas
- AWLRs should be installed on all piezometers
- Technical Officers can better be deployed on groundwater recharge work
- One data-entry operator post should be provided in each district office, so that field officers are not engaged for entering data, affecting data validation and processing work
- C.D. writer along with re-writable CD's should be provided to each office, as also Special Filing Cabinets. This will avoid the problems of data erosion, corruption and virus.
- More regional water quality labs will prevent variation of quality parameters, due to time lag between sample collection and analysis.
- Existing staff to be trained for pollution oriented studies
- The existing norm of one rainfall station per mandal is inadequate. Atleast three stations per mandal should be provided to assess the village-wise G.W. potential.
- Automatic Rainguage Stage should be installed and connected by telemetry district
- Frequent HDUG meetings should be convened at all levels from mandal to State level.

It was however, observed that the group's presentation reflected, by and large, requirements in the technical area, and that further thinking would be necessary to attempt at identifying action areas for improving the HIS work quality.

HIS Data Users

Following observations and recommendations were made by the group assigned to look into HDUGs area:

- Utilisation of Janbhoomi meetings for creating awareness
- Leveraging electronic media
- Creating awareness through cultural programs
- Linkages with research/academic institutions and industry groups for expanding user base
- Easy access of data through web-site
- Feedback mechanisms of lead bank/DCC meetings and surveys to be utilized
- HIS capability to be fine tuned to users' needs
- Expand linkages with NGOs.

Manpower and other constraints

The group was assigned to explore alternative solutions to meeting manpower shortage and suggest measures for managing other constraints. The group made the following recommendations:

Manpower

- Available manpower should be trained in multi-skilling for easy substitution
- Date-wise programme should be drawn in advance for effective utilization of manpower
- Regular study tours, refresher programs, workshops and seminars be conducted for up-dating and advancement

Budget

- To take on special short-term and long-term projects for resource mobilisation
- Review and simplify existing accounts procedure for effective and timely utilisation of funds

Technology

- A sophisticated technological institute should be established at state level for free flow of latest technology to the districts with a relatively senior officer above the cadre of District Officer
- Establish R&D Wing with separate budgetary provision.

Infrastructure

- Proper security for equipment
- AMC for all equipment
- Transport for timely collection of data
- Developing rainfall measurement network like automatic rainfall recording rainguages
- Properly archiving of data with security and safety.

4.2.4 Change areas

Taking into account the issues that emerged during the workshop, the group listed the following areas where 'changes' need to be introduced in order to ensure sustainability of HIS:

- Data users
- HIS work quality
- Human Resources and other constraints
- Infrastructure and productive facilities
- Mission and Values

Data users

- Promote awareness of data availability amongst potential users
- Expansion of 'user-base'
- Easy accessibility of data
- Mechanism for feed-back on 'users' needs
- 'Quality of service', and 'responsiveness'

HIS work quality

- Quality in data collection, data entry, data validation, data processing and analysis, data exchange, data storage, and data dissemination
- Quality in various organizational processes, viz: decision making, problem solving , conflict resolution, etc
- Continuous Improvement Process

Human Resources and Financial constraints

- Staffing
- Policies
- Skill
- Motivation and morale
- Budgetary Mechanism

Infrastructure

- Maintenance and up-gradation of infrastructure and productive facilities
- O&M budget

MISSION and Values

- Develop 'Mission' and 'Values' statement

4.2.5 Constitution of Task Forces

The workshop concluded with recommendations to constitute five separate Task Forces, with mandate to address various related issues. The broad principles for constituting the Task Forces were agreed to as indicated below:

Every Task Force, other than for Mission and Values, shall have seven members: 3 Regional DDs, 1 DD Hydrology – Hq, 1 DD WQ (Hq), 1 representative from Administration, 1 AD Statistics (Hq.) In addition, three Regional Research Officers are to be associated with the Task Force for 'Quality'.

The Task Force for 'Mission' and 'Values' shall comprise of the Director, DD – Hydrology, DD – Water Quality (Hq), DD – Hydro Geology (Hq), DD – Hydro Physics (Hq), Jt. Director – Admn. and Finance (Hq) and 3 Regional DDs.

The responsibility for working out detailed modalities was assigned to the Nodal Officer, Hydrology Project. The Nodal Officer indicated that he would take about two weeks time to develop the modalities.

In the concluding remarks, the Director announced that formation of the Task Forces shall be concluded expeditiously, after his discussions with the participants.

4.3 Karnataka, Surface Water

4.3.1 Objectives of the Workshop

The objectives of the workshop were:

- To build appreciation of organizational realities with respect to organization culture reflected though elements and processes
- To identify critical areas/issues that may affect sustainability of 'HIS' post Project period
- To collectively discuss possible interventions to respond to the identified challenges, and
- To recommend/decide an institutional framework for 'initiating' and 'managing' the change process.

Senior and middle level officers from Headquarters, Regional and Sub-regional units, representing all functions and disciplines associated with 'HIS', participated

The programme was designed and delivered to cover the following aspects and dimensions:

- Identification of issues that can possibly affect sustainability of 'HIS'
- Selecting a few (three to four) key critical issues warranting action
- Group-wise discussions on the identified critical areas, and presentation of groups' recommendations, followed by open discussion in the full house
- Presentation of a study on 'Change'
- Presentation on significance of 'Mission' and 'Values' statement
- Freezing 'change areas' for action initiatives
- Finalization of structure and mechanism for 'initiation' and 'management' of change process.

4.3.2 Highlight of the outcome

Identification of issues

Through an inter-active process, the participants identified the following as critical areas warranting attention and change action. Concerns in the areas are indicated here-under:

Area	**Aspects**
Human Resources	• Frequent transfers • Ban on recruitment • No recruitment even to fill those posts that are rendered vacant due to superannuation. • Fate of incremental staff (chemists, data operators, programmers) after completion of Hydrology Project. • Litigation by the Casual/Contract field staff, claiming permanency in employment.
Financial Resources	• Budget for O&M and other 'HIS' activities may not be available post March 2003. • Even if budget is available, flow of funds could be a problem • Likely situation of continued financial liability, without adequate resource and means to generate funds
Technological	• Adequacy in maintenance of Hardware and availability of spares • Bugs in Software, that may appear after March 2003 • Non-availability after March 2003 of technical support and guidance - as is available now from HP.
Institutional/Structural	• Fall-out of reduced consolidation period for stabilization, from envisaged three years to actual one year.

Group deliberations and presentations

The participants divided themselves into four groups - each group to address one identified area, discussed and deliberated on various aspects assigned to their group, and made presentations of the group's recommendations. The presentations are summarized below:

GROUP - I: HUMAN RESOURCES

Frequent transfers:

- HRD should take active part to avoid untimely transfers (Govt. policy is to transfer an official in a specified time), for improving the working efficiency in the project. In case transfer is effected, it should be motivated through the seniors for better prospects.
- Willing staff should be protected to continue in the same post to achieve good progress and quality. (This responds to the concern that even willing persons are transferred due to extraneous considerations and influence).

Incremental Staff:

- The services of specialised staff in various fields should be continued to be utilized as long as the system exists.

Casual/Contract Field Staff:

- The services of the casual staff are very essential for the sustainability of the project. Care should be taken while appointing a staff, to avoid litigation.

Replacements of retirees:

- Effective steps should be taken to fill the posts that are rendered vacant due to retirements, instead of over stressing the juniors with responsibilities. Retirement on attaining superannuation is unavoidable.

GROUP - II: FINANCIAL RESOURCES

Budget requirements

- Budget requirement for sustenance and consolidation of HIS for post March 2003 is estimated at over Rs. 150 lacs, comprising of i) Asset creation - Instruments: Rs. 8 lacs; ii) Assets and staff maintenance: Rs. 142 lacs, and iii) Staff training: Rs.2.25 lacs.

Flow of funds

- The Govt. should be apprised of the fact that a steady flow of funds is necessary to collect timely and correct field data which is necessary for future planning and academic studies. Since the PGTRs are being paid a very meagre remuneration, they are to be paid regularly to evince keenness in them to collect data from the field and submit the same for further processing to concerned centers. Bottleneck in flow of funds will definitely hamper the programme.

GOUP - III: TECHNOLOGICAL

Maintenance of hardware and availability of spares:

- AMC has to be continued beyond the project period
- Frequent in-house training has to be imparted to the technical staff for maintenance of hardware
- Sufficient spares for consumable items such as cartridges, floppies, etc. should be procured and made readily available
- In-house training in maintenance should be given to the staff using the machines to take up minor repairs.

Bugs in software, after 2003

- There should be continuity of contract with software developers
- AMC should be entered for software, also

Technical Support and Guidance, after March 2003

- In-house trainees have to be developed before 2003
- Incentive to be provided to the in-house trainees so that they may continue in the project

GROUP - IV: INSTITUTIONAL/STRUCTURAL

Consequence of restricted consolidation and stabilization period:

Issues:

- Software such as SWDES has had considerable stabilization time. But HYMOS is yet to become as user-friendly as SWDES has
- Advanced HYMOS is yet to take off
- Most advanced progammes, especially those introduced recently: DWLRs, HYMOS-Advanced, HYMOS-Bathymetry, GIS-DSC Software, etc., may come to a stand still.
- Trained staff are still fresh - insufficient exposure
- Hardware/Software for DSC is still to become operational and six months time is in no way sufficient
- Wide usage is necessary for any software/hardware to become stabilized and be free from any glitches
- Long term AMC Agreements are to be entered into - provisions?
- HP-I had limited scope at the outset - full potential is understood/begun to be realized only recently
- There should be time buffer to accommodate for inclusion of areas which were neglected for want of proper focus at the beginning.

Solutions

- Seamless transition to HP-II
- Time extension for HP-I
- At least, selected activities of HP-I to be continued to HP-II
- Sustained involvement of resource persons pooled/brought together by Consultants, for resulting gains -
  * HR network to be identified across nation spanning institutions, organizations, individuals, etc.
  * Global network to be the ultimate aim
  * Increase training targets; training problems may recede as a result
  * Mass publicity campaigns - constant monitoring/demand may be translated into results.

4.3.3 Presentation of a study on 'change'

A presentation, based on the book - "who moved my cheese", was made in one of the sessions, to drive interest and appreciation of the participants towards the concept of 'change'. Participants recognized that 'change' is inevitable; it brings about opportunities; and is necessary for survival.

Participants also worked in groups to register their perception about the (i) 'old mode' they are clinging to in the working of 'HIS'; (ii) the 'new mode' that should be adopted, and (iii) the changes needed to move on to the new mode. Essence of the reporting of the four groups in respect of these dimensions are:

'Old mode' still being clinged to:

- Insufficient man power
- Unsteady flow of funds
- Technology not passed to all the staff
- Old system of payments and release of grants
- Delays in taking decisions
- Communication of data through post/manually
- Meagre payment to Gauge Readers

'New mode' to be changed to:

- Proper deployment of man power
- Time scheduled allocation of funds
- Technology to be passed to all the staff
- Quick and smooth release of fund
- Quick decisions at Gov. level
- State funding of HP-II
- Automatic instruments to be installed - DWLR, ARG etc.
- Improving the status of Gauge Readers

'Changes' needed to move to the new mode:

- Provisioning of sufficient funds in the State Budget, under R&D
- Provisioning of incentive to staff
- Continuation of WB aid for three more years to sustain and consolidate 'HIS', since State Govt. would not be able to provide sufficient funds
- Earning revenue by providing data to the users
- Decentralization and delegation of requisite administrative and financial powers for deployment of field staff and maintenance of stations.

4.3.4 'Mission' and 'Values

In a brief presentation, participants were sensitized about the concept of 'Mission' and 'Values', and were enlightened on the need and process for developing and sharing 'HIS - Mission and Values statement', which will wield powerful influence in shaping culture of the organization, supporting 'HIS' sustainability.

4.3.5 Institutional framework for initiating and management of change

Having identified the above, viz.: Human Resources, Finance, Technology and Structure, as four major factors that can contribute to 'HIS ' sustainability, the participants recognized a need for analyzing in detail their realities in the post project perspective, identifying the deficiencies, and listing measures that would be necessary for the sake of 'HIS' sustainability. It was agreed that the Department would constitute a 'Core Group' to look into these aspects, and recommend to the management action areas for change initiatives.

4.4 Karnataka, Groundwater

4.4.1 Objectives of the workshop

The objectives of the workshop were:

- To collectively discuss for stock taking, organizational realities with reference to various elements and processes and culture of the organization, and

- To assess their compatibility, identify weaknesses, and explore opportunities for change to work out a strategy for sustainability of HIS.

The workshop was attended by senior level personnel from the Directorate and District locations, associate with HIS and representing various functions and specialities.

4.4.2 Workshop Highlights

Understanding the purpose of HIS

To draw a correlation between the organization's objectives, structure and processes, the participants were invited to share their understanding of the purpose of HIS. Following statements were made:

- To develop Groundwater
- To systematically manage Groundwater
- To plan and sustain the water resources
- To facilitate improvement in water quality
- To control pollution of groundwater
- To supplement agricultural production
- To create awareness amongst the public about water utilization
- To use new technology
- To establish an authoritative organization in Groundwater
- To provide technical advice to groundwater users
- To standardize collection of data
- To establish single-window nodal agency at state level for collection and dissemination of Hydrological Information to Govt. and Private organizations.

Critical factors for the success of HIS

The participants viewed the following as critical factors for the success of HIS:

- Technical manpower
- Team work
- Managerial skills
- Unity of command structure
- Budget/Resource availability

Other factors highlighted were:

- Association of external expert agencies, like Universities and Research Organizations, for up-scaling of technology from time to time
- Exposure of Technical personnel to outside world for experience sharing and learning new developments.

Challenges/Threats to HIS Sustainability

The participants perceived the following as threat in the listed order:

- Inadequate availability of Technical Manpower
- Insufficient resource allocation through Budget
- Poor maintenance of Instruments and machines
- Shortage of Specialists - Chemists, IT professionals etc.
- Sub-optimal level of motivation

In relation to inadequate availability of technical manpower, it was pointed out that there has been no recruitment of technical manpower since 1983; the average age of technical staff is over 50 years, and the majority of trained technical staff would retire in the next one to three years.

In relation to the level of motivation it was pointed out that, though motivation will remain a core issue, the current complement of technical staff has reached a stage beyond induced motivation and is operating on the strength of self-motivation, notwithstanding the absence of incentives, promotions, or constraints in the availability of performance facilities.

In relation to specialist staff, it was pointed out that sanction for specialist staff is co-terminus with the Hydrology Project, and therefore, it was a matter of great anxiety as to what would happen to this requirement after March 2003.

Operational constraints

The participants vehemently pointed out that the current arrangements of dual control - that is, control of Dept. of Mines and Geology for technical matters, and the control of Zila Parishad for administrative and financial matters, is turning out to be most dysfunctional, hurting professional satisfaction and causing stress. There was a strong articulation for total control by the Department of Mines and Geology.

Analysis of current position and desirability

The spectrum of (i) organizational universe, (ii) organizational output, and (iii) end-users, was presented to the participants, with the following details highlighting the critical concern in each and building appreciation of interlinkages, influences and implications for each other:

Constituent	**Elements**	**Concerns**
Organizational universe	Infra-structure	Adequacy
	Human Resources	Efficiency
	Financial Resources	Effectiveness
	Operational processes	Compatibility
	- Data Collection	
	- Data Entry	
	- Data Validation	
	- Data Processing	
	- Data Storage	
	- Data Dissemination	
	Management Processes	
	- Policies/Systems	
	- Decision making	
	- communication	
	- Conflict Resolution	

	Organisation Structure - Task Allocation - Role clarity - Accountability - Empowerment Values and Beliefs	
Organisational Output	Data Information	Quality - regular flow of data - validity of data - users' driven data - service delivery
End Users	HDUGs	- product awareness - data value/utility - users' participation - feedback mechanism

The participants, after a brief discussion, identified the following five aspects that in their view needed analysis and response to address the concern of HIS sustainability:

1. Infra-structure - - Maintenance
2. Human Resources - Motivation
3. Operational Processes - Data Storage and Dissemination
4. Management Processes - Internal Communication
5. Organization Structure - Command structure and Delegation of Powers
6. Users' area - Building awareness about data availability and Data Utility
   - Users' interface

The participants met in three groups to discuss the above issues and later shared their view points and observations with the full house.

Managing the Change

Completion of HP in March 2003 imports a change, which will need to be managed effectively. As a pro-action, the participants joined to analyze the implications of this change. The participants noted that the major consequence of this change would be:

1. Stoppage of financial support from World Bank
2. Cessation of technical advice/guidance from the DHV Consultants
3. Expiry of sanctions for specialist positions

The participants actively discussed implications of these changes, and various ways these could be managed:

Financial Support

Various responses to this situation were visualized, as below:

- Approaching World Bank for continued support
- Requesting State Govt. for HIS Budget
- Generating revenue from HIS product
- Pruning the expenditure
- Requesting Central Govt. for financial support to HIS

The participants concluded that the stoppage of financial support from the World Bank does not create an alarming situation, and the Department has confidence and capability to mobilize resources for the O&M function.

Technical Support

Various alternatives were identified as below:

- Increasing inter-action with academia, Universities, and Research Institutions
- Create a forum of inter-state agencies
- Increasing use of web sites
- Increasing reliance on capabilities available in the country
- Take advantage of the services of I.T. Dept., GOK
- Improve effectiveness of agency's Help Desk
- Expand the role of R&D department.

Specialists Resource

To manage this, various options discussed were:

- Approach the Govt. for continuation of these posts
- The World Bank to influence the state govts. for 'relaxation of ban' on recruitment

The participants also discussed examining other possibilities, such as:

- Scaling down/Rationalizing the work activities
- Re-deployment
- Utilization of Geologists for certain laboratory activities

Work/Organization Culture

Attuning to the change, the participants recognized that the following pattern in organizational behaviour should govern the wok place:

- Working with motivation and satisfaction
- Independence in work performance
- Continuous learning
- Evaluation of performance and assessment of potential
- Promoting innovation in work performance methods
- Recognition/incentive for performance
- Family -like atmosphere
- Encouraging Leadership
- Reasonable Career Growth

The participants observed that by and large, these conditions exist and should be maintained.

Value System

The participants listed following 'Values' to be promoted by the Dept.:

- Reliability of Data
- Technical Excellence
- Efficient Service Delivery
- Cohesiveness amongst employees
- Performance orientation

Status of other dimensions of the organization

The workshop was interspersed with certain exercises and questionnaires, to capture perception of the participants and obtain position about some organizational issues and management processes that reflect the culture of the organization. The outcome, in summary, is presented hereunder:

- Organisation members have a fairly good idea about the purpose and goals of HIS
- Policies, rules, and procedures are well defined and fairly clear to staff
- Employees are given fairly reasonable and equal treatment
- The level of trust and cooperation between employees is sufficiently high
- Commitment of employees is very high
- Management inspires employees to perform and encourages innovation

- There is a good deal of transparency in decision-making
- Communication is open
- Problems are solved at work place, through discussions
- Management shows reasonably high concern for employees' development
- There are no areas of conflict
- Management promotes goal achievement, work efficiency, and technical excellence through team work
- Leadership at field level develops because of the opportunity of independent working, meeting the challenges and solving problems at the work place, besides exposure to training and workshops
- There are no significant employee-problems, except certain administrative difficulties and delays
- There is ambivalence about 'empowerment' and 'reward system'.

One of the exercises - rather the first exercise given to the participants was to express through a 'figure' their perception and belief about the 'Future of HIS'. Perceptions and beliefs of the employees towards HIS have a strong bearing on its sustainability. Some of the meanings expressed through figures drawn by the participants are:

- Future of HIS is bright like sun
- HIS will radiate like sun
- Usefulness of HIS is its living support
- HIS has grown into a big tree with firm roots
- Budget, staff and training will provide smiling face to HIS
- HIS is a banyan tree, with good growth and prop roots which will sustain it
- HIS is like a furnished house, which has good foundation, high protection, and user-friendly approach. The house will last long and permits additional floors.

Discussing the meaning of pictures, the participants concluded that

"IT IS THE RESOLVE OF PEOPLE AND DEPARTMENT TO SUSTAIN HIS -

HENCE, HIS WILL SUSTAIN"

4.4.3 Conclusion

In the concluding remarks, it was indicated that the department would constitute a Core Committee for working out a detailed strategy and initiating change actions for sustainability of HIS; further adding that a definite time frame for this initiative will be set and progress monitored.

4.5 Maharashtra, Surface Water

4.5.1 Objectives of the Workshop

The objectives of the workshop were:

- To identify issues that can affect sustainability of 'HIS';
- To examine current realities of the organisation and identify critical areas warranting action;
- To deliberate and recommend a framework of action in the identified critical areas; and
- To create a mechanism for planning and initiating a change process in the critical areas.

The workshop was attended by senior and middle level officers of Hydrological Project, Govt. of Maharashtra, representing Head Office, Divisional and Sub-Divisional offices.

The programme was designed and delivered to cover the following aspects and dimensions:

- Identification of issues affecting sustainability
- Crystallizing three or four key critical areas needing attention
- Group discussion on each critical area, and presentation of recommendations by the groups, followed by open discussion
- Mission and Values - significance and process for development
- Developing an appropriate model of 'organisation culture' that is supportive of 'HIS' sustainability
- Freezing change areas for action initiatives
- Recommending structure/mechanism for initiating and managing 'change process'.

4.5.2 Highlights of the outcome

Visualising 'HIS' in the year 2007

At the out-set of the workshop, the participants were asked to do cool, deep and quick thinking and write - 'how they see 'HIS' in 2007 i.e. 5 years from today.'

This visualisation of each participant is reproduced in the appendix. The expression in certain cases is sketchy and not too well articulated, yet it does clearly reflect the feelings and expectations of the members, which is a significant input for assessment of 'HIS' sustainability.

Two features have come out distinctly from this exercise:

i. There is ample optimism amongst the organizational members vis-à-vis 'HIS' sustainability, its utility and popularity

ii. 'Human Resources' and ' Financial Resources' are the two most critical factors affecting 'HIS' sustainability

Overall, the participants have expressed the following as generic areas of concern on the projected time frame:

i. Shortage of funds for maintenance, and performance of data collection activity ;
ii. Shortage of manpower in the event of no recruitment following retirements, and consequential shortage of skills;
iii. Transfer of skilled manpower, due to certain influences; and
iv. Lack of interest of personnel to join Hydrology Unit.

Crystallizing critical areas for change-action

Based on broad discussions and appreciation of current realities of organizational elements and processes, the participants identified the following, as key critical areas warranting immediate attention:

1. Human Resources	-	motivation, attitude and commitment
2. Internal Communication	-	between locations and agencies; for managerial processes; and leadership communication.
3. Quality area	-	products and processes
4. Users' area	-	external communication for building awareness.

Group deliberations and presentations

The participants were divided into four groups for collective deliberations on the identified areas. Broad observations and recommendations of the groups are:

HUMAN RESOURCES AREA

MOTIVATION

(a) Supervisory Staff

Existing Pattern

The followings were seen as motivational factors in the existing framework:

- Time Scale
- T.A. bills
- Leave
- C.R. Communication
- Training
- Excellence Award

Recommended Pattern

The group recommended the following to be introduced or amplified for enhancing motivational level of employees:

- Soft loan for purchase of personal vehicles
- Grant of 30% incentive
- Rationalization of workload
- Amenities like, rain coat, jacket etc
- Petrol Allowance
- Appreciation Letter
- Study Tours
- P.G. Study
- Training
- Informal relation in personal matters.

(b) Observation Staff

Existing Pattern

The group observed that the following factors contributed to motivation of the observation staff:

- Training
- Residential accommodation
- Improved daily wages
- Workshops

Recommended Pattern

The group recommended the following for improving motivation of observation staff:

- Giving mementoes to participants in training programmes
- Bonus for good work
- Facilities such as life jacket, raincoat, gum boots, etc.
- Appreciation Letter
- Informal relaxation in personal matters.

ATTITUDE

Existing Pattern

- Inert at work
- Stereo-type/boring work
- Unsafe working condition
- Demoralized staff
- Remote in-accessible sites
- No seriousness about work

Recommended Pattern

- Training/Workshops for attitudinal change
- Risk coverage
- Safe working conditions
- Conveyance Allowance
- P.G. studies

COMMITMENT

Existing Pattern

- Duty bound, not from the heart
- Frequent transfers resulting in non-commitment
- No accountability

Recommended Pattern

- Training
- Sufficient length of service in one segment
- Posting of trained staff
- Accountability

INTERNAL COMMUNICATION

The group's deliberations were sparked by factors such as staff, workload, compensation, etc., diluting focus on the ' communication' issues. However, relevant observations and recommendations made by the group are summarized here under:

i. Data Flow

Observation

Data flow from site to sub-division office is manual and it takes more time due to long distances.

Recommendation:

Electronic media may be used for data transfer which will save time.

ii. Protocol for data transfer

Observation

As per protocol, data transfer from site to sub division is shown within 5 days, but due to long distances and inadequate staff, it is not possible to transfer the data within time and there are postal delays also.

Recommendation

This schedule may be extended to 15 - 20 days.

ii. Leadership Communication

Observation

Delay in communication of decisions reaching section level.

Recommendation

Electronic media such as fax, e-mail, may be used. Phone connection at sub-division level may be permitted for proper communication.

QUALITY AREA

The presentation of this group is summarized below

Presently Quality Data is achieved by adopting following procedures:

- Observation and Data Collection by trained field staff
- Entry in SWDES at SDDPC
- Primary validation at SDDPC
- Secondary validation through HYMOS at DDPC
- Hydrological validation at SDPC

Areas needing improvement are:

•	Communication system	- Phones/Wireless sets
•	Remuneration	- Remuneration and Honorarium to observers is in adequate
•	Insufficient staff	- Vacant posts, due to retirement, are not filled in time. Less manpower can lead to fabrication of data
*	Insufficient supervision	- Insufficient supervision is due to constraint of vehicles and irregularity in reimbursement of Travelling Allowance
•	Maintenance of Infrastructure	- Maintenance of infrastructure is affected by lack of funds, lack of quality consciousness at the root level, lack of standby equipment and spares, and insufficient AMCs for O&M of equipment.

Recommendations

- Sites should be made accessible during the rainy season, otherwise fabricated data is likely to be generated
- Willing persons should be considered for posting in HIS
- Sufficient spares, standby equipment, and O&M funds be provided
- Installation of communication facility - Telephone, Internet, Wireless at SDDPC
- Timely filling of vacant posts
- Lifting of ban on vehicle use for effective supervision
- Motivational workshops on Quality Consciousness for field staff
- Appreciation for good performance
- Installation of time data transfer system
    - to reduce transit time of data transfer
    - to eliminate manual data entry mistakes
    - to facilitate automatic primary validation
    - to facilitate on line flood monitoring
    - to give quality data on line
    - to reduce recurrent expenditure on manpower
- AMCs for equipment, instruments, computers, etc.
- Activation of effective Help Desk set-up at SDDPC level
- Timely up-gradation of softwares

USERS AND EXTERNAL COMMUNICATION

The presentation of the group is reproduced below

- *Possible user groups (HDUGs) -*

Irrigation, B&C, Agriculture, Revenue, Forest, CPWD, Railways, Educational Institutes, Z.Ps, Panchayats, NGOs, Pollution Control Boards, Consultants working in the field of Hydrology, Interested group of farmers, industrialists, and individuals.

Present: 66 Registered HDUGs

Future: All the above mentioned groups.

- *Awareness about HIS product -*

Hydro-meteorological data consisting of rainfall (SRG, ARG), climatic data (evaporation, sunshine, hours, RH, wind velocity and direction, max.-min. temp). Hydrological data consisting of gauge-discharge, water quality data, sediment data, and lake/reservoir water level monitoring data.

Present Awareness: Negligible with respect to HP product (data)

Recommendations

a) Creating awareness within the sections of irrigation dept. (C.D.O, MERI, WALMI, IPI Div., Management Div., Local Sector, IRD etc.) regarding type and quality of data in respect of HIS.

b) Creating awareness among all possible HDUGs about data:

Officers at Hydrology Project, Nasik:

Organize seminars, workshops, publication of booklet/magazine, for the benefit of MERI, CDO, Heads of other Depts., all entities (HDUGs) of State level; and work on their feedback.

Field Officers:

Organize district level workshops, exhibitions, arrange field visits/tours to field units of other depts., Collector, Tehsildars, NGOs, schools/colleges etc. within their jurisdiction. Display important data on display boards at Tehsils, District HQs, and actively participate in co-ordination meetings, where officers of other depts. are also present. Revise/modify/enhance activity based on feedback.

c) Include Irrigation Water Users Co-operative Societies by registering their names in HDUGs, to secure farmers participation in HIS. Nominal fee can be charged from such Societies.

- *Awareness about utility of HIS data*

Data has utility for

- Design of water resources projects, with objectives such as irrigation, hydro power, water supply, flood control, navigation, recreation, low flow augmentation, etc.
- Use of data during natural hazard, such as flood, drought, etc.
- Prediction of rainfall, drought, flood, and their monitoring
- Policy decision - based on realistic allocation of water resources among different regions/uses
- Use of data by HDUGs for their specific projects
- Use of data for academic/research interest.
- Present Awareness: Negligible with respect to HP data and its applicability.

Recommendations

- Arrange state level workshops, seminars, exhibitions, by H.P. Nasik. Real world water resources problem can be presented with practical solutions. Importance of data can be explained to the participants.
- In co-ordination meetings at District/Tehsil where normally officers of all other departments participate, the EE/SDO should take this opportunity to propagate utility of 'HIS'.

- During natural calamities such as flood, drought etc., the EE/SDO should provide sound technical support to Tehsildars, Collectors, so that the need of such data can be understood by those officers.
- During spread of epidemics (water borne diseases) the EE/SDO should guide the concerned authority using water quality data from the HIS network. Pollutants - their level of contamination, safe limits, etc. can be displayed on display boards at Tehsil/District HQ during such calamities.
- Real world case studies should be taken up by the HIS Circles and their usefulness can be proved.
- Real world small studies related to Hydrology can be taken up by Divisions/Sub-divisions within their jurisdiction.
- Irrigation projects/policy decisions regarding allocation of water resources/tariff structure can be taken up by HIS wing
- Industries should be under obligation to check the level of pollutants in their effluent through HIS Laboratories. (Legal involvement)
- Encourage research scholars to take up their project in the area of hydrology and to be guided by officers at rank of EE and above.
- The EEs/SDOs should arrange exhibitions, workshops, field visits, etc. in their jurisdiction to stress the utility of HIS data
- Budgetary provision for advertisement @ Rs. 50,000 per year/Division.
- User Need Analysis:
    - Identify users category
    - Purpose for which data needed
    - Type of data, duration, validation level, historical/real time needed by them and their formats
    - Checking demand of data relevant to problems stated
    - Identifying probable hydrological problem and data needed for such problems
    - Preparation of standard formats
- Processing time of data to be minimum
- Reasonable charging for data
- Restrictions about some category of data - military activities of strategic importance

- *User satisfaction and feed back*
    - Timely dispatch of data
    - Giving data in required format
    - Making data available at District/Taluka headquarters through Divisions/Sub-Divisions
    - Ensuring data is used for specified purpose
    - Feedback from agency
    - Improvement based on feed back.

4.5.3 Change Process and Implementation Strategy

After having built sufficient appreciation of the scenario and recognizing a need for change initiatives, the participants discussed the modality aspect of the change process, and agreed to constitute a 'Core Group' for addressing all the issues thrown up at the workshop. Members volunteered to constitute the Core Group, are as below:

1. Shri R.D. Patankar, E.E., Nasik
2. Shri M.B. Nakil, E.E., Thane
3. Shri P.D. Vaze, E.E., Aurangabad
4. Shri T.N. Munde, E.E., Pune
5. Shri L.P. Ingale, E.E., Nagpur
6. Shri V.N. Ital, E.E. , Amravati
7. Shri A.G. Raiter, S.D.O., Amravati
8. Shri D.A. Badge, A.E. I, Ratnagiri
9. Shri A.A. Joshi, A.E. I, Pune.

Shri R.D. Patankar, E.E., Nasik was chosen as Leader of the Group. The Chief Engineer approved composition of the Core Group, as above. The Group committed to submit its report to the Chief Engineer within six weeks time, and it was agreed to review the progress after eight weeks, i.e. two weeks following submission of the report by the Core Group. The group would have the authority to associate any other member as it deemed necessary, and the members would endeavour to involve their staff in the process.

4.5.4 Brainstorming Session

After the conclusion of the workshop, later in the evening on 24th July, 2002, the Consultants' Team met with a select group of senior members of the Dept. to brainstorm, under the chairmanship of the Chief Engineer. As a result of this brainstorming, the following conclusions were arrived at:

1. The Dept. has to continuously explore additional means for revenue generation, apart from budgetary support, in order to ensure that there are no handicaps in performance of HIS activities.
2. Conscious efforts have to be made at all level to optimize utilization of available manpower, to offset - to some extent, the impact of manpower shortage.
3. Communication Specialist on the Consultants Team shall support preparation of a paper on Strategy for marketing Lab. Services, where considerable potentials are visible for generating revenue.
4. Cultural Change, as is appropriate in the new context and supportive of 'HIS' Sustainability, shall be promoted through demonstrated leadership.
5. Mission and Values statement shall be proposed by the Core Group, with the support of Sr. I.D. Specialist on the Consultant's Team. The 'Mission and Values statement' shall then be formally adopted by the Dept. and widely circulated to the members of the organization, for building commitment to 'HIS'.
6. For building cohesion in the organisation, the Dept. shall consider launching a House Journal- both in electronic and print media, in addition to regular communication through D.O. letter to the field, for information sharing. Use of e-mail shall be increased for internal communication.

VISUALISING 'HIS' IN THE YEAR 2007

(visualization by participants, individually, in the 'HIS Sustainability Workshop' for Water Resources Dept. , Maharashtra Govt. on 23rd July,2002 at Nasik)

- "In the year 2007, 'HIS' will be a strong system, regarding data collection, and awareness to people. It is going in good direction. It will be useful in drought conditions, flood control, and many other social aspects."
- " In 2007, 'HIS' will have basic infrastructure completed in all respects and will be serving State in respect of guiding it through all sorts of problem - like, flood, drought, real time information about hydro-meteorological events and planning aspects of Water Resources projects."
- "In 2007, 'HIS' infrastructure will be complete in all respects. 'HIS' will be in good condition. System will be fully developed."
- "In 2007, Network will be strengthened -i.e. up-graded and automated. Data collection will be 'smoother' and 'neat' with time bound. Data processing and Analysis will be advanced. There will be awareness of 'HIS' in different systems and fields, with many HDUG members. Water quality aspect will remain a prominent feature. *In case of pausity of funds, the maintenance part of the station will be hampered and may provide a bad quality data. Staffing - trained staff, will be a problem."*
- " In 2007, 'HIS' will definitely be strong, because infrastructure will be well built. Primary and Secondary Validation work will be less; (data collection readings will be taken properly due training to actual observers). Data Users Group members will increase; there will be more familiarization with 'water availability' and 'use', specially farmers."
- " In 2007, data will be automatically collected and recorded in the computer. The data will be more reliable. Data Users will increase in number, as well as in categories - such as, farmers, industries, program organizers. Data will be available at any time, on-line to the users. Data will be processed/analyzed systematically with the help of software, predicting droughts and floods. There may be privatization. 'HIS' will be very strong and good, in data collection, dissemination, data analysis aspects. 'HIS' will be more result oriented and most useful to users of data."
- "*'HIS' will be 'strong' and 'good' in 2007, subject to dedication from workers right from field staff to officers. Dedication for HIS seems to be very poor quality at this stage. If it is continued, the* prospects *of HIS will be good on paper, but practically fruitless. Dedicated staff should be encouraged financially and promotionally. Norms of number of sites per engineer should be strictly followed. Overburden and largeness of area working should be avoided*."
- *" In 2007, 'HIS' will be good and strong considering that the field staff is trained and they are given more facilities, such as residence, etc. so that they can work with more concentration. More rain gauge stations are to be installed to get the correct and accurate data. Every district place is provided with F.C.S. station, so that all type of data can be available at district headquarter, and farmer in the nearby area can take help to increase and to decide crop pattern."*
- "In 2007, Hydrological data will be stored in storage center in the form of magnetic media in 3 copies. On-line/Of-line data will be made available to the authorized user in MSQL format. The catalogue of available data will be much available on the web site. *To protect the data for long time, sufficient funds are required."*
- "HIS will be strong if proper sustainability is devised with proper sustainable development. HIS will deliver maximum fruitful results using real time data transfer

adding to the authenticity of data. This will lead to reduced financial burden as recurrent establishment aspect and will make HIS more sustainable with limited resources."

- "After 5 years from today, 'HIS' scheme will be fully developed. Data will be required by many agencies. *Technically, all facilities will be ready but manpower to collect data will be reduced due to lack of money. Funds collected will not be sufficient."*
- "Data collection, in the year 2007, will be by digital instrument. Data transfer will be e-governed. All the data will be computerized. Less manpower will be involved. Data available will be accurate and reliable. People will be more aware of water quality. Less funds will be available for operating the system. Up-dating the software will be necessary and it will involve cost as well as frequent training."
- "After five years, position of 'HIS' will be good. Validated, reliable data will be available. *But due to shortage of funds and economic position of Govt. it will be difficult to collect the data from field in sufficient. And the staff position will be less. Transfer of trained staff will be a problem due to external influences. Persons like Sectional Engineer, Deputy Engineer, Executive Engineer are not willing to work in Hydrology Project. Posts vacant, additional charge is given year after year. This will affect badly HIS.*
- "Data collection, entry, validation will be done through Real Time Data System. Require less manpower, if Real Time data transfer is adopted. Increase its importance in planning. *Proper funding is not provided then the system will collapse. If the persons are not engaged after retirement of field staff and new recruits are not trained properly, then the system will not* be *fiasco. If the equipment and computers are not maintained, then the system would not sustain*. Quality data will be made available."
- By collecting the data for last many years, it will be useful for forecasting the necessary information of rainfall, surface water, groundwater, to reduce drought intensity, to increase water availability for drinking, industry and irrigation. It will be helpful for other department.
- "HIS will become tool for local development in all segments particularly industrial, agriculture, human resource. City and town will only be allowed to plan based on data of 'HIS', solving large scale disputes and quarrels between two cities, two states due to availability of the real data of HIS. There could be possible split between rural and urban population, due to the results of the HIS applied study. Hopefully, there could be solution to water scarcity only with the help of HIS. May be due to fund shortage, water quality labs will be closed down. Due to *Availability sufficient data, HIS network may no longer be required. May be due to large scale disputes all HIS network will be taken over by Central Gov. to monitor the activities at central level*. Due to good propagation, at last may be the 'HIS' will be acceptable to all."
- "HIS without WB support - a big question?
- "HIS System developed fully with data available at all the stations. All *processing* will conclude with value- added data. Use of HIS data in all aspects of water planning. Public made aware of all work done in HIS and its usefulness in their lives. HIS data made available to all those required at the cheapest rates and within shortest possible time."
- "HIS will have validated data so that one can forecast the nature, environment. Any HDUG get required data of required basin/sub basin/land for his study in good manner and easily. HIS will have good database in every respect/aspect.
- "Network will be more strong. Data collection will be fast, doing with digital instrument. Data will be smoother and accurate with time bound. There will be many HUDG members to use the data. Data will come to users within a sort span of time. Water quality will be known."
- "HIS is a revolutionary mission, at present and in future also."

4.6 Maharashtra, Groundwater

4.6.1 Objectives of the Workshop

The objectives of the workshop were:

- To identify issues that can affect sustainability of 'HIS', and
- To deliberate and recommend a 'framework for action' and 'change process'

The workshop was attended by senior level personnel from the Directorate and Divisions, associated with HIS and representing various functions and specialities.

The program was designed and delivered to cover the following aspects and dimensions:

- Identification of issues affecting sustainability
- Crystallizing a few (three or four) key critical areas warranting focused attention
- Group discussion on each critical area, and presentation of group recommendations, followed by open discussion
- Mission and Values
- Appropriate organization culture supportive of 'HIS'
- Freezing 'change-areas' for action initiative
- Change-process and management of change

4.6.2 Highlights of the outcome

Issues inhibiting sustainability

The group identified the following as threats to 'HIS' sustainability:

- Shortage of manpower
- Financial resources crunch
- Lack of clarity in objectives
- Lack of political will to promote 'HIS'
- Data not user-friendly
- Lack of awareness among users
- Improper and in-effective utilization of trained manpower
- System of 'operation and maintenance' not fully developed
- Ineffective communications
- Sub-optimal utilisation of resources
- Delay in developing application software
- No specific allocation of staff for HIS function
- Diversion of experienced and trained staff to non-HIS functions
- Issue of staff motivation and morale building
- Attitude and approach of the existing manpower

- Weak and lukewarm participation of HDUG members
- Absence of staff involvement in organisational issues
- Lack of promotional opportunities.

Factors supportive of HIS sustainability

The group identified the following factors as supportive of 'HIS' sustainability:

- Good product
- Availability of system to improve the product
- Participatory approach of HDUGs
- Regular training
- Committed workforce

Organisation culture supportive of HIS sustainability

The participants contributed to developing a model profile of an 'Organisation Culture' that would be compatible with the 'HIS', as developed under the Hydrology Project. The suggested characteristics of the desired culture are:

- User-friendly and quality product
- Excellent teamwork
- Sharing responsibility
- Prompt decision-making
- Self-motivation
- Positive approach
- Open communication
- Accountability
- Transparency
- Encouraging and supportive leadership
- Culture of performance
- Cohesiveness

Significant recommendations made by the groups

Five focussed areas were identified for deliberation by the syndicate groups. Summary of the status and significant recommendations made by the groups is:

Internal Communication

- Information sharing is partial at present
- Directions under various activities are adequate, but are understood differently at various levels, establishing a need for a proper communication system
- System for feedback exists. However, there is a need for training to all staff
- Learning to be a continuos process

- System of internal communication exists both in formal and informal manner. The communication is two-way and open
- Exchange of information is through the mode of hard copy. This should preferably be through e-mail, for which facility needs to be provided
- Co-ordination meetings are held regularly. And information is shared with other agencies at various fora, such as workshops
- Quality and frequency of MIS is adequate
- Meetings with employees are regularly held for exchange of ideas, feelings and opinions. These meetings are held not only for HIS but also for other components of agency's work. There is a need for such meetings to be HIS specific.
- The communication for sharing goals, feed-back on employees' aspirations, etc. exists between District and Regional level and ultimately at the Directorate level

Quality of HIS work

Following recommendations have been made in this area:

- Introduction of refresher courses for data collection staff, between July – September
- Regular short duration refresher programs for up-grading skills, and re-orientation meets - once in six months -for sharing up-dates on policy matters
- Annual Meets, with participation of all District Heads for sharing experiences and promoting learning
- Commencement of Annual Regional Publication
- Linkages with Universities and Educational Institutes
- Inter-State Exchange Visits/ Study Tours in India.

HIS Data Users

Following observations and recommendations were made by the group assigned to look into HDUGs area:

- Few of the potential users know about the data available with the department. 'Janajagrut Abhiyan' should be conducted through posters, exhibitions, and melas to create awareness amongst the potential users
- Department has voluminous data but due to lack of awareness, there are few users. To expand the users base, the following activities should be undertaken:
  - Implement Information, Education and Communication (IEC) program
  - Relay information on availability of different HIS data through local T.V., cable network, etc.
  - Give wide publicity through radio/T.V./newspapers
  - Design suitable posters for educating local masses in local languages and distribute to individual gram panchayats for general publicity
  - Give quick response to the queries from users with a view to sustain their interest
  - To provide menu, HIS data should be introduced on a website
  - Data request and data supply should be at district level
  - Data should be given to users as per their needs. In case the required data is not available through routine data collection, specific data should be generated and be supplied to users at an appropriate price
  - Introduce 'Feedback Survey' through questionnaire

Manpower and other constraints

The group was assigned to explore alternative solutions to meeting the manpower shortage and suggest measures for managing other constraints. The group made the following recommendations:

Manpower
- Trained staff should be recalled from Zilla Parishad
- Balance the transfers: get trained personnel against transfer of trained staff
- No diversion of work at any level
- Utilization of R&D staff at Head Quarters
- Induct fresh MSCs on contract basis

Other constraints
- Data gaps, due faulty instrumentation, should be filled manually
- Parallel technical capacity should be developed as precautionary measure, for repairs and maintenance
- Piezometer protection should be ensured to get quality data
- Rainfall data should be collected from rainguage stations of surface water

4.6.3 Change areas for action initiatives

Taking into account the issues that emerged during the workshop, the group listed the following as critical areas where 'changes' need to be introduced in order to ensure sustainability of HIS.

- Data users
- HIS work quality
- Human resources
- Infra-structure and productive facilities
- Mission and values

Change Process and Implementation Strategy

The workshop concluded with recommendations to constitute five separate Task Forces, with mandate to address various related issues, briefly indicated below:

TASK FORCE	*MANDATE*
DATA USERS	- Promote awareness of data availability amongst potential users - Expansion of 'user-base' - Easy accessibility of data - Mechanism for feed-back on 'users needs', 'quality of service', and 'responsiveness'
HIS WORK QUALITY	- Quality in data collection, data entry, data validation, data processing and analysis, data exchange, data storage, and data dissemination - Quality in various organizational processes, viz: decision making, problem solving, conflict resolution, etc. - Continuous Improvement Process

HUMAN RESOURCE	- Staffing - Policies - Motivation and morale - Skills
INFRASTRUCTURE	- Maintenance and up-gradation of infrastructure and productive facilities - O&M budget
MISSION AND VALUES	- develop 'Mission and Values' Statement

4.6.4 Principles for constitution of Task Forces

The group also discussed and decided on the broad principles for constituting the Task Forces:

Every Task Force, other than for Mission and Values, shall have six members, each member representing a region,

In addition

One NGO and a district PRO/Liaison Officer to be associated with the 'Data Users Task Force'

One senior level representative each from Administration, Finance and Planning to be associated with the Task Force for Human Resources.

Senior Chemist to be associated with the Task Forces for 'Data Users', 'Human Resources' and 'HIS Quality'

Chief Drilling Engineer and a representative from Finance to be associated with the Task Force for 'Infrastructure'

The Task Force for 'Mission' and 'Values' shall comprise of the Director, Additional Director, Joint Director, Deputy Directors and Chief Drilling Engineer.

Responsibility for working out detailed modalities and time frame

The responsibility for working out detailed modalities shall rest with the Deputy Director, Hydrology Project.

It was agreed that the Task Forces shall be constituted within one week and modalities finalized within two weeks.

4.6.5 Retreat: Brainstorming session

Following discussions in the larger group, a core group composed of the senior GSDA officials brainstormed on 'meeting the organisational challenges'. Some of the issues listed under desirable cultural factors including building a cohesive organisation were also taken up for discussion.

The core group also decided on the following course of action

- Converting the existing R&D Cell into an independent consultancy cell to ensure long-term sustainability of GSDA. The Consultancy cell would focus mainly on marketing the HIS and leveraging GSDA's intrinsic strengths.
- Pro-actively adopt at least one village in each district to demonstrate the effectiveness of GSDA and HIS and thereby enhance the image and credibility of the organisation.
- Putting into place a review/monitoring mechanism.
- Setting-up of intranet for effective use of e-mail facility to enhance internal communications
- Launch of house-journal
- A monthly letter from Director to all officers appraising them of key developments during the month
- Celebrating 16th July as the Foundation Day of GSDA where some of the employees will be honoured for excellence in performance.

5 Action Plan

This Chapter contains:

- Matrix of Change-Action
- Values Statements, and
- Mission Statements

5.1 Matrix of change-action for HIS sustainability

5.1.1 Andhra Pradesh, Groundwater

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
1. INFRASTRUCTURE AND PRODUCTIVE FACILITIES			
(A) *Equipment* 1) Comprehensive package for AMC. 2) Atleast 5% of stock or more to be available in case of AWLRs because replacement is taking lot of time, resulting in data loss.	Groundwater Department.	Sooner the better	
3) Feed back from data centres on activities/maintenance required regularly, to be sent to Head Office for consolidation and preparing annual budget for O & M. (Monitoring of the effectiveness of O&M activities)	Groundwater Department at Head Office and District level and Government of Andhra Pradesh for sanction of O & M budget.		Case Studies - Record will be reviewed at meeting to share experience.
(B) *Computer Management* Employment of one Hardware Engineer and one Software Engineer.	Groundwater Department to initiate proposals to Government of AP	Sooner the better	Hardware Engineer is essential to maintain hardware systems at Head Office and District Offices as many more are to be procured. Software Engineer will help to prepare solutions for innovative methodologies proposed/ evolved by GWD staff.
(C) *Civil Works*	Department Officers will monitor the performance of the equipment/ Civil works and prepare O&M Plan for the year. AMC for all equipment will be entered so that there will not be any data loss.	Sooner the better	Aesthetic appearance and proper hygiene is conducive for human resource utilization. Preparation of O&M for Equipment annually and visits/checks by departmental Officers will be helpful in maintaining the equipment properly. High standard of maintenance entails data availability, data storage, data analysis and data dissemination.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
1) Regular visits by Department Officers. 2) Annual plan for maintenance to be drawn.	O&M Budget Committee to estimate amounts to be earmarked		
3) O & M Committee to be constituted.	Committee to be constituted. Nomination of O&M officers for different group of districts for different O&M activities. Office orders will be issued with T.O.R.	- do -	
(D) *Strengthening and continuation of system of task force for O&M of AWLRs, software and computers*. Task force officers team strength increased from 12-18 Nos. Status will be reviewed for further strengthening. (Task force members have been assigned standard schedule for visits and training the field Officers. They are available to emergency on-call).	Taskforce Officers/ District Deputy Directors.	Continuous activity	(i) Ensuring timely maintenance for upkeep of proper standards. (ii) Upgradation of skills of personnel.
2. HUMAN RESOURCES AND TRAINING			
A. *Field officers* 1) Field Officers to be recruited as good number of officers are retiring from their services in future in Deputy Director and Asst. Director cadres and also field cadre.	Proposals for sanction of specialists posts/ field officers to be put up by Department to Government.	Immediate	Empowerment of Groundwater Department for sustainability of HIS.
B. *Sanction of additional posts/specialist posts*			
1) In chemical and IT field	Department/ Government	Immediate initiation	Reduction of gap between actual needs and availability of manpower.
2) Relaxation in recruitment policy. Government to treat GWD as essential services for sanctioning fresh posts as presently there exists a ban on recruitment of posts.			
C. *Training needs*			
I. All Officers of different disciplines who could not be trained during the period of HP-I to be trained for down loading of data/analysis of data. Entry level training will be included and also for special items such as GIS, GWDES etc.	Groundwater Department training cell.	Annual Training plans - regular basis	Training for all personnel in Data Collection and analysis irrespective of disciplines provides the District Deputy Director the flexibility of allotment of either HP work or routine technical surveys required for irrigation programmes and drinking water needs.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
2. Training of field staff (Technical and Non-Technical) on O & M of equipments, Computers and software.	Taskforce Team at Head Office/ Deputy Directors Offices.	Continuous	Improves technical capability of all Officers and Staff for uninterrupted service of equipment.
3. Personnel performance Evaluation and Monitoring HIS specific indicators to be added to the existing monthly PPEM Systems	Section looking after performance indicators in consultation with H.P.	Immediate	Highlights the need for performance in H.I.S. after Hydrology Project is completed.
D. *Sanction of posts for HIS sustainability* 1) As present sanctioned posts are only filled through redeployment. Fresh sanctions are necessary for recruiting field Officers as the data retrieval will be a major task of the Department.	Groundwater Department to initiate proposals to Government of Andhra Pradesh.	Sooner the better	Uninterrupted HIS activity.
2) As sufficient staff is not provided in the Chemical Lab it is not recognised as certified laboratory.	- do -	- do -	Specialised staff can analyse 70 parameters and 30 parameters as required in Level II and II+ Labs.

3. QUALITY IMPROVEMENT IN DATA COLLECTION

A. *Water level data collection* Rescheduling of water levels data collection from OB wells. (Dug wells). In place of present August monitoring, monitoring in March suggested.	a) Director will issue orders to Deputy Director in the Districts. b) District Deputy Directors and field officers to implement.	Sooner the better	Reduces data gap during January to May. Information at the end of 2nd crop period helps in precise assessment of situation of groundwater regime during summer months.
B. *Groundwater sample collection for analysis*			
1) Rescheduling of sample collection keeping in view the Data capabilities to analyse, in order to ensure that all samples collected for one season can be analysed in time.	Director/ Deputy Directors and Lab in-charge Officers to plan the schedule.	Sooner the better	a) Samples to match Lab. Capacity. b) Enable analysis in prescribed days.
2) Project area studies (a) In industrial polluted area. (b) Command areas Collection of samples at regular intervals from selected wells in the project area to know spatial variables and impact of pollutants over time.	(a) District level Deputy Director to identify study areas. (b) Shortlist at Head Office by Committee consisting of experts both internal and external. (c) Collaborative tie up with pollution - Causing industry to be under taken, preferably by financial support of industry.	Sooner the better	Facilitate to identify the impact of source pollutants on groundwater regime, identification of hazards, arial spread and time variations, and suggest the required management measures using the lab facilities.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
C. Data entry 1. Entry of historical data:			
To be completed on priority	Instructions already exist	six months	Facilitates analysis of changing scenario of the groundwater regime with causative factors.
2. Code numbers: uniform pattern of code numbering is to be adapted to all OB wells.	Instructions already exist	Six months	Presently data is available (quality and water levels) in Excel format, the transfer facility enables quick entry of data.
3. Data transfer from excel to GWDES to dedicated software	M/s. Tata Infotech Limited	By March 2003	Facilitate entry of all data on time.
4. Data entry operator: exclusive assignment of data entry to one person at Labs and District Offices.	District Deputy Director and Research Officers.	Immediate	
5. Validation: through comparison with previous data causative factors.	Field Level Officers/ District Deputy Directors/ Head Office.	At the time of collection and subsequently	Improves Quality of Data.
6. Storage of data: procurement of CD writer for each District + Head Office	GWD (H.O.)	By March, 2003	Non-editable and Editable C.D. writers are very essential for modern IT based administration.

4. DATA USERS AND MARKETING OF HIS (TASK FORCE 4)

A) *Public campaign* 1) Conduct awareness meeting from State level to Village level about the data availability and data utility. 2) The platform of Janmabhoomi meetings, water users association and watershed committee meetings and agricultural training classes will be utilised for creation of awareness about the data to enhance the data users group. 3) The platform of D.C.C. meeting will be utilised for building up awareness and for the feedback on the needs of the data users. 4) Awareness will be created through electric media, press and culture programmes. 5) Linkages with research/academic institutions/industries/NGOs for expanding the data user group.	Deputy Director Groundwater Department of the district will be responsible for conducting awareness meetings at district level with the help of the District Collector and at Mandal level with the help of M.P.D.O	Twice a year	All possible ways thus explored expected to create awareness. This will motivate/lead to user groups formation.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
6) Brochures and bulletins regarding data will be published and distributed frequently to build up awareness about the utility of the data. *B)* H.P. W*eb-site posting* 1) Easy access of data through web-site will increase utilisation of the data base. 2) Mechanism for feedback on users' needs will expand the users' base.	Head Office	By March, 2003	a) Time loss for user groups reduced. b) Provides facilitative source.

5. MISSION AND VALUES STATEMENT

1) Workshop for brain storming to develop mission and values statement.	HP Cell	By January 15, 2003	1) Will promote ideal understanding of employees about the purpose and direction of HIS. It will guide them in effective performance for achievement of purpose.
2) Circulation of mission and values statement to all employees at Head Quarters and districts.	- do -	- do -	2) Values will appropriately shape and guide the behaviour and attitude of employees to achieve success of HIS Mission.
3) To widely circulate mission and values statement to other stake holders.	- do -	- do -	3) Stake holders will get an ideal of the Mission and values of HIS.

5.1.2 Karnataka, Surface Water

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
1. FINANCE			
Submit Budget proposal to the Government for allocation of funds for HIS functions for the Financial Year 2003 –2004	Central Office	December, 2002	Availability of funds for operational and maintenance activities of HIS for the period beyond March 2003 is a critical factor for HIS Sustainability.
2. HUMAN RESOURCES			
Approach the Govt. for continuation of existing incremental staff, beyond March 2003.	Central Office	December 2002	Non-continuation of incremental staff recruited on contract basis by the Govt. will affect the functioning of laboratories and Data Centres.
Apprise the Govt. about the adverse effect of frequent transfer of HIS Staff on HIS Sustainability	Central Office	December 2002	Frequent transfer of HIS Staff adversely affects HIS Sustainability.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
3. ORGANISATION SYSTEMS			
Strengthen and maintain effectiveness of the following systems: • Material Management • Annual Maintenance Contract • Management of Gauging Staff - payment of wages and training etc. • HIS Help Desk	Concerned Positions	Continuing Basis	This will impart strength to HIS

5.1.3 Karnataka, Groundwater

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
1 TECHNICAL			
1) Training and orientation program for building appreciation of basics in maintenance amongst staff.	Nodal officer HP	Two programs in a year covering all districts.	Reduces frequent reference for district/Head quarters even for minor problems.
2) Activation/monitoring accountability system for utilization of assets- equipment and instruments.	Activation by district officer. Monitoring by Nodal officer.	Continuous	This will enhance flow of data by achieving optimal utilization of equipment and instruments.
2. HUMAN RESOURCES			
Seeking Government approval for fresh recruitment. - Posting of personnel to meet basic requirement	HOD	Immediate	This will enable taking adequate action for developmental activities in the district and improve overall work performance.
3. FINANCIAL			
1.Specific budget allocation for O & M of HIS - Approach Government for budget allocation for HIS.	HOD	Annual	This will ensure availability of requisite funds for HIS activity.
2. Enhance financial powers to HOD and district officers. - Approach Govt. for revising of delegation of powers	HOD	Immediate	This will improve effectiveness of organization at different levels and avoid frequent approaches to higher authorities for sanction.
4. MANAGEMENT			
Internal communication - Workshops on internal communication with the support of DHV consultants.	Nodal Officer	February 2003	To improve internal communication system for managerial staff.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
5. MISSION AND VALUES, STATEMENTS			
1) Formal adoption of Mission and Values, drafted by core group. - Seek approval from HOD. 2). Wider circulation of mission and values statements to all employees and other stake- holders	Nodal Officer.	Second week of January-2003 Beginning with Feb-2003.	Formal adoption of Mission and Values will influence the culture of the organization, generate commitment amongst the staff towards HIS sustainability culture and provide recognition to the department among external agencies.

5.1.4 Maharashtra, Surface Water

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
1. INFRASTRUCTURE DEVELOPMENT			
1) Providing accessibility to each G.D. and F.C. stations. Provision to be made in the estimate for at least pathway.	C.E., (H.P.)	Immediate.	Has an obvious advantage of data collection and supervision.
2) Upgradation and debugging of software system along with A.M.C.	DDPC	Immediate.	This will secure error free functioning of the system and will eliminate possible system error and troubles.
3) Reorganisation of F.C. station and W.Q. Labs to have atleast one F.C. station @ each district head quarter.	DDPC	Action start immediately complete in 6 months.	Enhancing awareness @ HIS within and beyond HDUG.
4) Automation a) Data Collection : Installation of SCADA (Supervisory Control and Data Acquisition System) based on real time.	CE, HP to approach Government for approval	1 year	Improvement in quality of data is achieved.
b) Data transmission : i) E mail connectivity to SDDPC	CE.,HP	Immediate	Will improve the internal communication with very little cost.
ii) Wireless network from GD/FC to CE., HP	CE.,HP to approach Govt. for approval	Immediately	Inexpensive and reliable mode of communication. Overall improvement in internal communication system.
iii) E-mail transfer of data using e-cafe.	DDPC	Immediate	Improvement of internal communication.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
2. HUMAN RESOURCES			
1) Committee to be set up to work out optimum tour/travel programme and work out demand of T.A. grants.	CE., HP	Jan.2003	Effective control over sites with optimum expenditure in available budget.
2) Approach Govt. for more funds for T.A. bills.		Feb.2003	Sufficient site visits through sufficient funds will make control over quality of data.
3) Release of 100% grants at start of year for T.A. and M.& R., against the existing orders of the Govt. to release funds on quarterly proportional basis.	S.E. to take up with the Govt.	Jan.2003	Makes adequate funds available in the first six months of the year when HIS activities are mainly concentrated
4) Special pay for HIS staff due to their arduous type of activities for six months in monsoon period.	CE to approach the Govt. for approval	Feb.2003.	It will motivate the staff to carry out duties with more zeal.
5) Provide comprehensive insurance coverage to labourers. Working at gauging sites and rain gauge sites looking into danger during high flood and high rainfall.	CE to approach the Govt. for approval	Feb.2003	This will motivate the laborers. Quality data would be collected during adverse conditions also.
6) Introduction of a scheme for awarding 'certificate of excellence' to staff up to Jr. Engr. level.	C.E.HP	To be introduced immediately and implemented on regular basis	Appreciation would effect change in organizational culture which will ultimately result in performance culture.
7) Empowerment to E.E. to grant cash award and certificate to the gauging staff for distinguished performance.	CE HP	Immediately	Appreciation would effect change in organizational culture which will ultimately result in performance culture.
8) To introduce the practice of study tour for sharing experience amongst the participating agencies.	CE.,HP to approach CWC / MoWR for framing of policy and directives to the states for implementations	Immediately	Up gradation of knowledge and performance. Inter change of progressive / new ideas leading to optimal HIS.
9) Invitation on website be given for willing, qualified employees (inside HP purview) to give their option to join HP. Submit a proposal for posting them in HP to Govt.	CE HP	3 months	This will ensure the availability of qualified and willing personnels for carrying out future activities.
10) Training of personnel on mobile unit for repairs of equipments.	SE	Immediate.	This will reduce down time and there will be no loss of data.
11) Training of contract staff.	SE	Immediate	Quality data will be available.
12) Water quality labs run by engineers trained in water quality, testing shall be accredited. Feed back from other states shall be taken regarding manpower in their state water quality labs.	CE.,HP	Immediate.	It will reduce expenditure on new recruitment of scientific staff and labs will be accredited without any hazzle.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
3. INTERNAL COMMUNICATION			
1) Furnish to every employee a copy of job description.	Executive Engineer (HP)	January 2003.	Employee will know his job better.
2) Introduce practice of holding staff meeting at head quarter/regional level, monthly/ bimonthly.	Executive Engineer/Chief Engineer	Regular activity	To review the progress and know difficulties if any.
3) HIS operationalisation workshop	Executive Engineer	Every Year	To update the knowledge of staff and observers.
4) Hold workshop on internal communication	Executive Engineer (HP)	Last week of January 2003.	This will improve effectiveness of internal communication. Better management of HIS.
4. QUALITY			
1) Set up in each division a mobile maintenance unit, equipped with spares and standby equipment with skilled technicians from the available resources.	1a) Formal orders to be issued by C.E. 1b) Implemented by EE.	1a) Within one month. 1b) Within 3 months.	It will help in reducing the time of losing the data for want of instruments in place of out of order instruments.
2) Arrange workshops on quality consciousness aspect.	S.E.D.C.C. and TOT's	Once in 6 months	To increase the quality consciousness among the staff to increase the reliability for HDUGs.
3) Incorporate AMCs for equipments.	SE DCC	Within 3 months	To have well maintained equipment and bug free software.
5. USERS AND EXTERNAL COMMUNICATION			
1) Workshops/seminars at District / Tehasil level for public involvement (i.e. Farmers Co-operative water use societies) - Every six Months	DDPC/SDDPC	Starting immediately (on Regular Basis)	This will increase awareness of farmers about optimum utilisation of available water resources by evaluation of actual crop water requirement.
2) Presentation at DPDC and Co-ordination meetings - 2 Presentations a year	DDPC/SDDPC	Starting immediately (on Regular Basis)	This will lead to increase in number of data users.
3) Installation of FC Stations/WQ labs at District Headquarters.	On CE's orders implementation by DDPC	By Feb.2003	Local hydrological/climatic data display will create public awareness about the activity.
4) Putting up of display boards for public information	DDPC	Starting immediately	
5) Publicity in local newspapers, city cables (local climatic data)	DDPC	Starting immediately	

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
6. (I) 'MISSION' AND 'VALUES' STATEMENT			
1) Development of Mission and values statement in a Core Group Meeting. 2) Approval of the statement by Chief Engineer (HP) 3)Take up with the Government, if necessary, for approval of the Mission and Values statement for circulation to employees and external stakeholders.	Executive Engineer (HP) Executive Engineer (HP) Chief Engineer	January 2003 January 2003 March 2003	An explicit statement of the HIS mission and values would be a effective tool in hands of the organisation for better management of HIS. It would help in improving the efficiency of the organisation, which would give better results, provide better direction and would result in more commitment from the staff. Cohesive organisation would improve performance and ultimately its image in the eyes of public. Better propagation would be the ultimate result.
6 (ii) CULTURE OF THE ORGANISATION			
Leaders to encourage and honour persons giving innovative ideas and modern techniques	CE HP	Immediately and regularly.	This will increase the efficiency and enthusiasm in the organisation to improve quality in turn.

5.1.5 Maharashtra, Groundwater

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
1. Mission, Values and organization culture			
i) Mission and Values			
1) Development of 'Mission' and Values Statements 2) Formal approval and adoption of Mission and 'Values' statement. 3) Circulation of 'Mission' and 'Values' statement to employees at all levels in the organization and to other stakeholders outside the organization 4) Wide sharing of 'Mission 'and 'Values', through: display in GSDA offices; printing in news-letter, manuals, booklets etc.; and discussion in workshops, seminars, conferences, training programmes, etc.	Core Committee of Dy. Directors chaired by Director, GSDA. Director, GSDA Directorate Office : Deputy Director, Hydrology Project.	Ist week of December 2002. -As above- Starting January 2003. February 2003.	An explicit statement of the HIS-Mission would enable organizational members to clearly comprehend the 'purpose' and long-term direction of the HIS. It would guide the managers to maintain an effective pattern in organizational activities, and impress what the organization is committed to, providing direction to the member for unified efforts, increasing their commitment to the cause and creating cohesiveness in the organization. Externally, it promotes image of the organization and advocates its role in contribution to society.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability

ii) Organisation Culture

Organizing workshops, staff meetings, official communications, etc. as a part of strategy for transformation of organization culture, compatible with 'HIS'.	Directorate, GSDA.	Immediately/ continuous basis.	

2. HUMAN RESOURCES AREA

i) change in mindset

Workshops on 'Management of Change'; with coverage: • appreciation of new realities • transformation of work culture • appreciation of redefined roles • building appropriate competencies, and learning to manage not only data, but staff also. • team building and team working. • attitudinal and behavioural changes for building sensitivity towards users: participatory approval, positive interface with users and shift in focus towards quality.	Directorate, GSDA	Year 2003-2004	Organization will have appropriate work culture with employees positively disposed towards HIS and new work demands.

ii) Capacity building

1. Induction and orientation training programmes. 2. Advanced training programme for acquisition of state of the art skills.	Training cell	Regular activity	Capability and confidence of the organization will increase to deliver HIS services.

3. Placement of manpower

Development of appropriate placement policy for deployment as per capability, potential and interest, having regard to specific problems of the area and challenges in the assignment.	Directorate, GSDA	Latest by March 2003	Right person at the right place, will improve organizational effectiveness and employees' motivation.

4. Succession planning

Development of second-line to ensure that there is no vacuum in the organization at any state and there are no gaps in human resource availability to maintain continuous flow of work in the absence of designated staff.	Director, Regional Deputy Directors and Senior Geologists.	Immediate	Effectiveness of the organization to perform 'HIS' work will be maintained.

Activities for achievements	Responsibilities	Time frame	Resultant advantage for HIS sustainability
5. Motivation			
1. Initiation and approval of the proposal for introduction of financial Incentive Scheme for HIS Staff. 2. Instituting a system of allocating one topic per year to every officer, for preparing and presenting detailed report on the subject, using HIS tools and data.	Director, GSDA.	By March 2003 Immediate	This will attract people to join and stay with HIS. This will provide professional satisfaction to technical staff.
3. INFRASTRUCTURE			
1. Undertake regular exercise for budget provision to acquire and maintain communication facilities like e-mail, ISDN connectivity etc. 2. Decentralization of authority for AMC equipment, from state to regional level. 3. Installation of mechanized automatic water level recorders to replace manual monitoring of water levels on fortnightly basis.	Directorate, GSDA	Yearly Immediately By March 2003	This will ensure strengthened communication facilities of exchange/ dissemination of data. This will remove the difficulties faced in the present system and ensure timely and effective maintenance of equipments. This will improve randomness and improve regularity in data collection.
4. QUALITY ASPECTS			
Certification of HIS chemical laboratories by NCL. Certification of HMS data by IMD	Directorate, GSDA	By March 2003	This will improve credibility and increase acceptability of HIS.
5. USER'S AREA			
Finalize strategy for awareness campaign. Introduce the system of periodical communication meetings with beneficiaries in the user category.	Directorate, GSDA	By March 2003	This will improve users' awareness about HIS products and sources; and sensitised GSDA about users' needs.
6. ORGANISATIONAL AND MANAGEMENT MATTERS			
Institute a system of goal-setting, for each region and district. Empowerment through increased financial delegations to field-level authorities at district and regional level.	Directorate, GSDA and Regional Deputy Directors. Director, GSDA.	By March 2003 By March 2003.	This will promote effectiveness of the organization and improve commitment and involvement of organization's constituents.

5.2 Values Statements

5.2.1 Andhra Pradesh, Groundwater

Values statement

- Scientific approach in collection of data
- Accountability for accuracy of data
- Efficiency in work performance
- Prompt response to meet users' needs
- Professional approach in the department functioning
- Computer literacy for all in the department
- Respect for talent irrespective of level

5.2.2 Karnataka, Surface Water

- Generating revenue to provide adequate return on investment
- Quality product at affordable cost
- Service to the Nation
- Timeliness in supply of data
- Concern for employees
  - Cordial relationship
  - Financial betterment
  - Career growth
  - Equity
- Quality in service in terms of
  - User friendliness
  - Promptness in service
- Dynamic data profile for meeting user's needs

5.2.3 Karnataka, Groundwater

- Quality in work
- Promptness in service
- Product/service, useful to the user
- Excellence in technology
- Accuracy in work
- Developing and sharing knowledge
- User friendliness
- Identity of individuals with the organisation

5.2.4 Maharashtra, Surface Water

- Useful for accountable to society
- Optimal utilization of water resources through increased awareness
- Providing error free and good quality data to user group
- Enhancing quality of life of organisational people
- Respond to and satisfy user-difficulties and problems
- Promote healthy and positive work culture
- Efficient work process
- Generate more revenue for organization for its strength

5.2.5 Maharashrta, Groundwater

Our organisation will value most, in the area of:

- *Products/Services:*

  Accurate, validated and user-driven data provision

- *Data Users*

  User-friendly approach,
  Responsiveness to user's needs,
  User satisfaction

Employees

Providing congenial working atmosphere

Job satisfaction and professional development

Leadership

Guidance, encouragement, and opportunities for development to employees,

Transparency in decision-making

Social Environment

Provision of potable, adequate drinking water,

Adequate water for irrigation and industrial usage

Safeguarding the environment from the hazards of groundwater abuse

5.3 Mission Statements

5.3.1 Andhra Pradesh, Groundwater

To attain a high degree of respectability for the HIS data provided by the department, by strengthening the product quality, the customer service, the employee commitment and the work efficiency; and to ensure precise quantification of the changes in the groundwater regime, both in terms of time and space, for sustainability of the resources.

5.3.2 Karnataka, Surface Water

To become nationally, an organisation of excellence for quality and cost effective data; progressively working towards achieving global recognition by creating awareness, timely dissemination, and promotion of hydrological data for equitable, conservative, and optimum use of natural water resources through HIS for attaining self sufficiency.

5.3.3 Karnataka, Groundwater

To support National effort in solving water problems and conservation of water; reaching number one position amongst agencies participating in Hydrology Project, through technological excellence and prompt service, fulfilling social needs and bringing happiness to society.

5.3.4 Maharashtra, Surface Water

To achieve and maintain top position in India in Hydrological Information System and to strive to become an organisation with identity of excellence, built through quality leadership and positive, healthy, and improved work culture; engaging in collection, processing and dissemination of quality and cost-effective hydrometeorological data and water quality data, satisfying competing user needs, and ensuring easy and timely accessibility of data to users of all categories, and helping the State in formulation of widely acceptable water-use policy for achieving optimal use of water.

5.3.5 Maharashtra, Groundwater

To take the organisation to newer heights through changed work culture, with a goal to achieve recognition to GSDA as the best groundwater agency in the country, by providing value added HIS services for sustainable water supply - qualitatively and quantitatively, protecting the environment at the same time.