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**Himachal Pradesh**

**IPH Department**

-1341-42

To

The Director,  
Public Relations Himachal Pradesh  
Shimla-2.

**Dated Shimla**

**4<sup>th</sup> Sept., 2013**

Subject:

**Invitation for Suggestions on the Draft State Water Policy 2013.**

Sir,

The Department is in the process of revising the State Water Policy 2005. Notice inviting suggestions on the Draft State Water Policy 2013 from Individuals, Public Representatives, Panchayati Raj, Institutions, Water Users Associations / Krishak Vikas Sanghs, Non Govt. Organizations or any other interested Stakeholder is enclosed. The enclosed notice may be published in the following newspapers:-

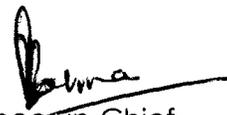
1. The Tribune (English)
2. Amar Ujala (Hindi)
3. Giriraj (Hindi)

Yours faithfully,

Encl: As above

Engineer-in-Chief,  
IPH Department  
U.S. Club, Shimla-1.

✓ Copy to the Additional Chief Secretary (IPH) to the Govt. of Shimla-2 for information please.

  
Engineer-in-Chief,  
IPH Department  
U.S. Club, Shimla-1.

HIMACHAL PRADESH  
IRRIGATION & PUBLIC HEALTH DEPARTMENT

**INVITATION FOR SUGGESTIONS ON THE**  
**DRAFT STATE WATER POLICY 2013**

Government of Himachal Pradesh notified the State Water Policy during the year 2005. Rapid increase in demand for water due to population growth, urbanization, industrialization, changing life style and climate change have resulted in increased pressure on water resources. Keeping in view the aforesaid factors, the Ministry of Water Resources, Govt. of India has notified the National Water Policy 2012. The State Water Policy is proposed to be revised in accordance with the National Water Policy 2012, keeping in mind the basic concerns and principles as also a unified national perspective. Copy of Draft State Water Policy 2013 is available on the departmental website [www.hpiph.org](http://www.hpiph.org)

Suggestions / Comments are invited from individuals, public representatives, Panchayati Raj Institutions, Water Users Associations / Krishak Vikas Sanghs, Non Govt. Organizations or any other organization regarding the thrust areas of the Draft State Water Policy 2013. These may be sent to the Superintending Engineer (Works), O/O Engineer-in-Chief, IPH Department, U.S. Club, Shimla-171001 upto 16<sup>th</sup> September , 2013. The same can also be e-mailed on [hpirrg@rediffmail.com](mailto:hpirrg@rediffmail.com)

# STATE WATER POLICY (2013)

## 1. PREAMBLE

1.1 A scarce natural resource, water is fundamental to life, livelihood, food security and sustainable development. India has more than 18 % of the world's population, but has only 4% of world's renewable water resources and 2.4% of world's land area. There are further limits on utilizable quantities of water owing to uneven distribution over time and space. **In Himachal Pradesh availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in a year and varies from about 600 mm in Lahaul & Spiti district to around 3200 mm in Dharamshala District Kangra. However, in spite of heavy rain and snow during the rainy season and winter the summer months are periods of water scarcity in many areas as the flow in the rivers and nallahs is quite low and traditional sources also dry up. This results in forced migration of humans and animals to the banks of rivers with perennial flows. On the other hand, heavy rains regularly cause havoc due to floods. Flash floods also cause damage in the higher reaches of the State.** In addition, there are challenges of frequent floods and droughts in one or the other part of the state. With a growing population and rising needs of fast developing urbanization & higher living standards, as well as the given indications of the impact of climate change, availability of utilizable water will be under further strain in future with the possibility of deepening water conflicts among different user groups. Low consciousness about the scarcity of water and its life sustaining and economic value results in its mismanagement, wastage, and inefficient use, as also pollution and reduction of flows below minimum

ecological needs. In addition, there are inequities in distribution and lack of a unified perspective in planning, management and use of water resources. The objective of the State Water Policy is to take cognizance of the existing situation, to propose a framework for creation of a system of laws and institutions and for a plan of action with a unified national perspective.

1.2 The present scenario of water resources and their management in Himachal Pradesh has given rise to several concerns, important amongst them are;

- i) Some parts of state have already become water stressed. Rapid growth in demand for water due to population growth, urbanization, changing lifestyle and industrialisation pose serious challenges to water security.
- ii) There is wide temporal and spatial variation in availability of water, which may increase substantially due to a combination of climate change, causing deepening of water crisis and incidences of water related disasters, i.e., floods, increased erosion and increased frequency of droughts, etc.
- iii) Access to safe water for drinking and other domestic needs still continues to be a problem in some areas. Skewed availability of water between different regions and different people in the same region and also the intermittent and unreliable water supply system has the potential of causing social unrest.

- iv) Groundwater, though part of hydrological cycle and a community resource, is still perceived as an individual property and is exploited inequitably and without any consideration to its sustainability leading to its over-exploitation in several areas.
- v) Water resources projects, though multi-disciplinary with multiple stakeholders, are being planned and implemented in a fragmented manner without giving due consideration to optimum utilization, environment sustainability and holistic benefit to the people.
- vi) **Inter-District , inter-Panchayat, inter-consitutency, as also inter- sectoral disputes in sharing of water, strain relationships and hamper the optimal utilization of water through scientific planning on basin/sub-basin basis.**
- vii) Grossly inadequate maintenance of existing irrigation infrastructure has resulted in wastage and under-utilization of available resources. There is a widening gap between irrigation potential created and utilized.
- viii) Natural water bodies and drainage channels are being encroached upon, and diverted for other purposes. Groundwater recharge zones are often blocked.
- ix) Growing pollution of water sources, especially through industrial effluents, is affecting the availability of safe water besides causing environmental and health hazards. In parts of the state, some stretches of rivers are heavily polluted and devoid of flows to support aquatic ecology, cultural needs and aesthetics.
- x) Access to water for sanitation and hygiene is an even more serious problem. Inadequate sanitation and lack of sewage treatment are polluting the water sources.

- xi) Low consciousness about the overall scarcity and economic value of water results in its wastage and inefficient use.
- xii) The lack of adequate trained personnel for scientific planning, utilizing modern techniques and analytical capabilities incorporating information technology constrains good water management.
- xiii) A holistic and inter-disciplinary approach at water related problems is missing.
- xiv) The public agencies in charge of taking water related decisions tend to take these on their own without consultation with stakeholders, often resulting in poor and unreliable service characterized by inequities of various kinds.
- xv) Characteristics of catchment areas of streams, rivers and recharge zones of aquifers are changing as a consequence of land use and land cover changes, affecting water resource availability and quality.

1.3 Public policies on water resources need to be governed by certain basic principles, so that there is some commonality in approaches in dealing with planning, development and management of water resources. These basic principles are:

- (i) Planning, development and management of water resources need to be governed by common integrated perspective considering local, regional, State and national context, having an environmentally sound basis, keeping in view the human, social and economic needs.
- (ii) Principle of equity and social justice must inform use and allocation of water.

- (iii) Good governance through transparent informed decision making is crucial to the objectives of equity, social justice and sustainability. Meaningful intensive participation, transparency and accountability should guide decision making and regulation of water resources.
- (iv) Water needs to be managed as a common pool community resource held, by the state, under public trust doctrine to achieve food security, support livelihood, and ensure equitable and sustainable development for all.
- (v) Water is essential for sustenance of eco-system, and therefore, minimum ecological needs should be given due consideration.
- (vi) Safe Water for drinking and sanitation should be considered as pre-emptive needs, followed by high priority allocation for other basic domestic needs (including needs of animals), achieving food security, supporting sustenance agriculture and minimum eco-system needs. Available water, after meeting the above needs, should be allocated in a manner to promote its conservation and efficient use.
- (vii) All the elements of the water cycle, i.e., evapo-transpiration, precipitation, runoff, river, lakes, soil moisture, and ground water, sea, etc., are interdependent and the basic

hydrological unit is the river basin, which should be considered as the basic hydrological unit for planning.

- (viii) Given the limits on enhancing the availability of utilizable water resources and increased variability in supplies due to climate change, meeting the future needs will depend more on demand management, and hence, this needs to be given priority, especially through
  - (a) evolving an agricultural system which economizes on water use and maximizes value from water, and
  - (b) bringing in maximum efficiency in use of water and avoiding wastages.
- (ix) Water quality and quantity are interlinked and need to be managed in an integrated manner, consistent with broader environmental management approaches inter-alia including the use of economic incentives and penalties to reduce pollution and wastage.
- (x) The impact of climate change on water resources availability must be factored into water management related decisions. Water using activities need to be regulated keeping in mind the local geo climatic and hydrological situation.

## 2. WATER FRAMEWORK LAW

2.1 There is a need to evolve a State Framework Law as an umbrella statement of general principles governing the exercise of legislative and/or executive (or devolved) powers by the States and the local governing bodies. This should lead the way for essential

legislation on water governance in every unit of the state and devolution of necessary authority to the lower tiers of government to deal with the local water situation.

2.2 Such a framework law must recognize water not only as a scarce resource but also as a sustainer of life and ecology. Therefore, water, particularly, groundwater, needs to be managed as a community resource held, by the state, under public trust doctrine to achieve food security, livelihood, and equitable and sustainable development for all. Existing Acts may have to be modified accordingly.

### **3. USES OF WATER**

3.1 Water is required for domestic, agricultural, hydro-power, thermal power, navigation, recreation, etc. Utilization in all these diverse uses of water should be optimized and an awareness of water as a scarce resource should be fostered.

3.2 The Centre, the States and the local bodies (governance institutions) must ensure access to a minimum quantity of potable water for essential health and hygiene to all its citizens, available within easy reach of the household.

3.3 Ecological needs of the river should be determined, through scientific study, recognizing that the natural river flows are characterized by low or no flows, small floods (freshets), large floods, etc., and should accommodate developmental needs. A portion of river flows (15% of lean period discharge) should be kept aside to meet ecological needs ensuring

that the low and high flow releases are proportional to the natural flow regime, including base flow contribution in the low flow season through regulated ground water use.

3.4 Rivers and other water bodies should be considered for development for navigation as far as possible and all multipurpose projects over water bodies should keep navigation in mind right from the planning stage.

3.5 In the water rich eastern and north eastern regions of India, the water use infrastructure is weak and needs to be strengthened in the interest of food security.

3.6 Community should be sensitized and encouraged to adapt first to utilization of water as per local availability of waters, before providing water through long distance transfer. Community based water management should be institutionalized and strengthened.

#### **4. ADAPTATION TO CLIMATE CHANGE**

4.1 Climate change is likely to increase the variability of water resources affecting human health and livelihoods. Therefore, special impetus should be given towards mitigation at micro level by enhancing the capabilities of community to adopt climate resilient technological options.

4.2 The anticipated increase in variability in availability of water because of climate change should be dealt with by increasing water storage in its various forms, namely, soil moisture, ponds, ground water, small and large reservoirs and their combination. States

should be incentivized to increase water storage capacity, which inter-alia should include revival of traditional water harvesting structures and water bodies.

4.3 The adaptation strategies could also include better demand management, particularly, through adoption of compatible agricultural strategies and cropping patterns and improved water application methods, such as land leveling and/or drip / sprinkler irrigation as they enhance the water use efficiency, as also, the capability for dealing with increased variability because of climate change. Similarly, industrial processes should be made more water efficient.

4.4 Stakeholder participation in land-soil-water management with scientific inputs from local research and academic institutions for evolving different agricultural strategies, reducing soil erosion and improving soil fertility should be promoted. The specific problems of hilly areas like sudden run off, weak water holding capacity of soil, erosion and sediment transport and recharging of hill slope aquifers should be adequately addressed.

4.5 Planning and management of water resources structures, such as, dams, flood embankments, tidal embankments, etc., should incorporate coping strategies for possible climate changes. The acceptability criteria in regard to new water resources projects need to be re-worked in view of the likely climate changes

## **5. ENHANCING WATER AVAILABLE FOR USE**

- 5.1 The availability of water resources and its use by various sectors in various basin and States in the country need to be assessed scientifically and reviewed at periodic intervals, say, every five years. The trends in water availability due to various factors including climate change must be assessed and accounted for during water resources planning.
- 5.2 The availability of water is limited but the demand of water is increasing rapidly due to growing population, rapid urbanization, rapid industrialization and economic development. Therefore, availability of water for utilization needs to be augmented to meet increasing demands of water. Direct use of rainfall, desalination and avoidance of inadvertent evapo-transpiration are the new additional strategies for augmenting utilizable water resources.
- 5.3 There is a need to map the aquifers to know the quantum and quality of ground water resources (replenishable as well as non-replenishable) in the country. This process should be fully participatory involving local communities. This may be periodically updated.
- 5.4 Declining ground water levels in over-exploited areas need to be arrested by introducing improved technologies of water use, incentivizing efficient water use and encouraging community based management of aquifers. In addition, where necessary, artificial recharging projects should be undertaken so that extraction is less than the recharge. This would allow the aquifers to provide base flows to the surface system, and maintain ecology.

5.5 Inter-basin transfers are not merely for increasing production but also for meeting basic human need and achieving equity and social justice. Inter-basin transfers of water should be considered on the basis of merits of each case after evaluating the environmental, economic and social impacts of such transfers.

5.6 Integrated Watershed development activities with groundwater perspectives need to be taken in a comprehensive manner to increase soil moisture, reduce sediment yield and increase overall land and water productivity. To the extent possible, existing programs like MGNREGA may be used by farmers to harvest rain water using farm ponds and other soil and water conservation measures.

## **6. DEMAND MANAGEMENT AND WATER USE EFFICIENCY**

6.1 A system to evolve benchmarks for water uses for different purposes, i.e., water footprints, and water auditing should be developed to promote and incentivize efficient use of water. The 'project' and the 'basin' water use efficiencies need to be improved through continuous water balance and water accounting studies. An institutional arrangement for promotion, regulation and evolving mechanisms for efficient use of water at basin/sub-basin level will be established for this purpose at the national level.

6.2 The project appraisal and environment impact assessment for water uses, particularly for industrial projects, should, inter-alia, include the analysis of the water footprints for the use.

- 6.3 Recycle and reuse of water, including return flows, should be the general norm.
- 6.4 Project financing should be structured to incentivize efficient & economic use of water and facilitate early completion of ongoing projects.
- 6.5 Water saving in irrigation use is of paramount importance. Methods like aligning cropping pattern with natural resource endowments, micro irrigation (drip, sprinkler, etc.), automated irrigation operation, evaporation-transpiration reduction, etc., should be encouraged and incentivized. Recycling of canal seepage water through conjunctive ground water use may also be considered.
- 6.6 Use of very small local level irrigation through small bunds, field ponds, agricultural and engineering methods and practices for watershed development, etc, need to be encouraged. However, their externalities, both positive and negative, like reduction of sediments and reduction of water availability, downstream, may be kept in view.
- 6.7 There should be concurrent mechanism involving users for monitoring if the water use pattern is causing problems like unacceptable depletion or building up of ground waters, salinity, alkalinity or similar quality problems, etc., with a view to planning appropriate interventions.

## **7. WATER PRICING**

- 7.1 Pricing of water should ensure its efficient use and reward conservation. Equitable access to water for all and its fair pricing, for drinking and other uses such as sanitation, agricultural and industrial, should be arrived at through independent statutory Water

Regulatory Authority, set up by each State, after wide ranging consultation with all stakeholders.

7.2 In order to meet equity, efficiency and economic principles, the water charges should preferably / as a rule be determined on volumetric basis. Such charges should be reviewed periodically.

7.3 Recycle and reuse of water, after treatment to specified standards, should also be incentivized through a properly planned tariff system.

7.4 The principle of differential pricing may be retained for the pre-emptive uses of water for drinking and sanitation; and high priority allocation for ensuring food security and supporting livelihood for the poor. Available water, after meeting the above needs, should increasingly be subjected to allocation and pricing on economic principles so that water is not wasted in unnecessary uses and could be utilized more gainfully.

7.5 Panchayati Raj Institutions (PRI's)/Urban Local Bodies (ULB's)/ Water Users Associations (WUAs) should be given statutory powers to collect and retain a portion of water charges, manage the volumetric quantum of water allotted to them and maintain the distribution system in their jurisdiction. PRI's/ULB's/WUAs should be given the freedom to fix rates subject to floor rates determined by the Govt..

## **8. CONSERVATION OF RIVER CORRIDORS, WATER BODIES AND INFRASTRUCTURE**

8.1 Conservation of rivers, river corridors, water bodies and infrastructure should be undertaken in a scientifically planned manner through community participation. The storage capacities of water bodies and water courses and/or associated wetlands, the flood plains, ecological buffer and areas required for specific aesthetic recreational and/or social needs may be managed to the extent possible in an integrated manner to balance the flooding, environment and social issues as per prevalent laws through planned development of urban areas, in particular.

8.2 Encroachments and diversion of water bodies (like rivers, lakes, tanks, ponds, etc.) and drainage channels (irrigated area as well as urban area drainage) must not be allowed, and wherever it has taken place, it should be restored to the extent feasible and maintained properly.

8.3 Urban settlements, encroachments and any developmental activities in the protected upstream areas of reservoirs/water bodies, key aquifer recharge areas that pose a potential threat of contamination, pollution, reduced recharge and those endanger wild and human life should be strictly regulated.

8.4 Environmental needs of Himalayan regions, aquatic eco-system, wet lands and embanked flood plains need to be recognized and taken into consideration while planning.

8.5 Sources of water and water bodies should not be allowed to get polluted. System of third party periodic inspection should be evolved and stringent punitive actions be taken against the persons responsible for pollution.

8.6 Quality conservation and improvements are even more important for ground waters, since cleaning up is very difficult. It needs to be ensured that industrial effluents, local cess pools, residues of fertilizers and chemicals, etc., do not reach the ground water.

8.7 The water resources infrastructure should be maintained properly to continue to get the intended benefits. A suitable percentage of the costs of infrastructure development may be set aside along with collected water charges, for repair and maintenance. Contract for construction of projects should have inbuilt provision for longer periods of proper maintenance and handing over back the infrastructure in good condition.

8.8 Legally empowered dam safety services need to be ensured in the States as well as at the Centre. Appropriate safety measures, including downstream flood management, for each dam should be undertaken on top priority.

## **9. PROJECT PLANNING AND IMPLEMENTATION**

9.1 Considering the existing water stress conditions in India and the likelihood of further worsening situation due to climate change and other factors, water resources projects should be planned as per the efficiency benchmarks to be prescribed for various situations.

- 9.2 Being inter-disciplinary in nature, water resources projects should be planned considering social and environmental aspects also in addition to techno-economic considerations in consultation with project affected and beneficiary families. The integrated water resources management with emphasis on finding reasonable and generally acceptable solutions for most of the stakeholders should be followed for planning and management of water resources projects.
- 9.3 Considering the heavy economic loss due to delay in implementation of projects, all clearances, including environmental and investment clearances, be made time bound.
- 9.4 Concurrent monitoring at project, State and the Central level should be undertaken for timely interventions to avoid time and cost over-runs.
- 9.5 All components of water resources projects should be planned and executed in a pari-passu manner so that intended benefits start accruing immediately and there is no gap between potential created and potential utilized.
- 9.6 Local governing bodies like Panchayats, Municipalities, Corporations, etc., and Water Users Associations, wherever applicable, should be involved in planning of the projects. The unique needs and aspirations of the Scheduled caste and Scheduled Tribes, women and other weaker sections of the society should be given due consideration.

9.7 All water resources projects, including hydro power projects, should be planned to the extent feasible as multi-purpose projects with provision of storage to derive maximum benefit from available topology and water resources.

## **10. MANAGEMENT OF FLOOD & DROUGHT**

10.1 While every effort should be made to avert water related disasters like floods and droughts, through structural and non-structural measures, emphasis should be on preparedness for flood / drought with coping mechanisms as an option. Greater emphasis should be placed on rehabilitation of natural drainage system.

10.2 Land, soil, energy and water management with scientific inputs from local, research and scientific institutions should be used to evolve different agricultural strategies and improve soil and water productivity to manage droughts. Integrated farming systems and non-agricultural developments may also be considered for livelihood support and poverty alleviation.

10.3 In order to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc., should be planned, executed, monitored and maintained on the basis of morphological studies. This will become increasingly more important, since climate change is likely to increase the rainfall intensity, and hence, soil erosion.

- 10.4 Flood forecasting is very important for flood preparedness and should be expanded extensively across the country and modernized using real time data acquisition system and linked to forecasting models. Efforts should be towards developing physical models for various basin sections, which should be linked to each other and to medium range weather forecasts to enhance lead time.
- 10.5 Operating procedures for reservoirs should be evolved and implemented in such a manner to have flood cushion and to reduce trapping of sediment during flood season. These procedures should be based on sound decision support system.
- 10.6 Protecting all areas prone to floods and droughts may not be practicable; hence, methods for coping with floods and droughts have to be encouraged. Frequency based flood inundation maps should be prepared to evolve coping strategies, including preparedness to supply safe water during and immediately after flood events. Communities need to be involved in preparing an action plan for dealing with the flood/drought situations.
- 10.7 To increase preparedness for sudden and unexpected flood related disasters, dam /embankment break studies, as also preparation and periodic updating of emergency action plans / disaster management plans should be evolved after involving affected communities. In hilly reaches, glacial lake outburst flood and landslide dam break floods studies with periodic monitoring along with instrumentation, etc., should be carried out.

## **11. WATER SUPPLY AND SANITATION**

11.1 There is a need to remove the large disparity between stipulations for water supply in urban areas and in rural areas. Efforts should be made to provide improved water supply in rural areas with proper sewerage facilities. Least water intensive sanitation and sewerage systems with decentralized sewage treatment plants should be incentivized.

11.2 Urban and rural domestic water supply should preferably be from surface water in conjunction with groundwater and rainwater. Where alternate supplies are available, a source with better reliability and quality needs to be assigned to domestic water supply. Exchange of sources between uses, giving preference to domestic water supply should be possible. Also, reuse of urban water effluents from kitchens and bathrooms, after primary treatment, in flush toilets should be encouraged, ensuring no human contact.

11.3 Urban domestic water systems need to collect and publish water accounts and water audit reports indicating leakages and pilferages, which should be reduced taking into due consideration social issues.

11.4 In urban and industrial areas, rainwater harvesting and de-salinization, wherever techno-economically feasible, should be encouraged to increase availability of utilizable water. Implementation of rainwater harvesting should include scientific monitoring of

parameters like hydrogeology, groundwater contamination, pollution and spring discharges.

11.5 Urban water supply and sewage treatment schemes should be integrated and executed simultaneously. Water supply bills should include sewerage charges.

11.6 Industries in water short regions may be allowed to either withdraw only the make up water or should have an obligation to return treated effluent to a specified standard back to the hydrologic system. Tendencies to unnecessarily use more water within the plant to avoid treatment or to pollute ground water need to be prevented.

11.7 Subsidies and incentives should be implemented to encourage recovery of industrial pollutants and recycling / reuse, which are otherwise capital intensive.

## **12. INSTITUTIONAL ARRANGEMENTS**

12.1 There should be a forum at the national level to deliberate upon issues relating to water and evolve consensus, co-operation and reconciliation amongst party States. A similar mechanism should be established within each State to amicably resolve differences in competing demands for water amongst different users of water, as also between different parts of the State.

12.2 A permanent Water Disputes Tribunal at the Centre should be established to resolve the disputes expeditiously in an equitable manner. Apart from using the „good offices“ of the

Union or the State Governments, as the case may be, the paths of arbitration and mediation may also to be tried in dispute resolution.

12.3 Water resources projects and services should be managed with community participation.

For improved service delivery on sustainable basis, the State Governments / urban local bodies may associate private sector in public private partnership mode with penalties for failure, under regulatory control on prices charged and service standards with full accountability to democratically elected local bodies.

12.4 Integrated Water Resources Management (IWRM) taking river basin / sub-basin as a

unit should be the main principle for planning, development and management of water resources. The departments / organizations at Centre / State Governments levels should be restructured and made multi-disciplinary accordingly.

12.5 Appropriate institutional arrangements for each river basin should be developed to

collect and collate all data on regular basis with regard to rainfall, river flows, area irrigated by crops and by source, utilizations for various uses by both surface and ground water and to publish water accounts on ten daily basis every year for each river basin with appropriate water budgets and water accounts based on the hydrologic balances. In addition, water budgeting and water accounting should be carried out for each aquifers.

12.6 Appropriate institutional arrangements for each river basin should also be developed for monitoring water quality in both surface and ground waters.

12.7 States shall encourage and incentivize to undertake reforms and progressive measures for innovations, conservation and efficient utilization of water resources.

### **13. DATABASE & INFORMATION SYSTEM**

13.1 All hydrological data, other than those classified on national security consideration, should be in public domain. However, a periodic review for further declassification of data may be carried out. A National Water Informatics Center should be established to collect, collate and process hydrologic data regularly from all over the country, conduct the preliminary processing, and maintain in open and transparent manner on a GIS platform.

13.2 In view of the likely climate change, much more data about snow and glaciers, evaporation, tidal hydrology and hydraulics, river geometry changes, erosion, sedimentation, etc. needs to be collected. A programme of such data collection needs to be developed and implemented.

13.3 All water related data, like rainfall, snowfall, geo-morphological, climatic, geological, surface water, ground water, water quality, ecological, water extraction and use, irrigated area, glaciers, etc., should be integrated with well defined procedures and

formats to ensure online updation and transfer of data to facilitate development of database for informed decision making in the management of water.

#### **14. RESEARCH & TRAINING NEEDS**

14.1 Continuing research and advancement in technology shall be promoted to address issues in the water sector in a scientific manner. Innovations in water resources sector should be encouraged, recognized and awarded.

14.2 It is necessary to give adequate grants to the States to update technology, design practices, planning and management practices, preparation of annual water balances and accounts for the site and basin, preparation of hydrologic balances for water systems, benchmarking and performance evaluation.

14.3 It needs to be recognized that the field practices in the water sector in advanced countries have been revolutionized by advances in information technology and analytical capabilities. A re-training and quality improvement programme for water planners and managers at all levels in India, both in private and public sectors, needs to be undertaken.

14.4 An autonomous center for research in water policy should also be established to evaluate impacts of policy decisions and to evolve policy directives for changing scenario of water resources.

14.5 To meet the need of the skilled manpower in the water sector, regular training and academic courses in water management should be promoted. These training and

academic institutions should be regularly updated by developing infrastructure and promoting applied research, which would help to improve the current procedures of analysis and informed decision making in the line departments and by the community. A national campaign for water literacy needs to be started for capacity building of different stakeholders in the water sector.

## **15 RESETTLEMENT & REHABILITATION**

15.1 Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of the displaced population. As far as possible, large storages shall be avoided and the State shall evolve its resettlement and rehabilitation policy taking into account the local conditions, so that displaced persons are also able to share the benefits of the projects. Careful planning shall be ensured so that the project construction and rehabilitation of affected families proceeds simultaneously and smoothly.

## **16. IMPLEMENTATION OF NATIONAL WATER POLICY**

16.1 State Water management Board should prepare a plan of action based on the National Water Policy, as approved by the State Water Resources Council, and to regularly monitor its implementation.



## 2. WATER RESOURCE PLANNING: -

2.1 Water resources available to the State should be brought within the category of utilizable resources to the maximum possible extent. Ground water exploitation for domestic use and irrigation will be promoted wherever feasible and improvising of surface water in pondages for usage during lean periods shall be encouraged.

2.2 Non-Conventional methods for augmenting availability of water such as artificial recharge of ground water and traditional water conservation practices like rain water harvesting, including roof-top rainwater harvesting and

use of such water through dual plumbing systems in all buildings need to be promoted. Pilot projects will be supported for demonstration effect. Research and development in these areas shall also be supported.

2.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi- sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements/awards for a basin or a sub-basin so that the best possible combination of options can be selected and sustained.

2.4 Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams and trenching should be promoted. Efforts shall be made to conserve the precipitation in the catchment area itself.

2.5 Overriding ownership rights over water sources rest with the State. Water may be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a state perspective, after taking into account the requirement of areas/basins. Water scarce neighborhoods will enjoy priority entitlement to avail the water available in adjoining areas for meeting their drinking water needs.

### 3. WATER ALLOCATION PRIORITIES

3.1 In the planning and operation of systems, water allocation priorities should be broadly as follows:

- Drinking water
- Irrigation
- Ecology/ Afforestation/biodiversity/tourism
- Agro-industries
- Hydro-power
- Non-agro-based industries.
- Navigation and other uses.

However, this is subject to modification if warranted by special considerations in any area/region.

#### 4. DRINKING WATER

4.1 Adequate, safe and sustainable drinking water facilities will be provided to the entire population both in urban and in rural areas throughout the year. Wherever there is no alternative source of drinking water, irrigation and multipurpose projects shall invariably include a drinking water component. Drinking water needs of human beings and domestic animals shall be the first charge on any available source of water.

4.2 Monitoring and surveillance of the quality of drinking water with emphasis on prevention of water borne diseases and proper operation and maintenance of the water supply system is of utmost importance. A "Catchment Area Approach" shall be adopted by involving grass root level educational and technical institutions in utilizing existing resources and strengthening them by providing additional technical and financial support for their activities in this area. Awareness on matter related to water borne diseases, their manifestation, symptoms, aspects of prevention and simple remedies shall be developed through effective information, education and communication programmes.

4.3 A transformation from a target based, supply-driven approach that pays little attention to the actual practices and/or preferences of the end users, to a demand- based approach, where users get the service that they want and are willing to pay for, is urgently required. Implementation of a participatory demand driven approach will ensure that the public obtains the level of service they desire and can afford to pay for through the mechanism of a tariff policy. The HRD programmes should aim at capacity building and empowerment of Panchayati Raj Institutions/Local Bodies with the objective of enabling them to take up the total management, including operation and maintenance activities of water supply systems.

**4.4 Urban domestic water systems need to collect and publish water accounts and water audit reports indicating leakages and pilferages, which should be reduced taking into due consideration social issues**

5.1 Irrigation planning whether in an individual project or in basin as a whole shall take into account cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques should be adopted for optimizing water use efficiency. Irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximize productivity of culturable lands.

12.2 An effective integration of water-use and land-use policies will be developed.

12.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms shall be obviated by adoption of a rotational water distribution system.

12.4 Concerted efforts shall be made to ensure that the irrigation potential that has been developed is fully utilized and the gap between potential and utilization is closed. To achieve this purpose, the command area development approach should be adopted in all irrigation projects.

12.5 Since irrigation accounts for the largest proportion of the consumptive use and of fresh water, the aim will be to get optimal productivity per unit of water usage. Scientific water

management and farm practices and sprinkler and drip systems of irrigation shall be promoted wherever feasible.

## COMMENTS ON NATIONAL WATER POLICY w.r.t HIMACHAL PRADESH STATE WATER POLICY

S. NO.	Item	Provision as per SWP-2005
1	<b>The Need for a State Water Policy:</b>	<p>1.1 Water is the elixir of life. It is part of a larger ecological system and vital to the essential environment for sustaining all life forms. It is a basic human need and must be managed in the most optimal manner so that consumption and development needs are met. As a scarce and precious resource its usage has to be planned, along with conservation and management measures, on an integrated and environmentally sound basis, keeping in view the socio-economic needs of the State. In the 21st century, efforts to develop, conserve, utilize and manage this important resource in a sustainable manner have to be guided by the State's perspective.</p> <p>1.2 Water, as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system. In Himachal Pradesh availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in a year and varies from about 600 mm in Lahaul &amp; Spiti district to around 3200 mm in Dharamshala District Kangra. However, in spite of heavy rain and snow during the rainy season and winter the summer months are periods of water scarcity in many areas as the flow in the rivers and nallahs is quite low and traditional sources also dry up. This results in forced migration of humans and animals to the banks of rivers with perennial flows. On the other hand, heavy rains regularly cause havoc due to floods. Flash floods also cause damage in the higher reaches of the State. Thus, through its Water Policy the State also has to address the issues of drought management in some areas and flood control in others.</p> <p>1.3 Planning and implementation of water related projects has many socio-economic aspects and issues such as environmental sustainability,</p>

resettlement and rehabilitation of project-affected people and livestock, public health concerns of water impoundment, dam safety etc. Clear guidelines are necessary in these matters. Moreover, certain problems and weaknesses have affected the water resources projects that have been implemented or are in the process of implementation in the State. Complex issues of equity and social justice in regard to water usage and distribution have to be addressed systematically. The development and exploitation of the groundwater resources in the state have raised concerns about the need for scientific management and conservation. Common policies and strategies are necessary to address these issues.

1.4 Expansion of economic activity inevitably leads to increasing demands for water for diverse purposes: domestic, commercial and industrial, irrigation, hydro- power generation, recreation, etc. So far, the major consumptive use of water in the .State has been for irrigation. The gross irrigation potential of the State is estimated to be 3.35 lakh ha., while the irrigation potential created has reached 2.05 lakh ha. by April, 2005. Production of food grains in H.P. has increased from around 0.7 million tonnes in the year 1966-67 to about 1.4 million tonnes in the year 2003-04. This will have to be raised to around 2.4 million tonnes by the year 2025 AD to meet the needs of the projected population of 92.25 lakh. The production of fruits and vegetables has increased from 0.05 million tones(1966-67) each to 0.7and 0.9 million tones (2003-04) respectively. We need to cover the balance area of 1.25 lakh ha. by irrigation schemes so that the productivity of the culturable land area of the State improves, food grain output increases and through diversion of the land to cultivation of vegetable, horticulture and cash crops the economic prosperity of the agriculturists is ensured and enhanced.

1.5 The drinking water needs of the people and livestock have also to be met. Demand of water for industrial use has so far largely been concentrated in or near the towns. However, the domestic and industrial water demand in rural areas is expected to increase sharply as the development programmes improve economic conditions and more industry comes up there. Impounding of water for hydropower generation will also increase as the potential in this sector is harnessed. This underscores the need for the utmost efficiency in water utilization and public awareness of the importance of conservation and maintenance of water quality.

1.6 Water quality is impacted by untreated or inadequately treated industrial effluents and sewage flowing into nallahs and rivers or affecting the surface and ground water. Since this can adversely affect the health of the populace, special attention will have to be paid to these aspects. Improvements in existing strategies, innovation of new techniques resting on a strong science and technology base are needed to eliminate the pollution of surface and ground water resources, to restore the pristine

		<p>quality of former years. Technology and training have to play important roles in the development of water resources and their management.</p> <p>1.7 Clearly, a number of issues and challenges have emerged in the development and management of the water resources. It is imperative therefore to formulate a State Water Policy for Himachal Pradesh backed with an action plan for implementation that will be executed in a time bound manner .</p> <p>1.8 The State Water Policy has its objective to ensure that available water resources are utilized in an efficient manner to meet drinking water needs and irrigation requirements in a manner that also promotes, conservation and engenders community participation. The State Water Policy seeks to make water everybody's business and to catch rain water where it falls or where it can be used optimally. Besides, the harnessing of water for commercial, industrial and hydro- power generation usage must take place in a sustainable manner with due regard to maintenance of water quality. Water is the elixir of life. It is part of a larger ecological system and vital to the essential environment for sustaining all life forms. It is a basic human need and must be managed in the most optimal manner so that consumption and development needs are met. As a scarce and precious resource its usage has to be planned, along with conservation and management measures, on an integrated and environmentally sound basis, keeping in view the socio-economic needs of the State. In the 21st century, efforts to develop, conserve, utilize and manage this important resource in a sustainable manner have to be guided by the State's perspective.</p> <p><b>1.9 Groundwater, though part of hydrological cycle and a community resource, is still perceived as an individual property and is exploited inequitably and without any consideration to its sustainability leading to its over-exploitation in several areas.</b></p> <p><b>1.10 Access to water for sanitation and hygiene is an even more serious problem. Inadequate sanitation and lack of sewage treatment are polluting the water sources.</b></p>
2.	<b>Participat or approach :</b>	<p>2.1 The State Water Policy must be implemented in a manner that promotes a participatory approach and involves local communities and stakeholders, including women, in the management of water resources, in an effective and decisive manner in various aspects of planning, design, development and management of the water related schemes.</p> <p>2.2 Necessary legal and institutional changes shall be made at various</p>

		<p>levels for the purpose, duly ensuring more meaningful decision making roles for women. Water Users' Associations and the local bodies such as municipalities and gram panchayats shall particularly be involved in the operation, maintenance and the management of water related infrastructure/facilities at appropriate levels, progressively, with a view to eventually transfer the management of such facilities to the user groups/local bodies.</p> <p>2.3 Private sector participation may also be encouraged wherever feasible in planning, development and management of the water resources for the usage of the general public and the community.</p> <p><b>2.4 Such a framework law must recognize water not only as a scarce resource but also as a sustainer of life and ecology. Therefore, water, particularly, groundwater, needs to be managed as a community resource held, by the state, under public trust doctrine to achieve food security, livelihood, and equitable and sustainable development for all. Existing Acts may have to be modified accordingly.</b></p>
<p><b>Information System:</b></p>		<p>3.1 A well developed information system, for water related data in its entirety, at the State level is a prime requisite for resource planning. A standardized state information system should be established with a network of data banks and data bases, integrating the State and Central level agencies and improving the quality of data collection and analysis.</p> <p>3.2 Standards for coding, classification, processing of data and methods/procedures for its collection should be adopted. Advances in information technology must be incorporated to develop a modern information system promoting free exchange of information among various agencies. Special efforts should be made to develop and continuously upgrade the technological capability to collect, process and disseminate reliable data in the desired time frame.</p> <p>3.3 Apart from the data regarding water availability and actual usage the system may be equipped to provide reliable projections of demand of water for diverse purposes along with availability in different areas of the State.</p>
<p><b>Water Resource Planning:</b></p>		<p>4.1 Water resources available to the State should be brought within the category of utilizable resources to the maximum possible extent. Ground water exploitation for domestic use and irrigation will be promoted wherever feasible and improvising of surface water in pondages for usage during lean periods shall be encouraged.</p> <p>4.2 Non-Conventional methods for augmenting availability of water such as artificial recharge of ground water and traditional water conservation practices like rain water harvesting, including roof-top rainwater harvesting</p>

		<p>and use of such water through dual plumbing systems in all buildings need to be promoted. Pilot projects will be supported for demonstration effect. Research and development in these areas shall also be supported.</p> <p>4.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi- sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements/awards for a basin or a sub-basin so that the best possible combination of options can be selected and sustained.</p> <p>4.4 Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams and trenching should be promoted. Efforts shall be made to conserve the precipitation in the catchment area itself.</p> <p>4.5 Overriding ownership rights over water sources rest with the State. Water may be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a state perspective, after taking into account the requirement of areas/basins. Water scarce neighbourhoods will enjoy priority entitlement to avail the water available in adjoining areas for meeting their drinking water needs.</p>
5	<b>Institutional Mechanism :</b>	<p>5.1 With a view to give effect to the planning, development and management of the water resources on a hydrological unit basis, alongwith a multi-sectoral, multi- disciplinary and participatory approach as well as integrating quality, quantity and environmental aspects, the existing institutions at various levels under the water resources sector shall be appropriately reoriented/reorganized and even created, wherever necessary .The institutional arrangements should be such that the aspect of maintenance of water related schemes is given importance equal or even more than that of new constructions.</p> <p>5.2 Development and management of a river basin as a whole or sub-basins, should take place in a planned manner involving multi-disciplinary units that prepare comprehensive plans taking into account not only the needs of irrigation but also harmonizing various other water uses, so that the available water resources are determined and put to optimum use.</p>
6	<b>Role of PRIs in conflict</b>	6.0 Guided by the traditional individual and community entitlements to water use enshrined in the Wazib-ul-arz (record of customary rights) 'Water Adalats' may be devised as a conflict resolution mechanism under the aegis

	<b>resolution:</b>	of the local PRIs.8.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects but provision for drinking water shall be a primary consideration. There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. Besides, in projects for hydropower generation involving impounding of water, adequate water shall be released round the year to meet the needs of downstream users. The sustainability evaluation of the Project shall determine “ Environmental Discharge” to be prescribed for the Project, which shall not be less than 15% of the available discharge at any given time. In forest areas the extraction of water shall be planned keeping in view the needs of the flora and fauna of the area. The involvement and participation of beneficiaries and other stakeholders will be encouraged at the project planning stage itself.
7	<b>Water Allocation Priorities:</b>	<p>7.0 In the planning and operation of systems, water allocation priorities should be broadly as follows:</p> <ul style="list-style-type: none"> <li>-Drinking water</li> <li>-Irrigation</li> <li>-Ecology/ Afforestation/biodiversity/tourism</li> <li>-Agro-industries</li> <li>-Hydro-power</li> <li>- Non-agro-based industries.</li> <li>-Navigation and other uses.</li> </ul> <p>However, this is subject to modification if warranted by special considerations in any area/region.</p> <p><b>7.1 Rivers and other water bodies should be considered for development for navigation as far as possible and all multipurpose projects over water bodies should keep navigation in mind right from the planning stage.</b></p> <p><b>7.2 Community should be sensitized and encouraged to adapt first to utilization of water as per local availability of waters, before providing water through long distance transfer. Community based water management should be institutionalized and strengthened.</b></p>
8	<b>Project Planning and Management:</b>	8.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects but provision for drinking water shall be a primary consideration. There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. Besides, in projects for

hydropower generation involving impounding of water, adequate water shall be released round the year to meet the needs of downstream users. The sustainability evaluation of the Project shall determine “ Environmental Discharge” to be prescribed for the Project, which shall not be less than 15% of the available discharge at any given time. In forest areas the extraction of water shall be planned keeping in view the needs of the flora and fauna of the area. The involvement and participation of beneficiaries and other stakeholders will be encouraged at the project planning stage itself.

8.2 The study of the likely impact of a project during construction and later on human lives, settlements, occupations, socio-economic, environment and other aspects shall form an essential component of project planning.

8.3 In the planning, implementation and operation of projects, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact on the environment, if any, should be minimized and should be off-set by adequate compensatory measures.

8.4 Environmental Impact Assessment of major and medium scale projects shall preferably be carried out by independent agencies.

8.5 The planning of projects in hilly areas shall take into account the need to assure drinking water supply, hydropower development and irrigation networks appropriate to the terrain of the area. The cost benefit analysis of projects in these areas shall reflect these aspects.

8.6 Special efforts should be made to investigate and formulate projects either in or for the benefit of backward areas and areas inhabited specially disadvantaged groups such as the socially weak and persons belonging to the scheduled castes and scheduled tribes. In other areas also, project planning should pay special attention to the needs of the weaker sections of society.

8.7 Time and cost overruns and deficient realization of benefits characterizing most water related projects shall be overcome by upgrading the quality of project preparation and management. The inadequate funding of projects should be obviated by an optimal allocation of resources on the basis of prioritization, having regard to the early completion of on-going projects as well as the need to reduce regional imbalances.

8.8 A close monitoring of projects to identify bottlenecks and to adopt timely measures to obviate time and cost overrun should be an integral part of project planning and execution.

		<p>8.9 Longitudinal studies should be carried out to monitor and evaluate the performance and socio-economic impact of water resource projects.</p> <p>8.10 The drainage system should form an integral part of any irrigation project right from the planning stage.</p> <p><b>8.11 Local governing bodies like Panchayats, Municipalities, Corporations, etc., and Water Users Associations, wherever applicable, should be involved in planning of the projects. The unique needs and aspirations of the Scheduled caste and Scheduled Tribes, women and other weaker sections of the society should be given due consideration.</b></p> <p><b>8.12 All water resources projects, including hydro power projects, should be planned to the extent feasible as multi-purpose projects with provision of storage to derive maximum benefit from available topology and water resources.</b></p>
9	<b>Water Audit:</b>	<p>9.0 Taking into account the fact that substantial losses of raw and treated water take place between the bulk storage, distribution and usage points thereby reducing availability to the ultimate users and financial losses to the supplying agencies as well as giving rise to deficiency in service and dissatisfaction with the public services, audit of the working of systems shall be carried out periodically in accordance with the guide lines for water audit and water conservation and rectification measures initiated where necessary.</p>
10	<b>Ground Water Development:</b>	<p>10.1 There shall be a periodical reassessment of the ground water potential taking into consideration the quality of that available and economic viability of its extraction.</p> <p>10.2 The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented. Exploitation of ground water resources shall be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. Ground water recharge projects will be developed and implemented for improving both the quality and availability of ground water resources.</p> <p>10.3 Integrated and coordinated development of surface water and ground water and their conjunctive use, shall be envisaged right from the project planning stage and should form an integral part of the project implementation.</p>
11.	<b>Drinking Water:</b>	<p>11.1 Adequate, safe and sustainable drinking water facilities will be provided to the entire population both in urban and in rural areas throughout the year. Wherever there is no alternative source of drinking water, irrigation and multipurpose projects shall invariably include a drinking water component. Drinking water needs of human beings and domestic animals</p>

		<p>shall be the first charge on any available source of water.</p> <p>11.2 Monitoring and surveillance of the quality of drinking water with emphasis on prevention of water borne diseases and proper operation and maintenance of the water supply system is of utmost importance. A "Catchment Area Approach" shall be adopted by involving grass root level educational and technical institutions in utilizing existing resources and strengthening them by providing additional technical and financial support for their activities in this area. Awareness on matter related to water borne diseases, their manifestation, symptoms, aspects of prevention and simple remedies shall be developed through effective information, education and communication programmes.</p> <p>11.3 A transformation from a target based, supply-driven approach that pays little attention to the actual practices and/or preferences of the end users, to a demand- based approach, where users get the service that they want and are willing to pay for, is urgently required. Implementation of a participatory demand driven approach will ensure that the public obtains the level of service they desire and can afford to pay for through the mechanism of a tariff policy. The HRD programmes should aim at capacity building and empowerment of Panchayati Raj Institutions/Local Bodies with the objective of enabling them to take up the total management, including operation and maintenance activities of water supply systems.</p> <p><b>11.4 Urban domestic water systems need to collect and publish water accounts and water audit reports indicating leakages and pilferages, which should be reduced taking into due consideration social issues</b></p>
12.	<b>Irrigation:</b>	<p>12.1 Irrigation planning whether in an individual project or in basin as a whole shall take into account cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques should be adopted for optimizing water use efficiency. Irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximize productivity of culturable lands.</p> <p>12.2 An effective integration of water-use and land-use policies will be developed.</p> <p>12.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water</p>

		<p>between head-reach and tail-end farms and between large and small farms shall be obviated by adoption of a rotational water distribution system.</p> <p>12.4 Concerted efforts shall be made to ensure that the irrigation potential that has been developed is fully utilized and the gap between potential and utilization is closed. To achieve this purpose, the command area development approach should be adopted in all irrigation projects.</p> <p>12.5 Since irrigation accounts for the largest proportion of the consumptive use and of fresh water, the aim will be to get optimal productivity per unit of water usage. Scientific water management and farm practices and sprinkler and drip systems of irrigation shall be promoted wherever feasible.</p>
13.	<b>Resettlement and Rehabilitation:</b>	<p>13.0 Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of the displaced population. As far as possible, large storages shall be avoided and the State shall evolve its resettlement and rehabilitation policy taking into account the local conditions, so that displaced persons are also able to share the benefits of the projects. Careful planning shall be ensured so that the project construction and rehabilitation of affected families proceeds simultaneously and smoothly.</p>
14.	<b>Financial and Physical Sustainability:</b>	<p>14.1 Besides developing additional water resource facilities, the physical and financial sustainability of existing facilities needs special attention. Water user charges shall attempt to cover gradually the operation and maintenance charges of providing the service initially as well as a part of the capital costs. Subsidies on water rates shall be well targeted and transparent.</p> <p>14.2 All linked inter-departmental financial resources available shall be pooled and the nodal department would facilitate further leveraging of resources for raising funds for capital investment. A revolving fund may be created to fund prioritized activities in select areas.</p> <p>14.3 There is an urgent need of a paradigm shift in the management of water resources sector, from the emphasis on the development and expansion of water resource infrastructure for diverse uses, to improvement of the performance of the existing water resource facilities. Therefore, allocation of funds under the water resources sector should be re-prioritized to ensure that needs for development as well as operation and maintenance of the facilities are met in an equitable and sustainable manner .</p> <p>14.4 A Citizen's Charter shall be developed with a view to guaranteeing efficiency, transparency and accountability in the delivery of drinking water and irrigation services.</p>

<b>15.</b>	<b>Participation of Centre/basin States &amp; Funding agencies Inter State Resolutions:</b>	15.0 Major river systems originate in the state of H.P. and flow through here to other states. The State may enter into agreements with the Government of India and , other States for exploitation of the water resources on a cost and benefit sharing basis.
		15.1 The State will work within the allocations made under various Inter State agreements
<b>16.</b>	<b>Water Quality:</b>	16.1 Both surface water and ground water shall be regularly monitored for quality. A phased programme shall be undertaken for effecting improvements in different parameters.
		16.2 Water quality parameters for different uses shall continuously be reviewed with a view to effecting improvement in water quality.
<b>17</b>	<b>Water Zoning:</b>	17.0 Economic development activities including agricultural, industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. Water zoning of the State should be done in a time bound manner and the economic activities should be guided and regulated in accordance with such zoning.
<b>18</b>	<b>Conservation of Water:</b>	18.1 Efficiency of utilization in all the diverse uses of water should be ensured and awareness of water as a scarce resource should be fostered. Consciousness about conservation should be promoted through education, regulation, incentives and disincentives. Water resources should be conserved and the availability augmented by maximizing retention in the catchment area, minimizing pollution and avoiding wastage.  18.2 Water resources should be conserved and the availability augmented by maximizing retention in the catchment area, minimizing pollution and avoiding wastage. For this, measures like selective lining of the conveyance systems, modernization and rehabilitation of existing water distribution systems roof top rain water harvesting, recycling, and re-use of treated effluent water, and new techniques like drip and sprinkler irrigation may be promoted, wherever feasible.  18.3 Adoption of traditional techniques like mulching or pitcher irrigation may be revived through capacity building.
<b>19</b>	<b>Flood Control &amp; Managem</b>	19.1 A master plan for flood control and management for each flood prone basin shall be prepared. 19.2 Adequate flood cushion should be provided in water storage projects,

	ent:	<p>wherever feasible, to facilitate better flood management. In highly flood prone areas, flood control may be given overriding consideration in reservoir regulation policy even at the cost of sacrificing some irrigation or power benefits.</p> <p>19.3 While physical flood protection works like embankments, spurs and dykes will continue to be necessary, increased emphasis should be laid on non-structural measures such as flood forecasting and warning, flood plain zoning and flood proofing for the minimization of losses and to reduce the recurring expenditure on flood relief measures.</p> <p>1.9.4 There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimize the loss of life and property on account of floods.</p> <p>19.5 The flood forecasting activities should be modernized, value added and extended to uncovered areas. Inflow forecasting to reservoirs should be instituted for their effective regulation.</p> <p><b>19.6 Protecting all areas prone to floods and droughts may not be practicable; hence, methods for coping with floods and droughts have to be encouraged. Frequency based flood inundation maps should be prepared to evolve coping strategies, including preparedness to supply safe water during and immediately after flood events. Communities need to be involved in preparing an action plan for dealing with the flood/ drought situations.</b></p>
20	Land erosion by rivers and tributaries :	<p>20.1 The erosion of land by rivers should be minimized by the suitable cost effective measures and construction of rain water harvesting structures should be encouraged to check soil erosion and flash floods. The State shall undertake steps to ensure that indiscriminate occupation and exploitation of land near the river banks is discouraged. Economic activity on river banks and beds must be properly regulated.</p>
21	Drought prone area development:	<p>21.1 Drought-prone areas should be made less vulnerable to drought associated problems through soil-moisture conservation measures, water harvesting practices, minimization of evaporation losses, development of ground water potential including recharging and transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development which are relatively less water intensive shall be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.</p> <p>21.2 Relief works undertaken for providing employment to drought affected populations should preferably be aimed at drought proofing of the affected area.</p>

22	<b>Maintenance and Modernization:</b>	<p>22.1 Structures and systems created for water resource management should be properly maintained in good health. Appropriate annual budgetary provisions should be made for this purpose. Preventive maintenance shall be given due attention for reducing overall maintenance cost, optimizing water use and making projects sustainable. There should be a regular monitoring of structures and systems and necessary rehabilitation and modernization programs should be undertaken.</p> <p>22.2 Formation of Water User's Associations with authority and responsibility shall be encouraged within a defined time frame to facilitate the management, including maintenance, of irrigation systems in a participatory manner.</p>
23	<b>Safety of Structures :</b>	<p>23.0 There should be proper organizational arrangements for ensuring the safety of storage dams and other water related structures involving consultation with specialists in investigation, design, construction, hydrology, geology etc. Legislation related to dam safety may be enacted to ensure proper inspection, maintenance and surveillance of existing dams and also to ensure proper planning, investigation, design and construction for safety of new dams. The guidelines on the subject should be periodically updated and reformulated. There should be a system of continuous surveillance and regular visits by experts.</p>
24	<b>Science &amp; Technology:</b>	<p>24.0 For effective and economical management of our water resources, the frontiers of knowledge need to be pushed forward in several directions by intensifying research efforts in various areas, including the following:</p> <ul style="list-style-type: none"> <li>-hydrometeorology;</li> <li>-snow and lake hydrology;</li> <li>-surface and ground water hydrology;</li> <li>-river morphology and hydraulics;</li> <li>-assessment of water resources;</li> <li>-water-harvesting and ground water recharge;</li> <li>-water quality;</li> <li>-water conservation;</li> <li>-evaporation and seepage losses;</li> <li>-recycling and re-use;</li> <li>-better water management practices and improvements in operational technology;</li> <li>-cost effective technology for treatment, transmission and distribution of drinking water;</li> <li>-crops and cropping systems;</li> <li>-soils and material research;</li> <li>-new constructional material and technology;</li> <li>-seismology and seismic design of structures;</li> <li>-the safety and longevity of water-related structures;</li> </ul>

		<ul style="list-style-type: none"> <li>-economical designs for water resource projects;</li> <li>-risk analysis and disaster management;</li> <li>-use of remote sensing techniques in development and management measures;</li> <li>-sedimentation of reservoirs;</li> <li>-prevention of water logging and soil salinity;</li> <li>-reclamation of water logged and saline lands;</li> <li>-environmental impact;</li> <li>-regional equity.</li> </ul>
25	<b>Human Resources Development (Training)</b>	<p>25.0 A perspective plan for upgradation of human resources shall be an integral part of water resources development. This shall include training in information systems, sectoral planning, project planning and formulation, project management, operation of projects and their physical structures and systems and the management of the water distribution systems. The training should extend to all the categories of personnel involved in these activities as also the farmers and other user groups from time to time.</p> <p><b>25.1 It is necessary to give adequate grants to the States to update technology, design practices, planning and management practices, preparation of annual water balances and accounts for the site and basin, preparation of hydrologic balances for water systems, benchmarking and performance evaluation.</b></p>
26	<b>Conclusion:</b>	<p>26.0 In view of the vital importance of water for the sustenance of human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use is a matter of utmost urgency. Concerns of the community need to be taken into account for water resources development and management. The success of the State water policy will depend on evolving and maintaining a consensus and commitment to its underlying principles and objectives. The State Water Policy may be revised as necessary</p>