

## UTTAR PRADESH STATE WATER POLICY

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### **PREAMBLE:**

**1.1** The state is endowed with bountiful water resources which were considered abundant but because of increasing demand for various purposes namely irrigation, drinking and domestic, power (thermal and hydro), industrial and other uses, its scarcity is becoming apparent which shall get more pronounced with increasing population. Water is a prime natural resource, a basic human need and a precious asset. Planning and development of water resources of the state need to be governed by the development perceptions of the state.

### **Water Availability :**

**1.2** In Irrigation sector, which has so far been the principal consumptive user, about 43.8 BCM (35.5 m.a.f.) of surface water and about 27 BCM (21.9 m.a.f.) (net) of ground water has been utilised out of the total of about 161.70 BCM (131.0 m.a.f.) of surface water and about 72 BCM (58.4 m.a.f.) exploitable (Total replenish able 84 BCM or 68.1 m.a.f.) ground water resource of the state. Another about 27.8 BCM (22.5 m.a.f.) of surface water shall get utilised after completion of on-going projects. 43.2 BCM (35 m.a.f.) is the quantity which can not be utilised at present. Thus there remains only about 22.2 BCM (18.0 m.a.f.) Which can be utilised for future irrigation projects after reserving about 24.7 BCM (20 m.a.f.) for drinking industrial and pollution control.

**1.3** State has a total of about 20 mha. of culturable land out of which about 17.4 mha. is presently under agriculture. For a projected population of 270 million by the year 2020 the food grain requirement has been assessed as 63 million tones. With the present irrigation and other inputs a productivity level of about 1.7 t/ha. has been achieved. A productivity level of 3.4 t/ha. will have to be achieved to meet the projected food grain requirements. In order to achieve this target, in addition to other inputs, irrigation facilities shall have to be adequately provided by harnessing the untapped potential and also by bringing about improvement in the management of water resources.

**1.4** Water for drinking and domestic use has the highest priority while allocating the water resource of the state. The state has to provide adequate drinking water facilities (both for people and livestock) to the entire population in both urban and rural areas upto the year 2025. Sanitation facilities for entire population in urban areas and most of the rural areas should also be provided.

### **Hydro Power :**

**1.5** The states hydro potential has been assessed as 15000 mw against which about 1500 mw has been harnessed so far. In addition, a potential of about 15000 mw has been assessed for the projects which lie in Nepalese territory. The state has been perennially short of power. Apart from shortfall in total energy requirements, the shortage of peak power is more acute. Huddle power is most suitable to take up the peak loads in addition to being environment friendly and using renewable resource.

### **Industry :**

**1.6** The present industrial status of the state calls for a quantum jump in industrial development, which shall have substantial requirement of water to be used consumptively. Adequate provision in water resource planning shall be made for industrial use also.

## **Ecology & Health :**

**1.7** Adequate provision for ecological, navigational, recreational and other purposes has also to be made. The quantity of water, its protection against pollution and safe guards against water related health hazards are also key concerns.

**1.8** In view of the water resources (surface and under ground) availability of the state and status of present use and to cater for future needs upto 2025, judicious and optimal exploitation, utilisation, conservation and management of this limited resource is imperative. Such a planning should also address to reconcile the conflicts, if they arise, between different uses.

## **Need For State Water Policy :**

**1.9** Water is one of the most crucial elements in development planning. The planning of this limited resource has to be guided by development perceptions of the state which would inter-alia account for geographical conditions, hydrological status (surface and under ground water), water allocation priorities and other specific needs. Hence the need for a "State Water Policy" which should enunciate the policy and strategy in respect of this precious and scarce resource. The Govt. of India has adopted "National Water Policy" in 1987 under the aegis of "National Water Resources Counsel" as accepted by the states and union territories. Draft of revised national water policy 1998 has been put up to the National Water Resources Council for its approval. The "State Water Policy" while recognising the water resource as a state subject under the constitution and addressing to its specific requirements, needs to be in consonance with the general guide lines and parameters laid down in the "National Water Policy".

## **OBJECTIVES :**

**2.1** Having realized the need for formulation of state water policy as stated herein above the broad objectives of the water policy for Uttar Pradesh shall be:

- a. Ensure preservation of the scarce water resources and to optimise the utilization of the available resources.
- b. Bring about qualitative improvement in water resource management which should include user's participation and decentralization of authority.
- c. Maintain water quality, both surface and underground, to established norms and standards.
- d. Promote formulation of projects as far as and whenever possible on the concept of basin or sub-basin, treating both surface and the ground water as a unitary resource, ensuring multipurpose use of the water resource. This would inter alia consist of the following main uses:
  - i. Provide adequate water for drinking and domestic use.
  - ii. Providing water for irrigation.
  - iii. Maximize hydro power generation with in the constraints imposed by other users.
  - iv. Provide water for industries including Agro industries.
  - v. Provide water for navigation, recreation, health and for other uses.
- e. Ensure ecological and environmental balance while developing water resources.

- f. Promote equity and social justice among individuals and groups of users in water resource allocation and management.
- g. Ensure self-sustainability in water resource development.
- h. Ensure Flood Management and drainage as integral part of water resource development.
- i. Provide a substantive legal framework for management.
- j. Provide a Management Information System (M.I.S.) for effective monitoring of policy implementation.
- k. Promote research and training facilities in the water resource sector.
- l. Provide mechanism for the resolution of conflicts between various users.

### **INFORMATION SYSTEM :**

**3.1** The prime requisite for resource planning is a well-developed information system. A standardised information system should be established with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies and improving the quality of data and the processing capabilities through suitable legislation for the purpose.

**3.2** Standards for coding, classification, processing and methods/procedures for data should be adopted. Advances in information technology must be introduced to create a modern information system promoting free exchange of data among the various agencies. Special efforts should be made to develop and continuously upgrade technological capability to collect, process and disseminate reliable data in the desired time frame.

**3.3** Apart from the data regarding water availability and actual water use, the system should also include comprehensive and reliable projections of future demands of water for diverse purpose.

### **WATER RESOURCES PLANNING :**

#### **Basin Planning :**

**4.1** A river basin or a sub-basin in case of surface water along with the corresponding aquifer for ground water should be considered as a unit of development while planning water resources of the state rather than consideration of an individual project. The planning of such a unit should take into account the present status of development and consider surface and under ground water as a unitary resource ensuring their optimal conjunctive use wherein drainage should also be considered as its integral part.

**4.2** The projects, wherever possible, should be conceived as multipurpose projects to cater for diverse uses.

**4.3** The priorities of development should also be aimed at reducing the existing regional imbalances. In this context, transfer of water from surplus to scarcity areas should also be considered.

**4.4** The occurrence of surface water in the state is unevenly distributed both in time and space and the underground water is unevenly distributed in space. This aspect should be duly addressed while formulating projects.

**Data Base :**

**4.5** Long term, strong and reliable data base is the prime requisite for water resources planning. The existing information and data collection system should be modernised and strengthened by making it more extensive and improving the quality of data and processing capabilities.

**Ecology & Environment :**

**4.6** All water resources projects should be examined from ecological and environmental considerations and remedial measures wherever needed should form a part of the project itself and implemented along with it. A minimum flow in the natural streams should be allowed.

**Resettlement & Rehabilitation :**

**4.7** The study of the impact of a project, during construction and afterwards, on human lives, settlements occupations, economic and other aspects should be an essential component of water resource planning. Rehabilitation and resettlement of affected persons and other measures needed as a result of the study should be taken up on priority basis along with the project itself. Since this is an aspect which affects all kinds of development activities and has wide ramifications, a multidisciplinary task force should be constituted to lay down general principles and also assist in formulating individual projects.

**Water Harvesting :**

**4.8** Water harvesting should be given consideration in planning water resources. Viable projects, specially in scarce ground water areas, should be investigated and implemented to increase the surface water availability would also help in recharging the ground water.

**Flood Protection :**

**4.9** Flood protection should be considered as an essential component while planning water resources of a basin or sub-basin.

**ALLOCATION PRIORITIES:**

**5.1** In the planning and operation of systems, the state, water allocation priorities should be broadly as below:-

- Drinking water
- Irrigation
- Hydro & Thermal Power
- Agro- industries non agricultural industries
- Navigation & other uses

However, these priorities might be modified if necessary in particular region with reference to area specific considerations.

**IRRIGATION :**

**6.1** While realising that substantial development has been done in this sector during successive five year plans, an assessment of the present status of irrigation vis-à-vis the resource availability and requirement, it is felt that a lot more needs to be done. A

two pronged strategy in respect of viz (i) exploitation of unutilised resources and (ii) qualitative improvement in the management of already harnessed resources, is called for

**6.2** Exploitation of unutilised resources: In this regard the following actions need to be taken.

- (i) Preparation of perspective plan upto 2025, both in respect of surface and underground water within the parameters outlined in para 4. The implementation schedule should ensure continuity in the process so that funds, expertise, equipment and trained manpower is evenly deployed yielding optimal results.
- (ii) The water resources projects, specially multipurpose projects, are generally capital intensive having long gestation periods, therefore, long term investment decisions in accordance with the perspective plan need to be taken so that the projects are completed on schedule.
- (iii) The projects need to be self sustaining. Presently, the benefit cost ratio is determined on the basis of indirect benefit that accrue to the state and not directly to the project. Therefore, the concept of self sustainability needs to be defined. Since irrigation is an essential input for agriculture, the pricing of water has wider economic ramifications, a "Tariff Regulatory Body" is proposed to be constituted for this purpose.

**6.3** Management of Irrigation water :- In order to realise fuller benefits from the investments made in irrigation sector, efficient management, scientifically economical use and conservation of harnessed water is imperative. The present status has a substantial scope for qualitative improvement in this field. In this regard the following actions need to be taken.

- (i) The vast irrigation system of the state having about 74000 km of channels, some of which are more than 150 years old, are in dire need of restoration and rehabilitation. Modernisation and upgradation of these channels is also needed to cater for future requirements.
- (ii) "Conveyance Management" needs to be improved specially because most of the system are fed by run-of the river schemes. These systems should be provided with mechanism using appropriate technology to enable quick adjustments of supplies as per requirements dictated by water availability and the priorities at the field. In addition, the following aspects need to be specially considered:
  - (a) Adequate and appropriate M.I.S. to ensure the running of system for optimal use as per availability and priorities of requirement.
  - (b) Reduction in losses need to be ensured by inter-alia adopting the following measures:
    - \* Judicious use of lining of canals.
    - \* Checking unauthorised use by cutting of canals and other means.
- (iii) "Field Management" needs to be tackled on high priority to achieve most efficient use of water at the field level wherein equity in its dispensation and proper recovery of dues is ensured. The following aspects need to be considered:-

- (a) A thrust needs to be given to improvement of command areas (such as leveling of fields improvement and maintenance of water courses etc.)
- (b) Adoption of improved irrigation and agriculture practices using appropriate technology to ensure optimal use of water for agriculture production. This should also aim at adoption of appropriate cropping pattern suitable for the area in question.
- (c) The needs of small and marginal farmers shall be given special consideration while managing irrigation water.

## **FLOOD MANAGEMENT :**

### **Data :**

**7.1** Out of about the 29.44 million ha. of geographical area of the state 7.336 million ha has been recognised as flood prone. Flood control and its management has been the endeavor of the state right from the beginning of the planned development in the post independence period. Till now flood protection to about 1.54 million ha has been provided under the state plans. The problem of the flood has been recognised as a basin problem not confined to a state. Therefore, GFCC was created to deal with the flood problem in Ganga basin under MOWR, GOI, which is the apex technical advisory body. At state level state flood control board was created under the chairmanship of the Chief Minister of the state to take decisions and ensure their implementation at the highest level.

### **Perspective Plan :**

**7.2** A long term perspective plan to protect almost all the flood affected areas was prepared in the year 1988 costing about Rs. 10,000 crores (1988 price level). However the progress in its implementation has not been satisfactory because of resource limitations.

**7.3** In view of the above, the following steps in the flood sector are proposed to be adopted.

- (a) Preparation of a perspective plan upto 2025 in which the priorities be fixed to tackle the areas which are worst affected both in terms of frequency and extent.
- (b) Funding to be provided in accordance with targets set out in the perspective plan.
- (c) While planning water resources projects flood protection, water logging and drainage decongestion should be included as an integral part wherever possible.
- (d) "Tariff Regulatory Body" proposed to be setup for the determination of water charges should also look into the possibilities of levying cess on the areas protected from floods and suggest ways and means for the enforcement keeping in view the wider socio-economic perspective.

## **DROUGHT MANAGEMENT:**

**8.1** Drought-prone areas should be made less vulnerable to drought-associated problems through soil-moisture conservation measures, water harvesting practices, the minimisation of evaporation losses, development of the ground water potential

including recharging and the transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development with relatively less water-demanding should be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.

**8.2** Relief works undertaken for providing employment to drought stricken populations should preferably be for drought proofing.

### **GROUND WATER :**

**9.1** Total replenish able ground water resource of the state is 84 BCM (68.1 maf.) Out of which 72 BCM (58.4 maf.) is exploitable for (Data) irrigation purposes which is 85.7% of the replenishable resource. Out of the total replenishable resource, present total extraction is about 40.95 BCM (33.2 maf.) and the net exploitation is 27 BCM (21.9 maf.) which is 65.9% of total extraction. Thus the ground water resource available for future exploitation is about 43.95 BCM (34.9 maf.). However, this resource is unevenly distributed in space. The regional breakup of this available resource for future development in western, central, eastern, Bundelkhand and foot hill regions is 14.8 BCM (12 maf.) 8.5 BCM ( 6.9 maf.) 16 BCM (13 maf.) 2.5 BCM (2 maf.) and 1.25 BCM (1 maf.) respectively which apparently shows that ample amount of ground water is yet to be exploited but uneven spacial distribution and the present state of exploitation has resulted in regional ground water imbalances. Out of 819 blocks, there are 85 " Dark" block, 214 "Grey" blocks in the state, of which 67 " Dark" & 86 " Grey" blocks are in western region, 15 dark & 38 grey blocks in central region 12 dark & 90 grey block in eastern region and 1 dark block in Bundelkhand region.

#### **Present Status :**

**9.2** It is estimated that for domestic, industrial and irrigation needs of growing population, the level of ground water exploitation will increase from 27 BCM (21.9 maf.) to 64 BCM (51.9 maf.) by 2025 i.e. requirement of ground water will be more than double the present level. Due to this the number of over-exploited blocks may increase from 14 to 177 by the year 2025. (These represent the blocks where the drawls are more than recharge).

**9.3** For the proper management of ground water resource which should ensure optimal utilisation and avoid over exploitation, the following aspects should be duly addressed.

1. Demand side management and conservation through the spread of efficient irrigation technologies, such as piping drip and sprinkler irrigation is essential.
2. Opportunities for and constraints on the spread of low water intensity cropping patterns should be investigated as a component of demand side management.
3. Conjunctive Use : Conjunctive management and ground water recharge should be central to ground water management. To augment the ground water by artificial means surplus monsoon runoff between sub-basin within river systems should be transferred and stored in the available aquifers, by applying different appropriate recharge techniques such as, construction of recharge ponds/percolation tank and desiltation of existing ponds, construction of recharge shafts in the existing ponds, construction of gravity head recharge wells and conversion of existing tube wells/wells into gravity head recharge well, construction of water conservation structures such as Nala Bunds, Contour Bunds, Gully plugs etc, construction of recharge basin etc. in the dark & gray blocks. However, while undertaking any recharge project, it must be ensured that such projects do not pollute the ground water aquifer.

4. Regulation : Methods to restrict ground water exploitation in the regions where the ground water is depleting at fast rate should also be considered keeping in view other constraints.

### **DRINKING WATER :**

#### **Data :**

**10.1** Drinking water and domestic needs of all the urban and rural population is to be fully met by the year 2025. Presently the consumption in urban and rural sectors is about 1.7 BCM (1.4 maf.) and 2.6 BCM (2.1 maf.) respectively. The projected requirements are about 3.2 BCM (2.6 maf.) and 4.6 BCM (03.7 maf.) for urban and rural population. The allocation to meet these requirement shall be the first charge on the water resources of the state.

#### **Perspective Plan :**

**10.2** A perspective plan upto 2025 to meet this requirement shall be prepared and steps taken to provide adequate resources for this purpose in a phased manner both from state sources and by raising funds from various quarters. Efforts shall be made to make the water supplies self-sustaining, at least to meet O & M costs, as far as possible considering the socio-economic conditions of the population to be served.

**10.3** For water supply and sanitation, measures to ensure more efficient accessible delivery of water resources and sewage collection, treatment and disposal with the ultimate aim to provide universal coverage shall be adopted and enforced.

### **OTHER DOMESTIC AND INDUSTRIAL NEEDS :**

**11.1** The domestic & industrial needs have been assessed as about 4.4 BCM (3.6 maf.) upto 2025 Adequate allocation of water resources shall be made to meet domestic and industrial requirements to ensure that there is no impediment on this account in developing the industrial status of the state to the desired level.

**11.2** The industries, barring some selected industries, shall be required to bear the development cost of the resource and its maintenance along with the cost of water to reflect the scarcity value of this resource which shall be fixed from time to time.

**11.3** For industrial use extensive water conservation and pollution control shall be exercised to keep the requirement low and prevent pollution of both ground and surface water. Treatment of industrial discharge and reuse of water shall be strictly enforced.

### **ECOLOGICAL HEALTH RECREATIONAL AND OTHER NEEDS :**

**12.1** All the water resources projects shall give due regard to the ecological health and other needs for which adequate provision shall be made on priority basis.

**12.2** While planning water resources, due consideration to development of navigation, whenever feasible shall be given. Even though there is no significant consumptive use for this purpose, yet certain flow restrictions in water ways shall have to enforced.

### **HYDRO AND THERMAL POWER NEEDS :**

#### **Present Status :**

**13.1** Presently the state has a thermal installed capacity of 11624 mw out which 5775 mw is in UPSEB and 5849 mw is in central sector. The share of U.P. in Central sector

projects is 2600 mw. In addition U.P. has an atomic power installation of 440 mw in which the state's share is 154 mw. The hydro installation of UPSEB is 1504 mw and it gets a share of 236 mw out of an installation of 945 mw in the Central sector. Thus the total installation available to U.P. from thermal and Hydro sector is 8529 mw and 1740 mw respectively resulting in about 85:17 thermal hydro mix. The present consumptive requirement for cooling water in thermal stations is about 12.46 cumes (440 cusecs) i.e. about 0.37 BCM (0.3 maf.) though the total draft is much more. The projected requirement upto 2020 for consumptive use in thermal power is estimated as 50.97 cumes (1800 cusecs) i.e. about 1.60 BCM (1.3 maf) which would correspond to an installation of about 45000 mw (including Central and Private Sectors)

#### **Hydro Thermal Mix :**

**13.2** In hydel sector efforts shall be made to accelerate the process of constructing new projects so that the available water resource are put to optimal use (specially by taking up multipurpose projects) and the thermal hydro mix is improved to a ratio of 60:40.

**13.3** In order to meet the present and future requirements, the allocation of water resources shall accommodate these requirements so that power development does not suffer on this account. The thermal power sector shall be required to meet the development cost and its maintenance along with the cost of water which shall be fixed from time to time.

#### **PARTICIPATORY APPROACH TO WATER RESOURCES MANAGEMENT :**

**14.1** The management of the water resources for diverse uses should be done by adopting participatory approach; by involving not only the various Governmental Agencies but also the users and other stakeholders in an effective and decisive way in various aspects of planning, design, development and management of the water resources scheme. Necessary legal and institutional changes should be made at various levels to ensure the implementation of above objectives. Water Users Associations and the local bodies such as Municipalities and Gram Panchayats should particularly be involved in the operation, maintenance and the management of water infrastructures/facilities at appropriate levels progressively with a view to eventually transfer the management of such facilities to the User groups/Local bodies.

#### **FINANCIAL AND PHYSICAL SUSTAINABILITY :**

**15.1** Besides creating additional water resources facilities for various uses, adequate emphasis needs to be given to the physical and financial sustainability of existing facilities. There is therefore, a need to ensure that the water charges for various uses should be fixed in such a way that they cover at least the operation and maintenance charges of providing the services initially and a part of the capital costs subsequently. These rates should be linked directly to the quality of service provided.

#### **INSTITUTIONAL ARRANGEMENTS :**

**16.1** Presently the water resource planning for various uses is being done by the respective departments. Realising the scarcity value of this resource as also the need for co-ordinate planned development, the state government has constituted a "State Water Board" under the chairmanship of the Chief Secretary.

## **LEGISLATION :**

**17.1** Looking to the scarcity value of water resources and need to conserve and keep this resource pollution free and to ensure its most efficient use, legislation in the following areas need to be considered.

- a) Regulation of exploitation of surface and ground water for diverse uses.
- b) Regulation of discharges made into surface and ground water sources by various agencies.
- c) Regulation in respect to bulk supply of water for irrigation and other purposes to associations.
- d) Creation of water rights in favour of users.
- e) Transfer of irrigation systems to users specially in respect of small and marginal farmers.

## **PERFORMANCE IMPROVEMENT :**

**18.1** There is an urgent need of paradigm shift in the emphasis in the management of water resources sector. From the present emphasis on the creation and expansion of water resources infrastructures for diverse uses, there is now a need to give greater emphasis on the improvement of the performance of the existing water resources facilities. Therefore, allocation of funds under the water resources sector should be re-prioritised to ensure that the needs for development as well as operation and maintenance of the facilities are met along with the funds allocated to other activities under the sector.

## **PRIVATE SECTOR PARTICIPATION :**

**19.1** Private sector participation should be encouraged in the various aspects of planning, development and management of the water resources projects for diverse uses, wherever feasible. Private sector participation may help in introducing innovative ideas, generating financial resources and introducing corporate management in improving service efficiency and accountability to users. Depending upon the specific situations, various combinations of private sector participation, in building, owning, operating, leasing and transferring of water resources facilities may be considered.

## **SCIENCE AND TECHNOLOGY :**

**20.1** 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 :

- Hydrometeorology
- Assessment of Water resources
- Snow and lake hydrology
- Ground Water Hydrology and recharge
- Water quality
- Prevention of salinity ingress

- Prevention of water logging and soil salinity.
- Water harvesting
- Evaporation and seepage losses
- Economical designs for W.R. Project
- Seismology and a seismic design of structures
- Advance numerical analysis in structures
- Crops and cropping systems.
- Sedimentation of reservoirs.
- Safety and longevity of water related structures.
- River morphology and hydraulics.
- Soils and material research; new construction materials and technology (with particular reference to roller compacted concrete, fiber reinforced concrete, new methodologies in tunneling technologies, instrumentation advanced numerical analysis in structures and back analysis).
- Use of remote sensing techniques in development and management.
- Better water management practices and improvements in operational technology.
- Recycling and re-use.
- Risk analysis disaster management.

### **TRAINING :**

**21.1** A perceptive plan for standardised training should be an integral part of water resources development. It should cover training in information systems, sectoral planning, project planning and formulation, project management, operation of projects their physical structures and systems and the managements of the water distribution system. The training should extend to all the categories of personnel involved in these activities as also the farmers.

### **CONCLUSIONS :**

**22.1** In view of the vital importance of water for 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 has become a matter of the utmost urgency. The success of the State Water Policy will depend entirely on the development and maintenance of general consensus and commitments to its underlying principles and objectives.

### **ACTION PLAN FOR SWP**

**1.0** The state water policy will apply to all the water resources in the State.

**2.0** For effective and purposeful implementation of the State Water Policy, an adequate organisation is essential. The Government has already set up a State Water Board under the chairmanship of Chief Secretary. This organisation shall have to be

adequately strengthened to achieve the desired results. The following subjects shall have to be mainly addressed by various wings of State Water Board.

- a. State Water Planning Office : For Planning of the entire water resources of the State including ground water wherein drainage and flood control should also be taken into account preferably on the basin/sub-basin concept. This office will work as technical secretariat of the State Water Board. This secretariat would inter-alia also be a regulatory body for the water resources.
- b. State Water Resource Data Centre-for collection and storage of water resource data and making it available in user friendly manner.
- c. Development of an effective Management Information System (M.I.S)

**3.0** Enactment of legislation for regulation and control of surface and ground water resources and their conjunctive use.

**4.0** Administrative and legislative reforms for ensuring users participation in management and decentralization of authority.

**5.0** Preparation of perspective plan of the water resources development of the State on integrated basis within the concept of basin/sub-basin development. The proposed development shall be on the multisectoral basis. Special emphasis should be laid on Flood Control and drainage and seepage control measures while preparing basin/sub-basin plans. The plan should include the following :

1. Irrigation Development including flood control and drainage.
2. Drinking water.
3. Hydro power development.
4. Industrial use including Agro-industries.
5. Navigation and Recreation.
6. Ecological requirements.

The plan of development should be so designed so as to achieve the targets within the stipulated time frame and indicate broad financial forecasts. The financial forecast for the layout of technical secretariat and S.W.R.D.C. of the State Water Board shall be indicated.

The water resources development Plan shall have necessarily to be prepared collectively by all the concerned user department spelling out time schedule and financial forecasts.

For the sector of Major and medium Irrigation development the perspective plan features are as follows :-

|      |   |                  |
|------|---|------------------|
| 1-   | Ultimate Irrigation Potential   | 12.5 million ha. |
| 2-   | Potential created upto end of VIII Plan                                   | 7.04 million ha. |
| 3-   | No of Schemes at the beginning of IX Plan                                 | 29               |
| 3(a) | Irrigation Potential likely to be created on completion of these schemes. | 2.9 million ha.  |
| 4-   | Schemes to be completed during the plan period.                           | 20               |
| 5-   | Total cost of completion of schemes (1997 base)                           | 4700 crores      |

|     |   |                  |
|-----|---|------------------|
| 6-  | Minimum requirement of funds for IX Plan.                 | 3800 crores      |
| 7-  | Irrigation Potential likely to be created during IX Plan. | 1.0 million ha.  |
| 8-  | Scheme identified but not started yet.                    | 34 Nos.          |
| 9-  | Additional Irrigation Potential                           | 2.56 million ha. |
| 10- | Total cost of Projects during X Plan and upto year 2020   | 20,000 crores    |
| 11- | Irrigation Potential likely to be created.                | 5.46 million ha. |

Hydro Power development and drinking water sectors are the other major cost intensive sectors vis-à-vis water resource development.

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