

# **Guidelines finalized by the Task Force for ILR after deliberation in the 4<sup>th</sup> meeting**

## **Chapter 2**

### **Basin and Sub-basin**

- 1 If the variation in catchment area of any basin/ sub-basin between NWDA and State Govts. figures is within 5% there is no need to revise the figures.

## **Chapter 3**

### **I Soils, Land Use, Delta and Water use**

- 1 The present practice of obtaining land use data of the basins from the land use statistics collected by the Directorate of Economics and Agriculture Statistics of various States may be continued by the NWDA.
- 2 It was agreed that in case of such future projects for which project reports have already been approved by CWC, the cropping pattern as given therein should be considered and for other future projects cropping pattern will be based on the availability of water and agro-climate zone.
- 3 Fodder crops should be included in the cropping patterns recommended by the NWDA in the water balance studies.
- 4 The culturable command area (CCA) need not be projected to 2025 AD/2050 AD and it would be adequate to consider the maximum culturable area of recent five years.
- 5 The permanent pastures and other grazing land need not be included in the culturable area of the basins / sub-basins and no separate provision would be necessary for irrigating the permanent pastures and other grazing lands.

## **Chapter 5**

### **Water Availability**

#### **Computation of Yield**

- 1 The yield studies carried by using the rainfall-runoff correlations taking monsoon months as a whole would be continued.
- 2 In case where there are no G&D sites or the existing G&D sites cover only a small portion of the catchments, rainfall-runoff relationship obtained for the adjoining hydro-meteorologically similar basin/ sub-basin may be adopted.
- 3 Regeneration from upstream utilisation of both in-basin and imported waters should be considered in the assessment of virgin yields.

- 4 The surface water yield need not be worked out at the state boundaries. The existing procedure for deciding the best-fit equations on the basis of the minimum standard error of estimate might continue.
- 5 Hydrological studies may be updated after a period of 10 years when additional data will be available.
- 6 Though the computer programmes of all the alternative methods have been developed but for water balance studies linear/non-linear type of correlation could continue.
- 7 Import/Export: - While updating the water balance studies export/import of one sub-basin may be compared with the figures for corresponding basin/ sub-basins. Unallocated export/import may be reconciled. The hydrological checks as above may be made for the import/ export figures also.

### **Water Availability**

- 1 The water balance study may project water availability at both 75% and 50% dependability. However, the proposed schemes should provide for a 75% success rate.
- 2 The water balance study should consider the surface water resources only while estimating the water balance in a river basin/sub-basin
- 3 Water availability upto the project site to be checked on the basis of the following:
  - I. Flow series are based on observed data and corrected for existing utilization.
  - II. Extended flow series are based on rainfall-runoff correlations for the project site.
  - III. Extended flow series based on rainfall-runoff correlations for the nearest hydro-meteorologically similar watershed.
  - IV. Prorata Basis
    - 50% and 75% yield computed as above may further be adjusted for the ultimate utilizations upstream, exports and imports to compute 50% and 75% dependable availability.
    - Water utilizations for any project should be restricted to a maximum of 75% dependable availability in case of diversions. However, for storage projects requirement may exceed 75% dependable availability with provisions of carryover storage.
    - Suitability of dam site: This aspect may be accepted as per the information provided by the State Governments/Master Plan.

## **Ground Water**

- 1 The NWDA studies may consider surface water resource only while estimating water balance, so that consumptive use of surface and ground water can be planned while preparing DPR of Water Resources Projects. The groundwater potential may not be considered as an available resource for the water balance studies being done by NWDA.
- 2 The NWDA studies may consider the gross groundwater potential of the basin/sub-basin assessed from the statistics supplied by the CGWB/State Groundwater Boards (SGWB) and subtract the domestic and industrial uses estimated by the NWDA to be met from groundwater resources for obtaining the available groundwater potential.

## **Chapter 6**

### **Water Requirements**

#### **Domestic and industrial water requirement**

- 1 The 50% of the rural water requirement and entire livestock water requirement is proposed to be met from groundwater sources. The urban water requirement in full and 50% of the rural water requirement is to be met from surface water sources.
- 2 Entire industrial water requirement is to be met from surface water sources.
- 3 The per capita water requirements @ 135 lts. and 50 lts. for urban and rural population may be adopted in the NWDA studies with 80% of the water returning back to the system.
- 4 In order to update the water balance studies it was decided that while revising the studies population projections may be made upto 2050 AD as per latest revision of UN publication "world population prospectus" on medium variant growth rate.

#### **Salinity Control**

- 1 A lump sum provision of 10% of the 75% dependable yield will be earmarked for salinity control tentatively pending detailed studies in this area.

#### **Water releases in the river for environment and ecology**

- 1 Regarding how much quantity of water to be released in the river for environment and ecology, it was decided that this issue may be finalized through an expert committee or by the Ministry of Environment and Forests.

- 2 After meeting downstream requirements a minimum lean season flow of 10% of the inflow at diversion structures should be maintained for environmental and ecological purposes with storages. This could be of the order of 10% of the average lean season natural flow downstream of the storage.

### **Annual Irrigation**

- 1 The intensity of irrigation in the case of existing and ongoing projects will be as per the present use. Under Peninsular river development component for the future projects, the intensity may be based on recommended cropping pattern considering the agro-climatic zone and available water at 75% dependable flow. However maximum intensity of irrigation may be restricted to 150% for major projects, 125% for medium projects and 100% for minor projects. The studies should also consider possibility of augmentation in the existing storages to increase the present intensity of irrigation, wherever this is less than the percentages indicated above for the future projects.
- 2 Any surplus surface water for transfer should be assessed only after considering the water needs of the basin for extending irrigation to atleast 60% of net culturable area.

### **Area to be Brought under Irrigation by 2050 AD**

- 1 In water deficit areas, the first attempt should be to cover at least 60% of the culturable area of the basin/ sub-basin by irrigation from surface water.
- 2 In case of deficit basins/sub-basins, where the percentage of existing irrigation from surface water is around 30% of the culturable area, the NWDA may consider extending irrigation facilities to 60% of the culturable area and the additional area to be brought under irrigation would be for a single dry crop without considering any high water consuming crop like sugarcane and paddy.
- 3 The command area of each proposed project may be examined with regard to availability of culturable area overlap with other projects etc. at the time of updating the water balance studies.

### **Irrigation Water Requirement**

- 1 The water requirement for irrigation should be worked out on climatological approach and reasonable provisions made for the field and transmission losses as well as evaporation from the storages.
- 2 In case of future studies irrigation efficiencies of 65% for major and medium projects with a regeneration value of 20% and irrigation efficiency of 80% for minor projects without considering any regeneration shall be considered while working out GIR.

- 3 The evaporation losses may be based on the available data for the existing major and medium reservoirs in and around the basin. Any figure for evaporation losses which is accepted in Tribunal Awards or agreements between the states may be taken for the NWDA studies for the concerned basin/ sub-basin.
- 4 The reservoir evaporation losses may be worked out based on the evapo-transpiration data available in the vicinity. However, in the absence of actual data, 20% of the withdrawals from the reservoir may be considered as evaporation losses.
- 5 While presenting the requirements of projects located within sub-basins and basins, the allocations indicated by the awards/agreements will be retained in the studies without any change.

### **Regeneration**

- 1 In the case of Krishna, Godavari and other basins, where Tribunal Awards are available, the estimated regeneration to the stream for irrigation, domestic, industrial and other uses for the NWDA studies might be as specified in the Award. In the case of other basins/sub-basins, the estimated regeneration in the NWDA studies might be at the rate of 20% of the irrigation use from major and medium irrigation projects, no regeneration from minor irrigation projects and 80% from both of the domestic and industrial uses from surface water resources. No regeneration would be assumed for domestic and industrial uses from groundwater resources. The percentage of regeneration may undergo change based on the scientific studies to be carried out in this regard.

### **Special Technical Points related to Himalayan Component Studies**

#### **1 Intensity of irrigation**

Considering availability of considerable groundwater potential in the basins of the Himalayan rivers, it was decided that the areas where existing irrigation intensity is less than 100%, the same maybe increased to level of 100% from surface water. Wherever, the existing intensity of irrigation is more than 100% the intensity can remain at the same level. Additional intensifications over and above those indicated above may be carried out by using groundwater to encourage conjunctive use and to avoid the problems of water logging and salinity.

#### **2 Irrigation in the enroute areas**

The areas enroute of the link canals not covered by any other irrigation scheme may be provided with irrigation to the extent of 100% intensity from the surface water and any additional irrigation by groundwater.

### **3 Irrigation in the target areas**

The target area should be covered by extensive irrigation and an intensity of not more than 100% should be provided from the transferred water.

### **4 Water requirements downstream of diversion points**

While carrying out water balance studies at the point, where diversions are contemplated, the water requirements will also include the committed utilizations and additional requirements of downstream areas, which cannot be met from the water available downstream.

### **5 Seasonal water balance**

Water balance study at diversion points where reservoir is contemplated will be carried out on annual basis as most of the flows can be considered to be regulated. However, at diversion point where reservoirs are not contemplated, water balance study will be carried out on a seasonal basis.

### **Allowable Lifting of Water for Inter Basin Water Transfer Links**

Present maximum allowable limit of lift 120m may be enhanced beyond 120m but subject to techno-economic viability of the project and ensuring that the economic cost of pumping / electricity charges has to be taken into account and not the subsidized cost of pumping / electricity charges)

### **Guidelines regarding the extent of Surveys and Investigations Necessary for Preparation of Feasibility Report**

#### **1 Inter-State links**

The guidelines as prepared by NWDA regarding the extent of Surveys and Investigations necessary for preparation of Feasibility Report accepted by the TAC.

#### **2 Intra-State link proposals**

Regarding technical guidelines for preparation of PFR/FR of Intra-State links, Director General, NWDA proposed to follow same technical guidelines as adopted for surveys and investigations for preparation of feasibility report of Inter basin water transfer proposal prepared and got approved from TAC in 1996. TAC agreed to use these guide lines for preparation of Feasibility Report of Intra State link proposals also.