

4.1.5. PROJECTS- IRRIGATION & MULTI PURPOSE (MP)

1.0 Subject Matter (May include sub heading, data, graphs etc.)

- Details of completed irrigation/MP Projects and Irrigation potential created and utilized by them. (Table 8 with a GIS based map)
- Details of ongoing irrigation/MP Projects and Irrigation potential to be created by them. (Table 9 with a GIS based map)
- Details of planned/proposed irrigation/MP Projects and Irrigation potential planned to be created by them. (Table 10 with a GIS based map)
- Details of completed, ongoing and planned/proposed ERM (Extension, Renovation and Modernization) Projects and irrigation potential restored. (Table 11)
- The extent of area covered by micro irrigation in each project may be given.

2.0 Availability & Utilizable Water (Tables 1 to 7 and Annexure Tables 12 to 14)

Table 1

| A5. Storage in Major Reservoir/Projects (MCM) as on 1st June (Cultivable Command Area > 10000 Hectares) | REMARKS |
|--|----------------|
| Projects in Basin A/ Sub-basin | |
| Projects in Basin B/ Sub-basin | |
| Projects in Basin C/ Sub-basin | |
| TOTAL | |

Table 2

| A6. Storage in Medium Reservoir/Projects (MCM) as on 1st June (CCA in between 2000 & 10000 Hectares) | REMARKS |
|---|----------------|
| Projects in Basin A/ Sub-basin | |
| Projects in Basin B/ Sub-basin | |
| Projects in Basin C/ Sub-basin | |
| TOTAL | |

Table 3

| A7. Storage in Minor Reservoir/Projects (MCM) as on 1st June (CCA < 2000 Hectares) | REMARKS |
|---|----------------|
| Projects in Basin A/ Sub-basin | |
| Projects in Basin B/ Sub-basin | |
| Projects in Basin C/ Sub-basin | |
| TOTAL | |

Total and Live Storage data in all Major/Medium/Minor projects (in MCM) as on 31st May of the previous year also may be provided in 3 similar tables as above for closing the water balance of the last year.

Table 4

| B3. Utilization of Surface Water: Major Projects* (MCM) | REMARKS |
|--|----------------|
| Abstractions/Withdrawals during filling season in MCM | |
| Projects in Basin A/ Sub-basin | |
| Projects in Basin B/ Sub-basin | |
| Projects in Basin C/ Sub-basin | |
| Live Storage available after filling season in MCM | |
| Projects in Basin A/ Sub-basin | |
| Projects in Basin B/ Sub-basin | |
| Projects in Basin C/ Sub-basin | |

| Inflow during post filling season in MCM | | |
|---|--|--|
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| TOTAL | | |

**similar exercise to be carried out for under construction and proposed projects after their commissioning*

Table 5

| B4. Utilization of Surface Water: Medium Projects* (MCM) | | REMARKS |
|---|--|----------------|
| Abstractions/Withdrawals during filling season in MCM | | |
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| Live Storage available after filling season in MCM | | |
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| Inflow during post filling season in MCM | | |
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| TOTAL | | |

**similar exercise to be carried out for under construction and proposed projects after their commissioning*

Table 6

| B5. Utilization of Surface Water: Minor Projects* (MCM) | | REMARKS |
|--|--|----------------|
| Abstractions/Withdrawals during filling season in MCM | | |
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| Live Storage available after filling season in MCM | | |
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| Inflow during post filling season in MCM | | |
| Projects in Basin A/ Sub-basin | | |
| Projects in Basin B/ Sub-basin | | |
| Projects in Basin C/ Sub-basin | | |
| TOTAL | | |

**similar exercise to be carried out for under construction and proposed projects after their commissioning*

The water that is lost from the System through evaporation from water bodies would come in this Table 7 as another Outflow from the System Boundary in an annual scale.

Table 7

| D4. Evaporation ** from all Surface Water Bodies (MCM) in a Water Year | | REMARKS |
|--|--|---------|
| Basin A/ Sub-basin | | |
| Basin B/ Sub-basin | | |
| Basin C/ Sub-basin | | |
| TOTAL | | |

** Evaporation from the open water surfaces like Reservoirs, lakes, ponds, tanks and wetlands can be estimated using one of the standard methods like Pan Evaporation Method, Priestly-Taylor or any other standard and simple methods.

Evaporation from smaller water bodies may be clubbed together for ease and simplicity.

3.0 Issues and Challenges (Text)

4.0 Problem Tree/ Root cause Analysis: Cause, Effect and Interventions (Text)

5.0 Governance/ Management:

- Statute/ Law/ Policy/ Regulations if any (Text)
- Institutions governing/ managing/ monitoring the resources and Institutional structure. (Text)
- Areas of Peoples/Private Participation if any (Text)
- Schemes & Financing (Text) [Also, relevant tables on Water Financing and Economics may be looked into Chapter 7 and filled up with appropriate data/information]

6.0 Measurement, Monitoring and Data Constraints/ Management: (Text)

Annexure may include various Project Details like Area-Elevation-Capacity Tables/Curves, Reservoir Operation Rule Curve, Spillway Rating Curve, Canal Head-works discharge data or utilization data, Evaporation data, Bathymetry Data on Sedimentation of reservoirs etc.

7.0 Performance Indicators: For comparison across Projects/ Districts (Table A)

Table A: Performance Indicators for Projects (Every Water Year)

| Performance Indicator | Norm/ Benchmark | Project 1 | Project 2 | ... | Project N |
|--|--------------------|--------------|--------------|-----|--------------|
| Measurement/ Water Quantity | | | | | |
| Whether measurement of flow through Canals is in practice? (Y/N) | Y | | | | |
| Whether flow measuring devices are installed on canal/distribution network? (Y/N) | | | | | |
| Whether flow measuring devices are calibrated before rotation start in every year? (Y/N) | | | | | |
| Whether measurement of water abstracted through Intake Wells is done? (Y/N) | | | | | |
| Whether measurement of water lifted through pumps is carried out for Lift Schemes? (Y/N) | | | | | |
| Water spilled downstream as % of Total Water Availability at that location (%) | | | | | |
| Percentage of actual evaporation losses to live storage (%) | | | | | |
| Percentage of unutilized water to live storage (%) | | | | | |
| % of distributaries where volumetric measurement is in place (%) | | | | | |
| Percentage of Dead Storage filled up with sediment (%) | | | | | |
| Whether Internal Water Audit was undertaken last year? (Y/N) | | | | | |
| Whether Third Party Water Audit was undertaken last year? (Y/N) | | | | | |
| Ground water utilized as % of total water used in irrigation (in Kharif Season) | | | | | |
| Ground water utilized as % of total water used in irrigation (in Rabi Season) | | | | | |
| Ground water utilized as % of total water used in irrigation (in Hot Weather Season) | | | | | |
| Productivity Indicators | | | | | |
| Whether design crop cycle is being practiced in the command? (Y/N) | | | | | |
| Agriculture Productivity of different crops (T/Ha) | | | | | |
| Water Productivity of different crops per unit irrigation water supplied (T/cum) | | | | | |
| Economic Productivity of different crops (Rs./Ha/cum) | | | | | |
| Irrigation Water Demand / Irrigation Water Supply (%) | | | | | |

| Performance Indicator | Norm/ Benchmark | Project 1 | Project 2 | ... | Project N |
|--|--------------------|--------------|--------------|-----|--------------|
| Measurement/ Water Quantity | | | | | |
| Whether measurement of flow through Canals is in practice? (Y/N) | Y | | | | |
| Whether flow measuring devices are installed on canal/distribution network? (Y/N) | | | | | |
| Whether flow measuring devices are calibrated before rotation start in every year? (Y/N) | | | | | |
| Whether measurement of water abstracted through Intake Wells is done? (Y/N) | | | | | |
| Whether measurement of water lifted through pumps is carried out for Lift Schemes? (Y/N) | | | | | |
| Percentage Area of Command covered under micro irrigation (%) | | | | | |
| Irrigation Potential Utilized/ Irrigation Potential Created (%) | 100 % | | | | |
| Annual water supplied per unit of irrigated area (MCM/Thousand Ha) | | | | | |
| Area irrigated per unit of water supplied in Kharif Season (Ha/MCM) | | | | | |
| Area irrigated per unit of water supplied in Rabi Season (Ha/MCM) | | | | | |
| Area irrigated per unit of water supplied in Hot Weather Season (Ha/MCM) | | | | | |
| Water Quality | | | | | |
| Reservoir Water Quality Parameters | | | | | |
| Water Use Efficiency Indicators | | | | | |
| Whether in areas under micro-irrigation, installation of Drip/ Sprinkler has been completed? (Y/N) | | | | | |
| Average surface water use efficiency in irrigation (%) | | | | | |
| Average ground water use efficiency in irrigation (%) | | | | | |
| % Length of Canals as Lined Canals (%) | | | | | |
| Reservoir Storage/Diversion Efficiency (%) | | | | | |
| Conveyance Efficiency (%) | | | | | |
| On-Farm Water Use Efficiency (%) | | | | | |
| Drainage Efficiency (%) | | | | | |
| % of area irrigated on volumetric basis, though may be charged on area basis | | | | | |
| Peoples Participation Indicators | | | | | |
| Percentage of developed irrigation command brought under WUAs (%) | 100 % | | | | |
| Percentage of developed irrigation command managed by WUAs (%) | 100 % | | | | |
| Whether Tail-enders is getting adequate water? (Y/N) | | | | | |
| Whether irrigation from tail to head is being practiced? (Y/N) | | | | | |
| % of Irrigation Service Fee retained by WUAs compared to fees collected by them (%) | | | | | |
| Financial Indicators | | | | | |
| Whether Irrigation Cess is being collected? (Y/N) | | | | | |
| Cost Recovery Ratio | 1.0 | | | | |
| O&M Cost per unit command area | | | | | |
| O&M Cost per unit water supplied | | | | | |
| Revenue generated per unit water supplied | | | | | |
| Cost incurred for generating per unit energy (Crores/ MW) | | | | | |

8.0 Reforms undertaken/ being undertaken/ proposed if any (Text)

9.0 Road map of activities/ tasks proposed for better governance with timelines and agencies responsible for each task/ activity. (Text)

- a. Better Governance
- b. Better source/ supply management
- c. Better demand management
- d. Water Quality
- e. Water Economics & Financing
- f. Sustainable Water Budgeting

Annex 8

Details of Completed Projects (as on 1st of June of the present water year)

| S. No. | Basin/ Sub-basin | Name of Project and Type (Major/ Medium/ Minor) | CCA | Taluka and District | FRL | MDDL / DSL | Capacity at FRL | Capacity at MDDL / DSL | Live Storage | IP created | IP utilized | Hydropower potential generated | Area covered under Micro irrigation Lakh Ha | Spillway Capacity | Design Flood | Total Storage as on 1 st June | Withdrawals during the filling season | Live Storage after filling season | Total inflow during post filling season |
|--------|--------------------------|--|-----|---------------------|-----|------------|-----------------|------------------------|--------------|------------|-------------|--------------------------------|--|-------------------|-------------------|--|---------------------------------------|-----------------------------------|---|
| | | | | | (m) | (m) | (MCM) | (MCM) | (MCM) | Lakh Ha | Lakh Ha | MW | Lakh Ha | m ³ /s | m ³ /s | MCM | MCM | MCM | MCM |
| | Basin/ Sub-basin A | Project 1 | | | | | | | | | | | | | | | | | |
| | | Project 2 | | | | | | | | | | | | | | | | | |

Annex 9

Details of Ongoing Projects (as on 1st of June of the present water year)

| S. No. | Basin/ Sub-basin | Name of Project and Type of Project (Major/ Medium/ Minor) | Taluka and District | FRL | MDDL / DSL | Capacity at FRL | Capacity at MDDL / DSL | Live Storage | IP creation envisaged | Hydropower potential envisaged | Area proposed to be covered under Micro irrigation | Spillway Capacity |
|--------|---------------------|--|---------------------|-----|------------|-----------------|------------------------|--------------|-----------------------|--------------------------------|--|-------------------|
| | | | | (m) | (m) | (MCM) | (MCM) | (MCM) | Lakh Ha | MW | Lakh Ha | m ³ /s |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Annex 10

Details of Proposed Projects (as on 1st of June of the present water year)

| S. No. | Basin/ Sub-basin | Name of Project and Type | Taluka and District | FRL | MDDL / DSL | Capacity at FRL | Capacity at MDDL / DSL | Live Storage | IP creation envisaged | Hydropower potential envisaged | Design Flood | Spillway Capacity |
|--------|---------------------|--------------------------|---------------------|-----|------------|-----------------|------------------------|--------------|-----------------------|--------------------------------|-------------------|-------------------|
| | | | | (m) | (m) | (MCM) | (MCM) | (MCM) | Lakh Ha | MW | m ³ /s | m ³ /s |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Annex 11**Details of Completed, Ongoing, and Proposed ERM Projects (as on 1st of June of the present water year)**

| S. No. | Basin/ Sub-basin | Name of Project and Type | Nature of Project (Extension / Renovation / Modernization) | Taluka and District | Serves Tribal / DP Area | Start Year | Year of completion | Total Cost | IP Restored / proposed to be restored | Expenditure per unit of IP restoration | Central Funding |
|--------|------------------|--------------------------|--|---------------------|-------------------------|------------|--------------------|------------|---------------------------------------|--|-----------------|
| | | | | | | | | Crore Rs | Lakh Ha | Lakh Rs / Ha | Crore Rs |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Annex 12**Annual Water Availability, Sector wise Demand and Supply for Major Projects (MCM): For the reporting water year on annual basis**

| S. No. | Basin/ Sub-basin | Name of the Project | Annual Water Availability | Farm Sector | | | Domestic Sector (Rural & Urban) | | Industries & Infrastructure | | Establishments & Institutions | | e-flow | Spillage downstream | Evaporation Losses | Total Water Supplied | Total Water remaining as on 31 st May |
|--------|------------------|---------------------|---------------------------|-------------|--------|----------------|---------------------------------|--------|-----------------------------|--------|-------------------------------|--------|--------|---------------------|--------------------|----------------------|--|
| | | | | Demand | Supply | Area Irrigated | Demand | Supply | Demand | Supply | Demand | Supply | | | | MCM | MCM |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Annex 13**Annual Water Availability, Sector wise Demand and Supply for Medium Projects (MCM): For the reporting water year on annual basis**

| S. No. | Basin/ Sub-basin | Name of the Project | Annual Water Availability | Farm Sector | | | Domestic Sector (Rural & Urban) | | Industries & Infrastructure | | Establishments & Institutions | | e-flow | Spillage downstream | Evaporation Losses | Total Water Supplied | Total Water remaining as on 31 st May |
|--------|------------------|---------------------|---------------------------|-------------|--------|----------------|---------------------------------|--------|-----------------------------|--------|-------------------------------|--------|--------|---------------------|--------------------|----------------------|--|
| | | | | Demand | Supply | Area Irrigated | Demand | Supply | Demand | Supply | Demand | Supply | | | | MCM | MCM |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Annex 14

Annual Water Availability, Sector wise Demand and Supply for Minor Projects (MCM): For the reporting water year on annual basis

| S. No. | Basin/ Sub-basin | Name of the Project | Annual Water Availability | Farm Sector | | | Domestic Sector (Rural & Urban) | | Industries & Infrastructure | | Establishments & Institutions | | e-flow | Spillage downstream | Evaporation Losses | Total Water Supplied | Total Water remaining as on 31 st May |
|--------|------------------|---------------------|---------------------------|-------------|--------|----------------|---------------------------------|--------|-----------------------------|--------|-------------------------------|--------|--------|---------------------|--------------------|----------------------|--|
| | | | | Demand | Supply | Area Irrigated | Demand | Supply | Demand | Supply | Demand | Supply | | | | MCM | MCM |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |