

CHAPTER - 7

WATER RESOURCES

7.1 Water scarcity has become acute due to over exploitation of ground surface water and erratic & untimely rainfall. State has 1.16 per cent of India's water resources in the form of annual rainfall. The surface water resources get exhaust before the commencement of next rainy season. The severity of water can be best realized from the following table:

Table No. 7.1
Contribution of Rajasthan

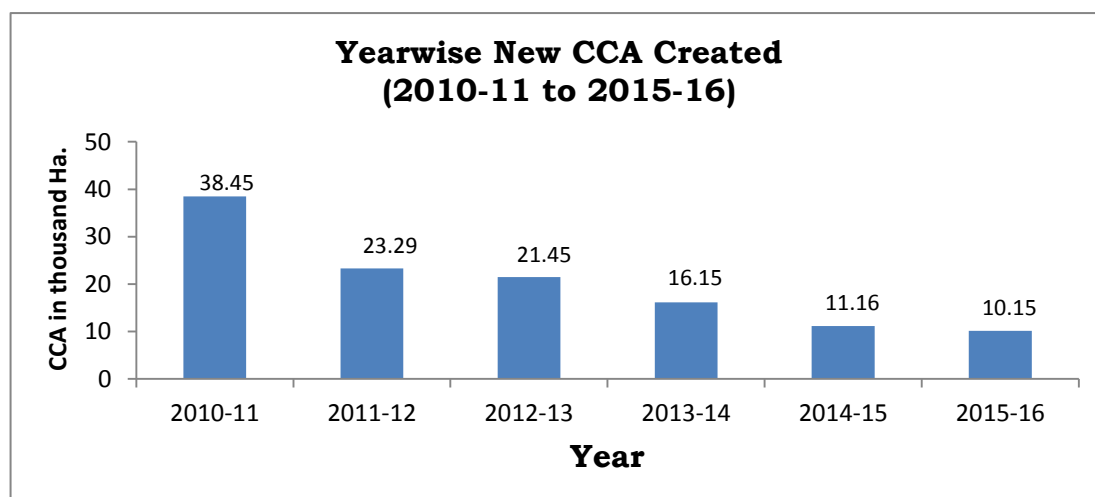
| Parameter | Share of State in Nation (in per cent) |
|-----------------|--|
| Area | 10.41 |
| Population | 5.66 |
| Livestock | 11.27 |
| Cultivable area | 13.88 |
| Surface water | 1.16 |
| Ground water | 1.70 |

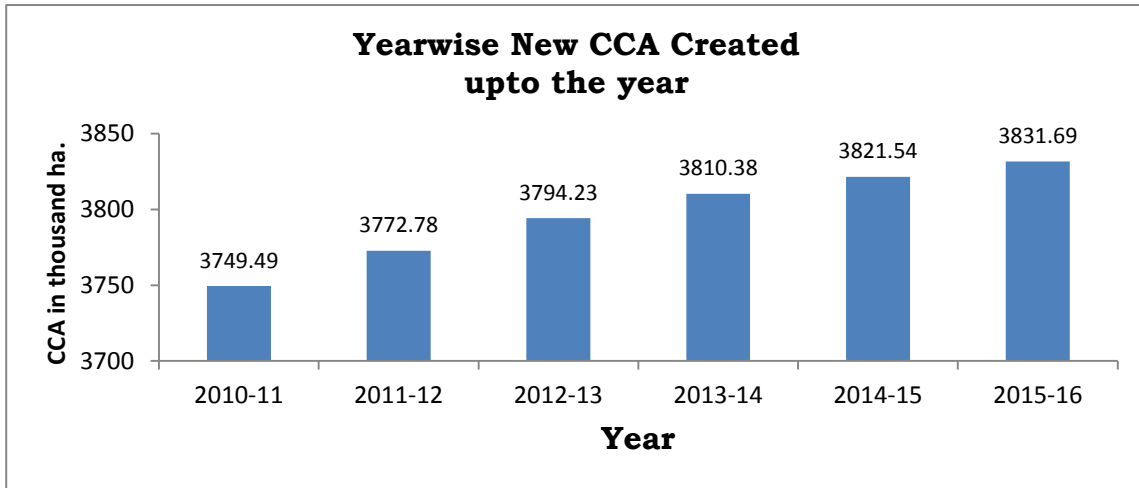
7.2 Total 3831.69 thousand ha. Culturable Command Area (CCA) has been created up to March, 2016 in the State.

Table No.7.2
Year-wise CCA Created during the Last Six Years

(In thousand Ha.)

| Year | CCA created during the Year | CCA created up to the Year |
|---------|-----------------------------|----------------------------|
| 2010-11 | 38.45 | 3749.49 |
| 2011-12 | 23.29 | 3772.78 |
| 2012-13 | 21.45 | 3794.23 |
| 2013-14 | 16.15 | 3810.38 |
| 2014-15 | 11.16 | 3821.54 |
| 2015-16 | 10.15 | 3831.69 |



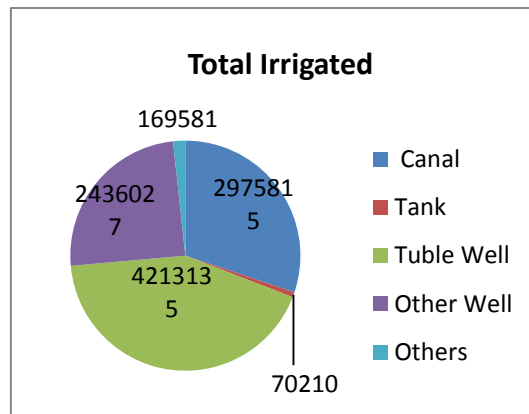
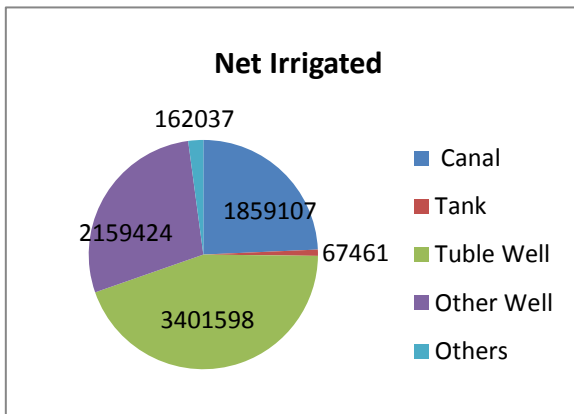


7.3 The net irrigated and total irrigated area by canal, tank, tube well, other well and other sources in 2013-14 is 7649627 ha and 9864768 ha. respectively. The details of source wise irrigation are given in the following table:

Table No. 7.3
Source wise irrigation in 2013-14

(Area in ha.)

| Source | Canal | Tank | Tube Well | Other Well | Other Sources | Total |
|-----------------|---------|-------|-----------|------------|---------------|---------|
| Net Irrigated | 1859107 | 67461 | 3401598 | 2159424 | 162037 | 7649627 |
| Total Irrigated | 2975815 | 70210 | 4213135 | 2436027 | 169581 | 9864768 |



7.4 The droughts put tremendous pressure on natural resources and lead to severe scarcity of water, food and fodder. The major causes of droughts are its geographical location not favouring abundant monsoon rainfall, poor and deep ground water limiting its uses for irrigation, absence of perennial rivers and forests, the poor water holding capacity of the soil and huge withdrawal of limited ground water resources. The increased pressure of both human and livestock population during the last decade has also affected the land, vegetation and surface/ground water resources.

7.5 There are 15 defined river basins in the State. The total available water in the State is 21.7 BCM, out of which 16.05 BCM surface water is utilizable economically. So far 11.99 BCM surface water has been harnessed, which is 74.70 per cent of the economically surface water.

7.6 Both surface water resources and ground water resources are a matter of immediate concern for the State. Therefore, conservation, preservation and optimum utilization of every drop of water constitute the core of water resources planning and management in the State. The role of the State in the integrated development of water resources is gradually evolving from that of owner to that of facilitator. The State Water Policy focuses on paradigm shift from engineering based solutions to community based management system. Thus the role of Water User Associations (WUAs) and NGOs assumes greater importance in water management. The focused attention in the Twelfth Plan period would be on harnessing the remaining surface water, reducing gap between irrigation potential created & utilized, strengthening WUAs, water harvesting, improve irrigation efficiency with shift from surface irrigation to adoption of drip & sprinkler irrigation system and from traditional cropping pattern to new less water requiring crops.

7.7 The challenges of water sector are multifaceted. Following are some of the important issues which have to be addressed by the strategic planning in water sector:

- Inequality of access and uncertainty of water, deteriorating water quality, high cost of service, low recovery of cost and low expenditure on O & M.
- Lack of ownership among the stakeholders.
- Low water charges.
- Out dated and unaccountable governance institutions for water management.
- Over exploitation of ground water.
- Lack of consensus among stakeholders on water sector reforms.

7.8 The above background leads to the following priorities and activities for water resources development and management:

- Optimum development and utilization of water resources on sustainable basis.
- Integrated water resources planning.
- Improving irrigation efficiency : more crop per drop of water
- Providing flood protection and drainage facilities
- Ensuring proper functioning of existing structures, conveyance systems and other assets through adequate maintenance and operation.

- Minimizing adverse impacts of water resources development on the natural environment and on population affected by project implementation works.
- Promoting beneficiaries' participation in all aspects of water planning and management, with particular emphasis on Water User Associations intended to manage and maintain irrigation systems, both physically and financially.
- Advancing the technological and scientific level of all the staff in the water sector through intensification of applied research, technology transfer, training and education.
- Facilitating private initiative in development, operation and management of water projects.
- Human Resource Development.
- Institutional reforms.
- Water charges rationalization.
- Water resources information systems and awareness campaign

7.9 An outlay of ₹ 785390.53 lakh was fixed for water resources sector for the Twelfth Plan. An expenditure of ₹ 138439.97 lakh has been incurred in 2015-16 against an outlay of ₹171907.86 lakh. An outlay of ₹230060.74 lakh is kept for the Annual Plan 2016-17 which includes ₹14151.31 lakh of Central Assistance. Sub sector-wise details are given in the following table:

Table No. 7.4
Financial Outlays & Expenditure for Water Sector

(₹in lakh)

| S. No. | Scheme | Twelfth Plan Outlay | Outlay 2015-16 | Exp. 2015-16 | Outlay 2016-17 |
|--------|--------------------------|---------------------|------------------|------------------|------------------|
| 1. | Water Resources | 597884.16 | 109307.64 | 104175.68 | 158737.79 |
| 2. | Ground Water | 7500.00 | 140.00 | 138.73 | 168.00 |
| 3. | Command Area Development | 72506.37 | 30602.60 | 15984.39 | 30583.81 |
| 4. | IGNP | 107500.00 | 31857.62 | 18141.17 | 40571.14 |
| | Total | 785390.53 | 171907.86 | 138439.97 | 230060.74 |

WATER RESOURCE DEPARTMENT

7.10 The emphasis has been laid on harnessing of maximum water resources by investing enormous funds over plan periods (1951-2012). Irrigation potential has been increased from 4.00 lakh ha. (1951) to level of 38.32 lakh ha. by March, 2016 with the construction of 119 major & medium and 3324 minor irrigation projects. Work on major irrigation projects viz. Narmada Project, Yamuna Water Project, Parwan Project,

Modernization of Gang Canal, 6 medium irrigation projects viz. Gararda, Takli, Piplad, Lhasi, Gagrin, Rajgarh and 48 minor irrigation works are in progress.

7.11 An outlay of ₹597884.16 lakh was kept for various irrigation projects for the Twelfth Plan period. Additional irrigation potential of 88.97 thousand ha is to be created during the Twelfth Plan period against this 58.91 thousand ha. CCA has been created upto March, 2016. An expenditure of ₹104175.68 lakh has been incurred in 2015-16 against an outlay of ₹109307.64 lakh. An outlay of ₹158737.79 lakh is kept for the Annual Plan 2016-17 which includes ₹5197.42 lakh of Central Assistance. 17.73 thousand ha. Additional CCA will be created during the year 2016-17. Scheme-wise details are given in the following table:

Table No. 7.5
Financial Outlays

(₹in lakh)

| S. No. | Scheme | Twelfth Plan Outlay | Outlay 2015-16 | Exp. in 2015-16 | Outlay 2016-17 |
|--------|-----------------------------|---------------------|------------------|------------------|------------------|
| 1. | Multi-purpose Projects | 0.10 | 2145.00 | 2919.74 | 4269.07 |
| 2. | Major Projects | 233078.83 | 19201.07 | 14091.64 | 84953.77 |
| 3. | Medium Projects | 80016.00 | 5481.27 | 14314.42 | 8047.15 |
| 4. | Modernization of Gang Canal | 29766.40 | 5994.50 | 8901.04 | 1118.50 |
| 5. | Minor Projects | 243249.93 | 68172.25 | 55132.95 | 52071.33 |
| 6. | Water Management Services | 9260.05 | 7513.54 | 4549.13 | 5277.97 |
| 7. | Flood Control | 2512.85 | 800.01 | 4266.76 | 3000.00 |
| | Total | 597884.16 | 109307.64 | 104175.68 | 158737.79 |

Multi-Purpose Projects

7.12 For Various Multi-purpose projects, an expenditure of ₹2919.74 lakh has been incurred in 2015-16 against an outlay of ₹2145.00 lakh. An outlay of ₹4269.07 lakh is kept for the Annual Plan 2016-17.

Major Irrigation Projects

Central Assistance Projects

Narmada Project (under AIBP)

7.13 Narmada Canal Project was taken up to utilize 0.5 Million Acre Feet (MAF) of Narmada water allocated to Rajasthan from Sardar Sarova Project, Gujarat. The share of water was to be delivered at Rajasthan-Gujarat border through 458 Km long Narmada Main Canal (NMC). The water of river Narmada reached Rajasthan in the month of March, 2008. The canal system would provide irrigation in 2.46 lakh ha by adopting improved method of irrigation i.e. sprinklers irrigation system which is mandatory in this project. CCA of 2.39 lakh ha. has been created up to

March 2015. CCA of 6017 ha is created during 2015-16. The project would also provide drinking water facility to 1336 villages & 3 towns. Revised sanctioned cost of the project is ₹ 248149.00 lakh as approved by Planning Commission. An expenditure of ₹227611.35 lakh has been incurred up to March 2015. An expenditure of ₹9270.00 lakh has been incurred in 2015-16 against an outlay of ₹15100.00 lakh. An outlay of ₹10300.00 lakh is kept for the year 2016-17. This includes Central Assistance of ₹2352.22 lakh. The project is likely to be completed by March, 2017.

Modernization of Gang Canal (under AIBP)

7.14 The Gang Canal project is under operation since 1927 to provide irrigation in Sriganganagar district. The canal system has deteriorated over the years. The modernization project was prepared for the lining of Bikaner Canal in Punjab and canal system in Rajasthan portion. The project was started in 2000-01 and revised cost of the project (at 2008 price level) is ₹ 62142.00 lakh under AIBP. An expenditure of ₹62180.69 lakh has been incurred up to March, 2015. Under the project, additional irrigation potential of 96.51 thousand ha. was to be created, out of which 96.24 thousand ha. has been created up to March, 2015. An expenditure of ₹8901.04 lakh has been incurred in 2015-16 against an outlay of ₹5994.50 lakh. CCA 265 ha. is created during 2015-16. An outlay of ₹1118.50 lakh is kept for the year 2016-17. This Project is expected to be completed in 2016-17.

State Project

Yamuna Water Project

7.15 For utilization of 3195 Cusec Yamuna water allocated in 22nd meeting of Upper Yamuna River Board. Two separate major projects namely (i) Yamuna Water project for Bharatpur district and (ii) Yamuna Water Project for Jhunjhunu and Churu districts. An expenditure of ₹37.50 lakh has been incurred in 2015-16 against an outlay of ₹ 50.00 lakh. An outlay of ₹50.00 lakh is kept for the year 2016-17.

Parwan Irrigation Project

7.16 Parwan major irrigation cum drinking water project was proposed to be constructed in Jhalawar District on Parwan River near village Akawad for providing irrigation to 131400 ha. land of Kota, Baran and Jhalawar districts. The total cost of this project is ₹ 236043.00 lakh. An expenditure of ₹ 610.03 lakh has been incurred up to March, 2015. An expenditure of ₹77.89 lakh has been incurred in the year 2015-16 against an outlay of ₹1500.00 lakh. An outlay of ₹70000.00 lakh is kept for the year 2016-17.

Kalisindh Irrigation Project

7.17 Kalisindh Major Irrigation Project is proposed to be constructed on Kalisindh river near Bhanqarasa in Jhalawar district which will create an

irrigation potential of 14438 ha. Estimated cost of the project is ₹41676.00 lakh. Central Water Commission (CWC) has approved the project. CWC had conveyed, in- principle consent for preparation of DPR.

Dholpur Lift Irrigation Project

7.18 Dholpur Lift Irrigation Project is proposed to be constructed to irrigate 34665 ha land of Dholpur district. The hydrology of the project has been cleared by CWC, New Delhi with an estimated cost of ₹9060.00 lakh. Scheme includes 7.5 ha forest land (0.3 ha in Ghadyal Sanctuary and 7.2 ha in reserve forest). Case has been submitted for clearance to the CWC for 0.3 ha.

Medium Irrigation Projects

Gardada Irrigation Project

7.19 This irrigation project is under construction on river Mangli Dungari & Ganesh Nallah, a tributary of river Chambal. The dam site is located near village Polaspura in district Bundi. The project would provide irrigation in an area of 9161 ha. The work on this project was started in 2003. The estimated cost of the project is ₹ 24616.00 lakh. An expenditure of ₹13582.33 lakh was incurred up to March, 2015 and 950 ha. CCA was created. An expenditure of ₹211.54 lakh has been incurred in the year 2015-16 against an outlay of ₹820.97 lakh. No CCA has been created during the year 2015-16. An outlay of ₹400.00 lakh is kept for the year 2016-17.

Takli Irrigation Project

7.20 Takli irrigation cum drinking water supply project is under construction on river Takli, a tributary of Amjar and Kalisindh rivers. The dam site is located near village Dhankya in Kota district. The project would provide irrigation facility in an area of 7386 ha and drinking water facility to 4 villages and 2 towns of Ramganj mandi tehsil of Kota district. The revised cost of the project is ₹ 13144.00 lakh, out of which an expenditure of ₹11766.92 lakh was incurred up to March, 2015. No CCA has been created up to March 2015. An expenditure of ₹110.95 lakh has been incurred in the year 2015-16 against an outlay of ₹0.05 lakh. No CCA has been created during the year 2015-16. An outlay of ₹300.00 lakh is kept for the year 2016-17.

Piplad Irrigation Project

7.21 Piplad irrigation project is under construction on river Piplad, a tributary of Ahu river. The dam site is located near Sulia Chowki village in Bhawanimandi tehsil of Jhalawar District. The project would provide irrigation in an area of 4688 ha in 19 villages of Pachpahar tehsil. The estimated cost of the project was ₹ 9120.65 lakh. CCA of 4000 ha has been created up to March, 2015 by incurring an expenditure of ₹ 7825.20 lakh 688 ha. CCA has been created during the year 2015-16. An

expenditure of ₹468.21 lakh has been incurred under deposit head in the year 2015-16 against the outlay of ₹0.04 lakh. An outlay of ₹165.00 lakh is kept for the year 2016-17.

Gagrin Irrigation Project

7.22 Gagrin medium irrigation project is under construction on river Ahu, a tributary of Kalisindh river. The dam site is located near Kalapipal village of Pachpahar tehsil of Jhalawar district. The project would provide irrigation in an area of 7963 ha. Estimated cost of the project was ₹18529.00 lakh. An expenditure of ₹10671.94 lakh has been incurred up to March 2015. An expenditure of ₹1679.16 lakh has been incurred in the year 2015-16 against an outlay of ₹0.08 lakh. An outlay of ₹800.00 lakh is kept for the year 2016-17. No CCA has been created up to March 2016.

Lhasi Irrigation Project

7.23 Lhasi medium Irrigation Project envisages construction of earthen dam on river Lhasi near Khajuria village of Chhipabarod tehsil of district Baran. The project would provide irrigation in an area of 2539 ha. The revised cost of the project was ₹ 10695.00 lakh. An expenditure of ₹12251.29 lakh has been incurred up to March 2015. An expenditure of ₹887.54 lakh has been incurred in the year 2015-16 against an outlay of ₹0.05 lakh. No CCA has been created up to March 2015 and during the year 2015-16. An outlay of ₹800.00 lakh is kept for the year 2016-17.

Rajgarh Irrigation Project

7.24 This irrigation cum drinking water project is under construction on the confluence of Ahu and Kanthari rivers of Jhalawar district for providing irrigation to 6827 ha land of Jhalawar district. Estimated cost of the project was ₹ 19213.00 lakh. An expenditure of ₹4045.64 lakh has been incurred up to March 2015. An expenditure of ₹7107.00 lakh has been incurred in the year 2015-16 against an outlay of ₹2000.00 lakh. No CCA has been created up to March 2015 and during the year 2015-16. An outlay of ₹3000.00 lakh is kept for the year 2016-17.

New Medium Irrigation Projects:

7.25 Following new medium irrigation projects are proposed to be constructed under State Plan.

Manoharthana Irrigation Project:

7.26 This irrigation cum drinking water project was proposed to be constructed on Parwan River in Jhalawar district for providing irrigation to 9800 ha. land of Jhalawar district. Estimated cost of the project is ₹9310.00 lakh. Environmental clearance from State Environment Authority under State Pollution Department (constituted by MoEF, New Delhi) is yet to be obtained. An expenditure of ₹0.30 lakh has been

incurred in the year 2015-16 against an outlay of ₹20.00 lakh. An outlay of ₹5.00 lakh is kept for the year 2016-17.

Hatiyadeh Irrigation Project:

7.27 This irrigation project envisages construction of earthen dam on Hatiyadeh Nalla near Karwari Khurd village of Kishanganj tehsil in Baran district for providing irrigation to 6885 ha land of Baran district. Estimated cost of the project is ₹ 7066.00 lakh. This project is delayed due to want of Inter State Clearance from Madhya Pradesh as per requirement of Central Water Commission for further processing the DPR.

Andheri Irrigation Project:

7.28 This irrigation project envisages construction of earthen dam on river Andheri near Mundkiya village of Chhipa barod tahsil in Baran district for providing irrigation to 7700 ha land of Baran district. Estimated cost of the project is ₹ 8753.00 lakh. This project is delayed due to want of Inter State Clearance from Madhya Pradesh as per requirement of Central Water Commission.

Minor Irrigation Projects

7.29 The irrigation projects having CCA less than 2000 ha are called as minor irrigation projects. These projects have low cost and are completed in short gestation period. Such works create irrigation potential in arid and semi-arid region of the State, where scope of surface water is limited and the scope of exploitation of groundwater is very limited. An expenditure of ₹54819.55 lakh was incurred up to March 2015. An expenditure of ₹13152.22 lakh has been incurred in the year 2015-16 against an outlay of ₹3165.00 lakh. An outlay of ₹10000.00 lakh is kept for the year 2016-17, which includes Central Assistance of ₹ 600.00 lakh. In addition two minor irrigation projects (Guradia and Roshanbari of Jhalawar districts) of cost ₹ 10000.00lakh will be taken up during the year 2016-17.

Four Water Concept

7.30 For the use of rain water, surface water, soil water and ground water under four water concept, work of Micro Irrigation Projects and Check Dams on Bunad river of Mahi Basin and Ahu river of Chambal Basin has started under a pilot project. After that, the project has been implemented in the entire State and 364 micro irrigation projects and 195 check dams amounting to ₹149648.00 lakh were sanctioned in Mahi, Chambal, Sabarmati, Luni, Sukali and West Banas basin. An expenditure of ₹ 5356.00 lakh was incurred up to March 2015. An expenditure of ₹ 15654.49 lakh has been incurred in the year 2015-16 against an outlay ₹ 43655.55 lakh. 82 micro irrigation schemes and 48 check Dams have been completed up to March 2016. An outlay of ₹17626.31 lakh is kept for the year 2016-17.

Rajasthan River Basin and Water Resources Planning Authority

7.31 Rajasthan River Basin and Water Resources Planning Authority has been constituted under sub section (1) of section 5 of Rajasthan River Basin and Water Resources Planning Act 2015 (Act No. 15 of 2015). For the execution of activities of the Authority, "State Water Resources Advisory Council" under the chairmanship of Hon'ble Chief Minister of Rajasthan and "Rajasthan River Basin and Water Resources Planning Authority" under the chairmanship of chairman nominated by the State Government have been constituted. The power and functions of the Authority as per section 10 of the Act are as under:

- to recommend to the Council the integrated state water resources plan proposed by Water Resources Planning Department of the state government.
- to recommend to the Council water resources projects proposed by Water Resources Planning Department of the State Government on the basis of the basin and sub -basin wise plans.
- To ensure that the Integrated State Water Resources Plan and water resources projects proposed by Water Resources Planning Department of the State Government are in conformity with the economic, hydrologic and environmental viability and where relevant, are in consonance with the State's obligations under inter-state agreements and awards of water dispute tribunals.
- To ensure that Integrated State Water Resources Plan and water resources projects proposed by Water Resources Planning Department of the State Government are in conformity with concept of Integrated Water Resources Management.
- to recommend the Council inter basin water transfer from surplus to deficit basins including interlinking of rivers to ensure optimal and efficient utilization of surface water.
- To endeavor to develop navigational facilities for inland water transport in major rivers and canals
- to formulate action plan for making rivers and its streams perennial or sub-perennial by undertaking activities for
 - watershed development;
 - construction of micro or minor irrigation tanks;
 - construction of check dams downstream of micro or minor irrigation tanks ; and
 - construction of series of barrages on river streams;
- to secure compliance of all decisions, directions and resolutions passed by the Council,

- to coordinate with the departments of the state government for efficient implementation of water resources plans or projects,
- To facilitates and ensure development, maintenance and dissemination of a comprehensive hydro-meteorological information data base.
- To promote pressure irrigation for efficient use of water resourced.
- To pursue the interlinking projects of Sharda-Yamuna, Yamuna-Rajasthan and Rajasthan-Sabarmati and such other major river interlinking projects as the Council or the State Government may direct.

7.32 An expenditure of ₹148.00 lakh has been incurred in 2015-16. An outlay of ₹373.69 lakh is kept for the year 2016-17.

GROUND WATER DEPARTMENT

7.33 The water supply schemes in Rajasthan are basically dependent on ground water. There is acute stress on Ground Water reserves in the State on account of agricultural activities. Approximately 90 per cent extraction of ground water is for agricultural purpose. The exploitation of ground water in the State is 137.07 per cent in comparison to recharge. The condition has become more critical due to uncertain and scanty rainfall during the monsoon. Out of 248 blocks in the State, as per ground water Assessment Report 2013, only 44 blocks are in “safe” category, 28 in “semi critical category, 9 in “critical” and 164 in “overexploited” category. Three blocks are completely saline. The overall scenario of ground water availability is very grim.

7.34 The over exploitation of ground water has also resulted in deterioration of ground water quality. It is high time to harvest the rain water, which will help in replenishment of ground water resources in the State. Management of Ground Water should be carried out with participation of stake holders and in present scenario people participation is an effective tool for implementation of ground water related issue to manage it. Following activities were proposed to be taken up during the Twelfth Plan.

- Strengthening of Water Level Monitoring System
- Ground Water Assessment & Publication
- Community Awareness on Ground Water Situation
- Human Resources Development & Capacity Building
- Preparation of Recharge Master Plan

7.35 An outlay of ₹7500.00 lakh was kept for the activities of the department for the Twelfth Plan. An expenditure of ₹138.73 lakh has been incurred against an outlay of ₹140.00 lakh in 2015-16. An outlay of ₹168.00 lakh is kept for the Annual Plan 2016-17.

COMMAND AREA DEVELOPMENT

Command Area Development & Water Utilization Department

7.36 The Command Area Development Program aims to bridge the gap between irrigation potential created and its early utilization. This is achieved through construction of lined water courses, agriculture extension, adaptive research, soil surveys, anti logging and land reclamation works out of which On Farm Development (OFD) works, soil surveys are carried out on 50 per cent Central sharing basis. The main objectives of CAD Programs are as follows:

- Efficient utilization of water, minimizing of water losses through lining of canals, increasing canal capacity, installation of control structures, dissemination of improvement techniques.
- Maximizing gains from water use through On Farm Development Works, constructing improved and wider road network, improved agriculture techniques brought about by adaptive research and its dissemination through agriculture extension.
- Equitable distribution of water through wara bandi and greater control over canal system as a whole.
- Involvement of farmers in management of irrigation system through Participatory Irrigation Management by their active involvement.

7.37 During the Twelfth Plan, the priorities of CAD projects are as follows:

- Enhancing water use efficiency by reducing losses
- Efficient utilization of water through people participation
- Land development to improve water use efficiency
- Capacity building for efficient utilization of land & water resources.
- Transfer of new technologies to farmers.

7.38 The following strategies will be adopted to achieve the objectives of the project.

- Rehabilitation of irrigation system of the project area.
- Providing institutional & financial support to farmer's organization to make them self-sustainable.
- Training of members of farmer organizations including exposure trips. Adaptive trials, demonstration and field days for farmers.

7.39 An outlay of ₹72506.37 lakh was kept for Command Area Development for the Twelfth Plan. An expenditure of ₹15984.39 lakh is has been incurred in 2015-16 against an outlay of ₹30602.60 lakh. An outlay of ₹30583.81 lakh is kept for the Annual Plan 2016-17, which includes Central Assistance of ₹ 6305.49 lakh.

7.40 Outlays kept for the various activities for the Twelfth Plan, expenditure in 2015-16 and outlays for the Annual Plan 2016-17 are as follows:

**Table No. 7.6
Financial Outlays for CAD**

(₹in lakh)

| S. No. | Project | Outlay Twelfth Plan | Outlay 2015-16 | Exp. in 2015-16 | Outlay for 2016-17 |
|--------|-----------------------|---------------------|-----------------|-----------------|--------------------|
| 1. | CAD Secretariat | 395.00 | 126.72 | 112.24 | 126.59 |
| 2. | IGN Project, Bikaner | 1890.37 | 387.03 | 311.65 | 344.15 |
| 3. | Sidhmukh Nohar | 528.00 | 100.00 | 95.59 | 240.00 |
| 4. | Amarsingh Jassana | 330.00 | 100.00 | 320.82 | 240.00 |
| 5. | Mandi Committee | 450.00 | 100.00 | 77.88 | 100.00 |
| 6. | Gang Canal | 23378.00 | 7746.73 | 7850.35 | 6478.02 |
| 7. | Bhakra Canal Project | 6500.00 | 1552.83 | 991.45 | 2180.00 |
| 8. | Gang Canal Phase -II | 0.00 | 0.01 | 132.73 | 260.00 |
| 9. | Chambal Project, Kota | 31035.00 | 18335.94 | 5128.31 | 18371.29 |
| 10. | CAD, Bisalpur | 8000.00 | 2153.34 | 963.37 | 2243.76 |
| | Total | 72506.37 | 30602.60 | 15984.39 | 30583.81 |

Indira Gandhi Nahar Project, Bikaner

7.41 The following seven CAD Projects are controlled by the Commissioner, Command Area Development, Indira Gandhi Nahar Project located at Bikaner.

- Indira Gandhi Nahar Project
- Sidhmukh Nohar Irrigation Project
- Amarsingh Jassana Sub Branch Irrigation Project
- Gang Canal Project-I
- Mandi Development Committee
- Bhakra Nahar Project
- Gang Canal Project-II

7.42 OFD works in the total area of Indira Gandhi Nahar Project, Bikaner were completed covering 47,119 ha area during the Eleventh Plan period. Farmers are being benefited by the various activities of the project like agriculture extension, adaptive research, soil survey anti water logging and land reclamation. An expenditure of ₹311.65 lakh has been incurred in 2015-16 against an outlay of ₹387.03 lakh. An outlay of ₹344.15 lakh is kept for the project for the Annual Plan 2016-17.

Sidhmukh Nohar Irrigation Project

7.43 This project covers 1, 24,864 ha area of 99 villages of Hanumangarh and 14 villages of Churu district. Lined water courses

were completed in 98,310 ha. area by the end of Eleventh Plan, in 101416 ha. up to March 2015 and in 1,146 ha. During 2015-16. An expenditure of ₹95.59 lakh has been incurred in 2015-16 against an outlay of ₹100.00 lakh. An outlay of ₹240.00 lakh is kept for the Annual Plan 2016-17 which includes central assistance of ₹120.00 lakh.

Amarsingh Sub Branch Project

7.44 This project covers 44,425 ha area. OFD works in 31,738 ha. area were completed during the Eleventh Plan. Lined water courses have been constructed in 32737 ha. up to March 2015 and 1994 ha. in 2015-16. An expenditure of ₹ 320.82 lakh has been incurred in 2015-16 against an outlay of ₹100.00 lakh. An outlay of ₹240.00 lakh is kept for the Annual Plan 2016-17 which includes central assistance of ₹120.00 lakh.

Infrastructure Facilities in the Mandi Towns

7.45 Additional facilities of roads, drinking water and electrification are being provided in the mandi towns located in IGNP area. An outlay of ₹450.00 lakh was kept for the Twelfth Plan. An expenditure of ₹77.88 lakh has been incurred in 2015-16 against an outlay of ₹100.00 lakh and an outlay of ₹100.00 lakh is kept for the Annual Plan 2016-17.

Gang Canal Project Phase-I

7.46 This project covers an area of 2.32 lakh ha & OFD works are being undertaken in this CAD project in an area of 1.83 lakh ha as per sanction accorded by CADWM wing of Ministry of Water Resources (MoWR), GoI. The CAD project was started in 2011-12, lined water courses in 5731 ha. Area were constructed during Eleventh Plan against the target of 11800 ha. It was proposed to construct lined water courses in 159700 ha area during the Twelfth Plan with an outlay of ₹23378.00 lakh. Lined water courses have been completed in 68739 ha. Up to March, 2015 and in 32609 ha. area during 2015-16. An expenditure of ₹7850.35 lakh has been incurred against an outlay of ₹7746.73 lakh in 2015-16. It is proposed to construct lined water courses in 17500 ha area during the Annual Plan 2016-17 with an outlay of ₹6478.02 lakh. This includes Central Assistance of ₹2821.21 lakh.

Bhakra Nahar Project

7.47 This project covers an area of 1,13,420 ha & OFD works are being undertaken in this CAD project as per sanction accorded by CADWM wing of Ministry of Water Resources (MoWR), RD & Ganga Rejuvenation, GoI. The CAD Project was started in 2015-16, an outlay of ₹6500.00 lakh was kept for the Twelfth Plan. Lined water courses have been completed in 6013 ha area during 2015-16. An expenditure of ₹ 991.45 lakh has been incurred against an outlay of ₹1552.83 lakh in Annual Plan 2015-16. It is proposed to construct lined water courses in 24500 ha area during the Annual Plan 2016-17 with an outlay of ₹2180.00 lakh. This includes Central Assistance of ₹1073.28 lakh.

Gang Canal Project Phase-II

7.48 This project covers an area of 44,875 ha & OFD works are being undertaken in this CAD project as per sanction accorded by CADWM wing of Ministry of Water Resources (MoWR), RD & Ganga Rejuvenation, GoI. The CAD project was started in 2015-16, Lined water courses have been completed in 1389 ha area during 2015-16. An expenditure of ₹132.73 lakh has been incurred in 2015-16. It is proposed to construct lined water courses in 7000 ha area during the Annual Plan 2016-17 with an outlay of ₹260.00 lakh. This includes Central Assistance of ₹130.00 lakh.

CAD Chambal Project, Kota

7.49 This project was initiated in 1974. The Chambal Valley Development Scheme is a joint venture project of Madhya Pradesh & Rajasthan States for integrated command area development comprising irrigation, drainage works, OFD, agriculture & research activities. Water of the Chambal river has been harnessed in three phases by constructing dam and barrage across the river as under:

- In first phase Gandhi Sagar Dam, for storage of water & power production and Kota Barrage was constructed.
- In second phase Rana Pratap Sagar Dam was constructed between Gandhi Sagar and Kota Barrage for water storage and power generation.
- In third phase Jawahar Sagar Dam was constructed for power generation.

7.50 Total command area of Chambal Project in Rajasthan is 2,29,000 ha.

7.51 The Chambal Right Main Canal (CRMC) off takes from right side of Kota Barrage. It runs 124 Km in Rajasthan and 248 Km in Madhya Pradesh. It has 7 branches, 27 distributaries and minors having a total length of 1368.33 Km and it irrigates 1.27 lakh ha. land of Kota and Baran districts of Rajasthan. The designed carrying capacity of the canal is 6656 cusecs which is presently reduced due to poor maintenance.

7.52 The Chambal Left Main Canal (CLMC) off takes from left side of Kota Barrage. It is 2.59 Km long and further bifurcates into branches. Three branches, 27 distributaries and 180 minors of this canal system irrigates 1.02 lakh ha land of Kota and Bundi districts.

7.53 The Canal system was constructed long back and requires maintenance. To provide sufficient irrigation water in time to farmers up to the tail end, a project costing ₹127400.00 lakh was prepared for complete renovation of the irrigation system. First phase of the project costing ₹15000.00 lakh has been sanctioned by NABARD. An expenditure

of ₹10768.45 lakh has been incurred up to 2015-16 against ₹15000.00 lakh in NABARD.

7.54 A total of ₹5128.31 lakh has been incurred in 2015-16 against state plan outlay of ₹18335.94 lakh. An outlay of ₹18371.29 lakh is kept for the Annual Plan 2016-17, which includes Central Assistance of ₹961.20 lakh.

7.55 Physical targets kept for various activities for the Twelfth Plan, achievements made in 2015-16 and targets for the Annual Plan 2016-17 are as follows:

Table No. 7.7
Physical Targets for CAD, Chambal Project

| S. No. | Item | Unit | Target Twelfth Plan | Target 2015-16 | Ach. 2015-16 | Target for 2016-17 |
|--------|--|----------|---------------------|----------------|--------------|--------------------|
| 1. | Canal Lining | Km | 430.000 | 110.00 | 65.29 | 275.42 |
| 2. | Earth Work | lakh Cum | 22.000 | 13.83 | 9.624 | 25.00 |
| 3. | Training Program | Nos. | 40 | 15 | 15 | 15 |
| 4. | One time grant to WUAs (Functional grant)(perha) | ha | 180000 | 6000 | 1200 | 6000 |
| 5. | OFD Survey | ha | 57000 | 9000 | 9000 | 9000 |
| 6. | OFD Planning & Design | ha | 57000 | 9000 | 9000 | 9000 |
| 7. | OFD Works | ha | 57000 | 8000 | 6093 | 9000 |
| 8. | Canal structure/protection works | Nos. | 1900 | 249 | 154 | 372 |

CAD Bisalpur Project, Tonk

7.56 This project is engaged in construction of lined water courses in the field of CAD Bisalpur, district Tonk in order to achieve the optimum water use & enhance water application efficiency. The project is implemented under Centrally Sponsored Scheme on 50:50 basis. A target of construction of water courses in 40166 ha and 10000 ha area were kept for the Twelfth Plan and the Annual Plan 2015-16 respectively.

7.57 An outlay of ₹8000.00 lakh was kept for the Twelfth Plan. An expenditure of ₹963.37 lakh has been incurred in 2015-16 against an outlay of ₹2153.34 lakh. An outlay of ₹2243.76 lakh is kept for the Annual Plan 2016-17, which includes Central Assistance of ₹1016.50 lakh.

Indira Gandhi Nahar Project (IGNP)

7.58 Indira Gandhi Nahar Project is the largest Project of water resource sector in Rajasthan. Rajasthan suffers from a disproportionately poor availability of water when compared to its area, potential large no. of users, people, animals and agricultural requirement. It has a share of less than 3 per cent in country's total water resources- both surface and

ground water. In such situation, I.G.N.P. plays a major role in fulfilling water requirements of West and North-West Rajasthan by delivering share of Rajasthan surplus water of Ravi-Beas Rivers under Inter-state agreement and transforming the desert waste land into agriculturally productive area.

7.59 For the convenience of the administrative control and construction, the project has been divided in two stages. The 204 Km long feeder and main canal up to 189 Km along with its distribution system (except Sahwa lift system) falls under Stage-I. Main work in this stage has been completed. Indira Gandhi Main Canal downstream 189 Km to tail along with distribution system (including Sahwa lift system) falls in stage-II, where works in lift schemes of Bikaner zone and flow area of Jaisalmer zone are in progress.

7.60 Due to less availability of water, the State Government has directed to complete works on priority in CCA up to 16.17 lakh ha. against which canal construction works were completed in 16.06 lakh ha. up to March, 2015. Apart from this, some other essential works like construction of head regulators for canals off-taking from main canal, replacement/ installation of gates on regulators, replacement of pipe water courses by open water courses, repair/replacement of old pumps/motors and installation of additional pumps/motors on pumping stations to enhance their capacity have also been executed during 2015-16 along with operation & maintenance and repair of canals in project area.

7.61 An expenditure of ₹18141.17 lakh has been incurred during the year 2015-16 against an outlay of ₹31857.62 lakh. An outlay of ₹40571.14 lakh is kept for the Annual Plan 2016-17, which includes central assistance of ₹2648.40 lakh for sprinkler irrigation works in Stage-II lift schemes. It is proposed to open 10,340 hectare additional CCA for irrigation and develop sprinkler irrigation system in 10,000 ha. CCA of lift schemes of stage-II during the Annual Plan 2016-17.

Table No. 7.8
Financial Outlays & Expenditure for IGNP

| Scheme | Twelfth plan outlay | Outlay 2015-16 | Exp. 2015-16 | (₹ In lakh) |
|--|---------------------|-----------------|-----------------|-----------------|
| | | | | Outlay 2016-17 |
| IGNP (Bikaner & Jaisalmer Zone) (excluding relining of IGF) | 92500.00 | 25657.60 | 15478.63 | 28789.63 |
| IGNP - Stage I (CE Hanumangarh) | | 4200.00 | 2662.54 | 9781.51 |
| Relining of IGNP in Punjab (CE Hanumangarh) | 15000.00 | 2000.02 | 0.00 | 2000.00 |
| Total | 107500.00 | 31857.62 | 18141.17 | 40571.14 |