Revision Notes
Chapter-3
Water Resources

- In the first century B.C. Sringaverapura near Allahabad had sophisticated water harvesting system channeling the flood water of the river Ganga.
- During the time of Chandragupta Mauriya, dams lakes and irrigation systems were extensively built.
- Evidences of sophisticated irrigation works have also been found in Kalinga, Nagarjuna Konda, Bennur, Kohlapur etc.
- In 11th century, Bhopal lake, one of the larest artificial lakes of its time was built.
- In 14th century, the tank of HauzKhas, Delhi, was constructed by Iltutmish for supplying water of Siri Fort area.

WATER RESOURCES

1. We already know that three-fourth of the earth's surface is covered with water, but only a small proportion of it accounts for fresh water that can be used.
2. This fresh water is mainly obtained from surface run off and ground water that is continually being renewed and recharged through the hydrological cycle.
3. All water moves within the hydrological cycle ensuring that water is a renewable resource.

WATER SCARCITY AND THE NEED FOR WATER CONSERVATION AND MANAGEMENT:

1. The moment we speak of water shortages, we immediately associate it with regions having low rainfall or those that are drought prone.
2. The availability of water resources varies over space and time, mainly due to the variations in seasonal and annual precipitation, but water scarcity in most cases is caused by over – exploitation, excessive use and unequal access to water among different social groups.
3. Water scarcity may be an outcome to large and growing population and consequent greater demands for water and unequal access to it.
4. A large population means more water not only for domestic use but also to produce more food.

5. Hence, to facilitate higher food-grain production, water resources are being over-exploited to expand irrigated areas and dry-season agriculture.
6. Post-independent India witnessed intensive industrialization and urbanization, creating vast opportunities for us.
7. The ever-increasing number of industries has made matters worse by exerting pressure on existing freshwater resources.
8. Industries, apart from being heavy users of water, also require power to run them.
9. Today, in India hydroelectric power contributes approximately 22% of the total electricity produced.

MULTI-PURPOSE RIVER PROJECTS AND INTEGRATED WATER RESOURCES MANAGEMENT:

1. Archeological and historical records show that from ancient times we have been constructing sophisticated hydraulic structures like dams built of stone rubble, reservoirs or lake, embankments and canals for irrigation.
2. **Dams** were traditionally built to impound rivers and rainwater that could be used later to irrigate agricultural fields.
3. Today, dams are built not just for irrigation but for electricity generation, water supply for domestic and industrial uses, flood controls, recreation, inland navigation and fish breeding.
4. Dams are now referred to as the impounded water is integrated with one another.
5. In recent years, multi-purposes projects and large dams have come under great scrutiny and opposition for a variety of reasons.
6. The reservoirs that are created on the floodplains also submerge the existing vegetation and soil leading to its decomposition over a period of time.
7. Multi-purpose projects and large dams have also been the cause of many new social movements.
8. Local people often had to give up their land, livelihood and their meager access and control over resources for the greater good of the nation.
9. Irrigation has also changed the cropping pattern of many regions with farmers shifting to water intensive and commercial crops.
10. At the same time, it has transformed the social landscape i.e. increasing the social gap between the richer landowners and the landless poor.
11. Most of the objections to the projects arose due to their failure to achieve the purposes for

which they were built.
12. Ironically, the dams that were constructed to control floods have triggered floods due to sedimentation in the reservoir.
13. Moreover, the big dams have mostly been unsuccessful in controlling floods at the time of excessive rainfall.

RAINWATER HARVESTING:

1. Many though that given the disadvantages and rising resistance against the multi-purpose projects, water harvesting system was a viable alternative, both socio-economically and environmentally.
2. People had in-depth knowledge of rainfall regimes and soil types and developed wide ranging techniques to harvest rainwater, groundwater, river water and flood water in keeping with the local ecological conditions and their water needs.
3. In hill and mountainous regions, people built diversion channels like the ‘guls’ or ‘kuls’ of the western Himalayas for agriculture.
4**. ‘Rooftop rain water harvesting**’ was commonly practiced to store drinking water, particularly in Rajasthan.
5. In the semi-arid regions of Rajasthan, particularly in Bikaner, Phalodi and Barmer, almost all the houses traditionally had underground tanks for storing drinking water.
6. They were connected to the sloping roofs of the houses through a pipe.
7. Rain falling on the roof tops would travel down the pipe and was stored in these underground tanks.
8. The rainwater can be stored in the tanks till the time the next rainfall making it an extremely reliable source of drinking water when all other sources are dried up, particularly in the summers.
9**. Rainwater, or pular pani,** as commonly referred to in these parts, is considered the purest form of natural water.