UNIT III
WATER RESOURCES

NOTES

1. **Water –** Water is invaluable for living beings. It is one of the three basics that have made life possible on the earth. About 3 per cent of the total water on the earth is of fresh which is effectively available for human use. We use water for agricultural, industrial and domestic purposes.

   The demand for fresh water is increasing with the growth of population and advancement in agriculture and industry. The availability of fresh water in the country varies over space and time.

2. **Sources of water -** Rainfall and snowfall are considered to be the main sources of water and obtained from four major sources i.e.

(i) Atmospheric water
(ii) Surface water
(iii) Ground water and
(iv) Ocean water

3. **Utilisation of water resources -** We use water for irrigation, production of hydro-electricity, industrial, transportation, recreation and domestic purposes.

4. **Sources of irrigation -** The main sources of irrigation in India are:

(i) Canals – Canals are the most popular mode of irrigation in the plain, costal and deltaic regions of India.

(ii) Wells and tube wells – Well irrigation is popular in areas where the level of sweet ground water is high. It is the major source of irrigation in India.

(iii) Tank irrigation –Tank irrigation covers only 4.7 per cent of the total irrigated area of the country.

5. **Multi-Purpose Project –** Multi-Purpose Project is a river valley project which serves many purposes at the same time. A number of multi – purpose projects have been launched with irrigated water source management considering that it would lead the nation to development and progress.
6. **Dam -** A dam is a barrier across flowing water that obstructs, directs or retards the flow often creating a reservoir or a lake.

7. **Multi – purpose projects of India -** The important multi – purpose projects of India are:

(i) **The Bhakra Nangal Project -** Constructed on the Sutlej as the joint venture of Punjab, Haryana, Rajasthan and Delhi. It is the highest dam in the world.

(ii) **The Damodar Valley Project -** It is built on the river Damodar and its tributaries.

(iii) **The Hirakud Project -** Built on the river Mahanadi in Orissa and is the longest in the world.

(iv) **The Chambal Project -** Jointly undertaken by Madhya Pradesh and Rajasthan

(v) **The Tungabhadra Project -** It is built at Mallapuram on the river Tungabhadra, a tributary of the Krishna.

(vi) **The Beas Project -** It links the Beas and Sutlej and has a dam at Pong.

(vii) **The Rajasthan Canal Project -** Known as the Indira Gandhi canal project, it irrigates the thirsty lands of Ganganagar.

(viii) **The Kosi Project -** It is built at Hanumannagar on the Kosi in Nepal.

(ix) **The Nagarjuna Sagar Project -** It is one of the largest river valley project having many major, medium and minor dams in the world.

(x) **The Sardar Sarovar Project -** It is a high Dam constructed in the lower Narmada Valley in Gujarat.

8. **Adverse effects of the dams of Multi – Purpose Projects:**

(i) Damming of rivers results in sedimentation and rockier stream bed.

(ii) It makes the aquatic fauna difficult to migrate for spawning.

(iii) A large number of people have been displaced by the impounding water of the dams.

(iv) Multi – purpose projects and large dams have been the cause of social movements like the Narmada Bachao Andolan, Tehri Dam Andolan, etc.

9. **Water scarcity -** Water scarcity is the lack of fresh water resources to meet the standard water demand. It is caused by over exploitation, excessive use and unequal access to water among different social groups.

10. **Conservation and Management of water resources -** Since there is shortage of fresh water, and increasing demand, conservation and management of this precious resource become essential for sustainable development. There is need to encourage watershed management, rainwater harvesting, water recycling and reuse.

11. **Rain water harvesting -** Rainwater harvesting is a system to capture and store rain- water for various uses. It is used to recharge ground water aquifers to meet the household needs. It is a low cost and eco – friendly technique.

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