

Final Writing Assignment

The Dams and Dam Failure lesson showed statistics of dams (type and age) in the United States. Prepare a report that describes the dams in your area, the primary use of those dams, and the biggest challenges. If you are in an area where Glacial Lake Outburst Floods (GLOFs) are possible, does your knowledge of dam failure enhance your understanding or effect your ability to analyze GLOF's?

**Submitted
To
National Water Academy
Central Water Commission Pune, India
In association with
COMET & World Meteorological Organisation (WMO)**



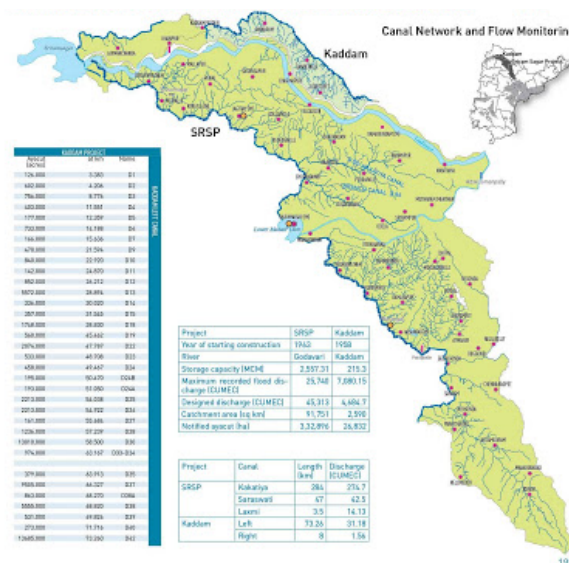
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Telangana is bordered by the states, Andhra Pradesh to the south and east, Maharashtra to the north and north-west, Karnataka to the west and Chhattisgarh to the north-east. The region is drained by two major rivers, with about 79% of the Godavari River catchment area and about 69% of the Krishna River catchment area, but most of the land is arid. Telangana is also drained by several minor rivers such as the Bhima, the Manjira and the Musi.

SRIRAMSAGAR PROJECT



Location	Nizamabad, Telangana, India
Coordinates	18°58'03"N 78°20'35"E
Construction began	1963
Opening date	1977
Impounds	Godavari River
Height	43 metres (141 ft) from river level
Length	15,600 metres (51,181 ft)
Total capacity	3,172,000,000 m ³ (2,571,582 acre·ft)
Active capacity	2,322,000,000 m ³ (1,882,476 acre·ft)
Surface area	451 km ² (174 sq mi)



Location map of Sriram sagar project

The Sri Rama Sagar Project also known as the Pochampadu Project is an Indian flood-flow project on the Godavari River. The Project is located in Nizamabad district.

Sriramsagar is an irrigation project across river Godavari in Telangana state to serve irrigational needs in Karimnagar, Warangal, Adilabad, Nalgonda, and Khammam districts. It also provides drinking water to Warangal city. There is a hydroelectric plant working at the dam site, with 4 turbines each with 9 MW capacity generating 36 MW. The foundation was laid on 26 July 1963 by the late Jawaharlal Nehru, first Prime Minister of India.

Sriram Sagar Reservoir's capacity is 75 tmcft and it has 42 floodgates. It also includes Kakatiya Canal covering 284 km, Laxmi Canal, Sarswati Canal, and Flood flow canal. Construction of this dam was started in 1957. Most of the catchment area upstream of this dam is located in Maharashtra.

This dam site is located in the Nizamabad district of Telangana State after the confluence of Manjira river with Godavari. Under stage I of this project nearly 1 million acres (4,000 km²) irrigation facility is created to utilize 140 tmc water. Stage II of this project is under advanced stage of construction to irrigate 440,000 acres (1,800 km²) using 25 tmc water. The flood flow canal project is also under implementation to irrigate 200,000 acres (810 km²) using 20 tmcft water available at Pochampadu dam site. The live storage capacity of this dam is limited to 90 tmcft to reduce submergence area in Maharashtra up to FRL level 1,091 feet (333 m) above mean sea level as per the agreement between Maharashtra & Telangana.

Challenges

Interstate disputes:

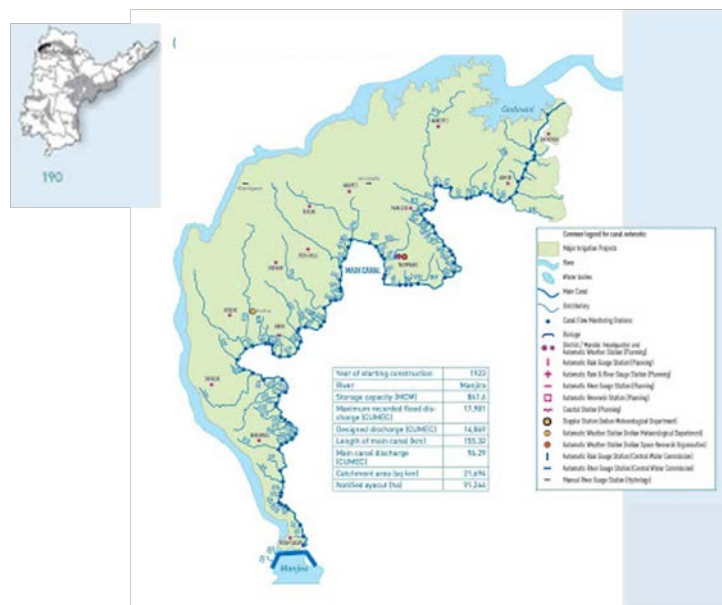
In the catchment area of this dam, Maharashtra has constructed many medium and minor irrigation projects in excess of its water use entitlements under Godavari Water Disputes Tribunal (GWDT). In last nine years, the dependable water availability has reduced to 33% (i.e. adequate water is available once in three years) against the designed dependability of 75% under GWDT. This major irrigation project has become many years unproductive / idle in the last decade. Due to complete utilization of river water in the upstream river basin area, the water quality in the reservoir has high alkalinity and salinity which is unsafe for human and cattle consumption. Also the ground water in the lower reaches of Pochampadu dam catchment area would gradually turn unsuitable for irrigation and human consumption.

NIZAMSAGAR DAM



Location	Kamareddy district, Telangana
Coordinates	18°12'09"N 77°55'26"E
Construction began	1923
Opening date	1977
Impounds	Godavari River
Height	34.65 (115.50 ft) from river level
Length	3km
Total capacity	29716mcft
Active capacity	25602mcft m ³
Surface area	129.50 km ²

Location map



Nizam Sagar Dam is an Indian dam. It is a reservoir constructed across the Manjira River, a tributary of the Godavari River, between Achampet and BanjePally villages of

the Kamareddy district in Telangana, India. It is located at about 144 km north-west of Hyderabad. Nizam Sagar is the oldest dam in the state of Telangana.

Nizamsagar dam was constructed in 1923 by the rulers of the erstwhile Hyderabad State, Mir Osman Ali Khan. It was made by emptying over 40 villages.

This masonry dam sprawling across the river for 3 km with a fourteen feet wide motorable road over it. There are excellent boarding and lodging facilities nearby, for tourists. Nizam sagar Project is the second irrigation scheme on Manjira river and the largest in the then Hyderabad state taken up during the year 1923 and completed by the year 1931.

This Project was originally contemplated for utilization of 58.00 TMC of water to irrigate 2,75,000 acres in Banswada, Bodhan, Nizamabad and Armoor Taluks of Nizamabad District. Manjira Barrage and Singur Project in Telangana to meet the drinking water needs of twin cities of Hyderabad and Secunderabad in Telangana. Karanja Project, Choukinala Project in Karnataka, Lower Tiruna Project, Manjira Project in Maharashtra State. Therefore, the inflows into Nizamsagar Project and as well as the low flows at Ghanpur Anicut during lean periods have dwindled considerably. Apart from the above changes, out of the total localized ayacut of 2,75,000 acres, 28,085 acres have come under submergence of Sreeramsagar Project, 8,296 acres have come in the command of Lakshmi canal and Kakatiya Canal of Sreeramsagar Project, and 7,260 acres ayacut has not been getting water since inception of Nizamsagar Project. Thus, the settled ayacut of 2,75,000 acres has come down to 2,31,339 acres. In view of the above enumerated facts, the inflows into Nizamsagar Project not only reduced but also delayed resulting in not only in the delayed commencement of agricultural operations in the ayacut but also some times loss of crop due to insufficient water supply. The problem has become more acute during the years 1972-73, 1993-94 and 1994-95.

Challenges

- ***Siltation of the reservoir :*** The Nizamsagar is one of the most heavily silted Indian reservoirs, with a 60 per cent reduction in its storage capacity in just 40 years. At the present rate of siltation, the entire original storage capacity will have silted up in 70 years. The problem of siltation has a multitude of economic and environmental implications.
- ***Interstate Disputes:*** Manjira basin got distributed among the three states viz., Maharashtra, Karnataka and Telangana. Different irrigation schemes have come up in above three states.

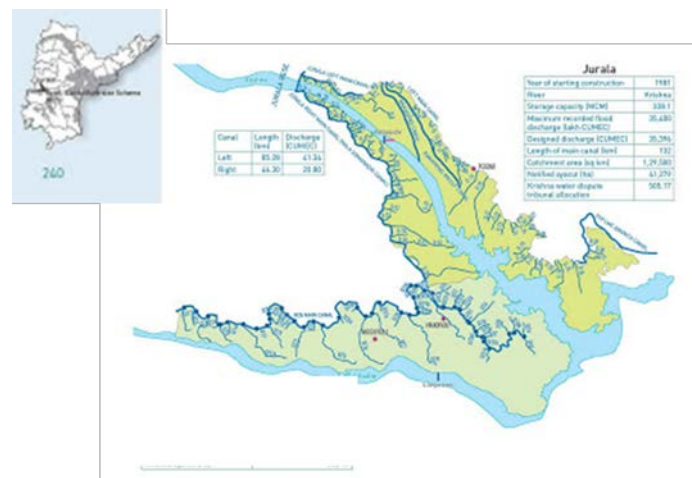
- **Inadequate inflows:** This very old major irrigation project has become unproductive for want of water inflows.
- **Water quality:** The water quality / salinity & alkalinity of inflows into this reservoir is becoming unsafe for irrigation use and human & cattle consumption. The ground water is also turning into high salinity & alkalinity water.

JURALA PROJECT



Location	Jogulamba Gadwal, Telangana
Coordinates	16°20'15"N 77°42'55"16"E
Construction began	
Opening date	1995
Impounds	Krishna River
Height	40m above foundation
Length	4534m
Total capacity	338.103mcm
Active capacity	192.27mcm

Location Map



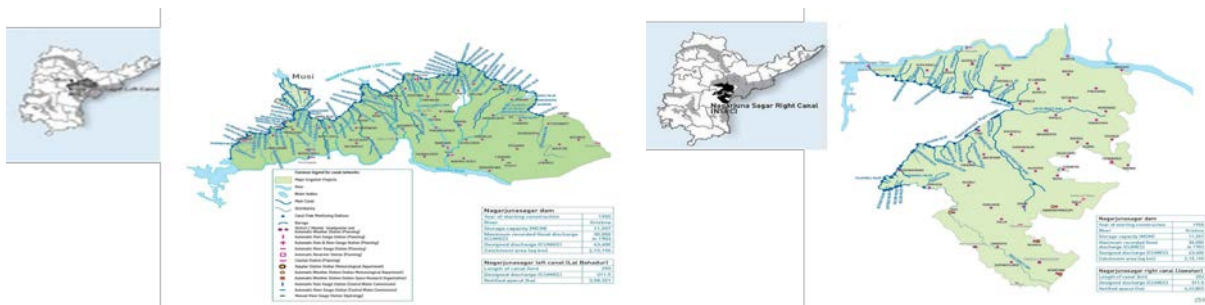
The Priyadarshini Jurala Project or Jurala Project is situated about 15 km from Gadwal, Jogulamba Gadwal district, Telangana, India. The Kurvapur Kshetra River is merging with water of the Joorala Project. The Jurala has a full reservoir level of 1045 ft and has a full capacity of 11.94 TMC. As of August 2013, the project has an estimated capacity of 9.74 TMC. The Jurala Project was completed in 1995. The Jurala Project, with a capacity to store 12 tmcft of water. However, Andhra Pradesh could not impound water into its reservoir to the required level as it feared that some villages would be affected. This has affected irrigation in Gadwal and Alampur areas of Jogulamba Gadwal district.

NAGARJUNASAGAR PROJECT



Location	Nalgonda, Telangana
Coordinates	16°34'32" 79°18'42"E
Opening date	1967
Impounds	Krishna River
Height	40m above foundation
Length	4534m
Total capacity	338.103mcm
Active capacity	192.27mcm(acre-ft

Location Map



Nagarjunasagar Left Canal

Nagarjunasagar Right Canal

Nagarjuna Sagar Dam was built across the Krishna river at Nagarjuna Sagar where the river forms the boundary between Nalgonda District in Telangana and Guntur district in Andhra

Pradesh states in India. The construction duration of the dam was between the years of 1955 and 1967. Jul 2, 2017. Nagarjuna Sagar was the earliest in the series of large infrastructure projects termed as "modern temples" initiated for achieving the Green Revolution in India. It is also one of the earliest multi-purpose irrigation and hydro-electric projects in India. The dam provides irrigation water to the Nalgonda, Suryapet, Krishna, Khammam, West Godavari, Guntur and Prakasam districts along with hydro electricity generation. Nagarjuna Sagar dam is designed and constructed to use all the water impounded in its reservoir of 408 TMC gross storage capacity which is the second biggest water reservoir in India.

Irrigation The right canal (Jawahar canal) is 203 km (126 mi) long with maximum 311.5 cumecs capacity and irrigates 1.117 million acres (4,520 km²) of land in Guntur and Prakasam districts. The left canal (Lalbahadur Shastri canal) is 179 km (111 mi) long with maximum 311.5 cumecs capacity and irrigates 1.008 million acres (4,080 km²) of land in Nalgonda, Krishna, West Godavari and Khammam districts. The project transformed the economy of above districts.

Alimineti Madhava Reddy lift irrigation canal draws water from the Nagarjuna Sagar reservoir to irrigate 0.37 million acres (1,500 km²) of land in Nalgonda district. This lift scheme with pump house located near Puttamgandi village on the left bank of Krishna river also supplies nearly 20 TMC water for the drinking water needs of Hyderabad city. Nearly 80% of the Nagarjuna Sagar water used in Hyderabad city is available for irrigation use in Nalgonda district in the form of regenerated water/treated sewage water. In addition, the high level flood flow canal drawing water from the left side shore of the reservoir also supplies irrigation water in Nalgonda district.

Power generation

The hydroelectric plant has a power generation capacity of 815.6 MW with 8 units. First unit was commissioned on 7 March 1978 and 8th unit on 24 December 1985. The right canal plant has a power generation capacity of 90 megawatts (120,000 hp) with 3 units of 30 megawatts (40,000 hp) each. The left canal plant has a power generation capacity of 60 megawatts (80,000 hp) with 2 units of 30 MW each. The tail pond is under advanced stage of construction to put to use the pumped storage features of 7 x 100.8 MW units.

Many times, it happens that power generation from the 150 MW canal based units is not optimised when the Nagarjunasagar reservoir is overflowing on its spillway and very less water is required for irrigation from the canals during the monsoon floods. Power generation from canal based hydro units can be optimised by running these units during the flooding

period by releasing the water fully into the canals. The unwanted canal water can be released into the natural stream when it is crossing the major stream. Thus run off power can be generated from the water going down unutilised into the river by the canal based power units also.

The water level in the Nagarjunasagar reservoir shall be maintained above the minimum level required for these units in most of the time by releasing water from the upstream Srisailem reservoir to optimise the power generation from the canal based units during dry season.

CHALLENGES FOR IRRIGATION PROJECTS.

- No proper measurement devices at any level(i.e at distributory, minor and sub minor levels).
- No project is following the designed cropping pattern leads to less water use efficiency.
- Insufficient funds for the Operation and Maintenance
- All the projects that are in construction mode should shift to management mode.
- Lack of interference of Water users in water management (Participatory Irrigation Management.)
- No proper maintenance of irrigation database for better maintenance and decision making