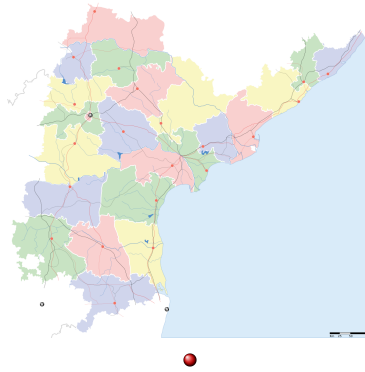


# Nagarjuna Sagar Dam

## Nagarjuna Sagar Dam



Nagarjuna Sagar Dam  
నాగారజునసాగరత్రనకటట్



Location of Nagarjuna Sagar Dam

<b>Official name</b>	నాగారజునసాగరత్రనకటట్ Nagarjuna Sagar Dam
<b>Location</b>	Guntur District, Nalgonda district, Andhra Pradesh, India
<b>Coordinates</b>	16°34′32″N 79°18′42″E
<b>Construction began</b>	10 December 1955
<b>Opening date</b>	1960
<b>Construction cost</b>	1300 crore rupees
<b>Dam and spillways</b>	
<b>Height</b>	124 metres (407 ft) from river level
<b>Length</b>	1,450 metres (4,757 ft)
<b>Impounds</b>	Krishna River
<b>Reservoir</b>	
<b>Creates</b>	Nagarjuna Sagar Reservoir
<b>Capacity</b>	11,560,000,000 m <sup>3</sup> (9,371,845 acre-ft)
<b>Active capacity</b>	5,440,000,000 m <sup>3</sup> (4,410,280 acre-ft) <sup>[1]</sup>
<b>Catchment area</b>	215000 km <sup>2</sup> (83012 sq mi)

<b>Surface area</b>	285 km <sup>2</sup> (110 sq mi)
<b>Power station</b>	
<b>Commission date</b>	1978-1985
<b>Turbines</b>	1 x 110 MW Francis turbines, 7 x 100.8 MW reversible Francis turbines
<b>Installed capacity</b>	816 MW

**Nagarjuna Sagar Dam** (Telugu: నాగార్జునసాగరఆనకట్ట) is the world's largest masonry dam at the time of its construction, which is built across Krishna River at Nagarjuna Sagar in Guntur district & Nalgonda district of Andhra Pradesh, India. The construction duration of the dam was between the years of 1955 and 1967. The dam created a water reservoir whose capacity is 11,472 million cubic metres. The dam is 490 ft (150 m). tall and 1.6 km long with 26 gates which are 42 ft (13 m). wide and 45 ft (14 m). tall.<sup>[2]</sup> Nagarjuna Sagar was the earliest in the series of large infrastructure projects initiated for the Green Revolution in India; it also is one of the earliest multi-purpose irrigation and hydro-electric projects in India. The dam provides irrigation water to the Nalgonda District, Prakasam District, Khammam District, Krishna District and Guntur District and electric power to the national grid.

## History

The proposal to construct a dam to use the excess waters of the Krishna river was sketched out by the British Engineers in 1903 on the supervision of Hyderabad Nizams. Since then, various competing sites in Siddeswaram, Hyderabad and Pulichintala were identified as the most suitable locations for the reservoirs. The perseverance of the Raja of Muktyala paved way for the site identification, design and construction of the dam.<sup>[3][4][5]</sup> Nagarjunasagar was the earliest in the series of "modern temples" taken up to usher in the Green Revolution in India.<sup>[4]</sup>

Project construction was officially inaugurated by Prime Minister Jawaharlal Nehru, on 10 December 1955, and proceeded for the next twelve years. The reservoir water was released into the left and right bank canals by Prime Minister, Indira Gandhi in 1967.<sup>[6]</sup> Construction of the hydropower plant followed, with generation increasing between 1978 and 1985, as additional units came into service.

The construction of the dam submerged an ancient Buddhist settlement, Nagarjunakonda, which was the capital of the Ikshvaku dynasty in the 1st and 2nd centuries, the successors of the Satavahanas in the Eastern Deccan. Excavations here had yielded 30 Buddhist monasteries, as well as art works and inscriptions of great historical importance. In advance of the reservoir's flooding, monuments were dug up and relocated. Some were moved to Nagarjuna's Hill, now an island in the middle of the reservoir. Others were moved to the mainland.<sup>[7]</sup>

## Salient data<sup>[8]</sup>

- Catchment Area : 215000 km<sup>2</sup> (83012 sq mi)
- Location of dam : Nalgonda(District)
- Reservoir
  - Water spread area at FRL of dam : 285 km<sup>2</sup>
- Masonry dam
  - Spillway of dam : 471 m
  - Non-over flow dam : 979 m
  - Length of Masonry dam : 1450 m
  - Maximum height : 125 m
- Earth dam
  - Total Length of Earth dam : 3414 m

- Maximum height : 128 m
- Power Generation
  - Power Units : 1 No. conventional (110 MW capacity), 7 nos Reversible (100 MW capacity)
- Canal Power House
  - Right side : 3 units 30 MW (each)
  - Left side : 2 units 30 MW (each)

## Effect of the project

The project benefited farmers in the districts of Prakasam, Krishna, Nalgonda and Khammam. The right canal (a.k.a. Jawahar canal) is 203 km long and irrigates 1.113 million acres (4,500 km<sup>2</sup>) of land. The left canal (a.k.a. Lalbahadur Shastri canal) is 295 km long and irrigates 0.32 million acres (800 km<sup>2</sup>) of land in Nalgonda and Khammam districts of Telangana region. The project transformed the economy of above districts. 52 villages were submersed in water and 24000 people were affected. The relocation of the people was completed by 2007.<sup>[5]</sup>

## Power generation

The hydroelectric plant has a power generation capacity of 815.6 MW with 8 units (1x110 MW+7x100.8 MW). 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 MW with 3 units of 30 MW each. The left canal plant has a power generation capacity of 60 MW with 2 units of 30 MW each.<sup>[9]</sup> Tail pond is under advanced stage of construction to put to use the pumped storage features of 7x100.8 MW units.



Nagarjuna Left Canal

## Tapping dead storage potential

The left and right bank canals sill level is fixed at 490 ft MSL to supply irrigation water to two million acres. The unutilized storage capacity is nearly 180 TMC below the canals sill/bed level. Nagarjuna Sagar reservoir also meets the Krishna delta water requirements to the extent of 100 TMC by letting water down stream in to the river. Nearly 1.3 million acres is irrigated under Krishna Delta Canals. There is a possibility to utilize most of this idle dead storage capacity to store the river flood water further and use as carry over storage. Nearly 150 TMC idle storage up to 380 ft MSL, can be used leaving 30 TMC for silt settlement. This is possible by installing Water Powered Pump<sup>[10]</sup> (WPP) units at the base of the dam.

WPP units are to be located at the toe of the Nagarjuna Sagar dam with tail water level of 240 ft MSL on either side of the river. The WPP units can be connected below 380 ft MSL level to the reservoir with the technique called live reservoir / lake tapping. Live lake tapping method was implemented successfully in Koyna Hydroelectric Project to install additional hydroelectric units without emptying the Koyna reservoir. The cost would be Rs 15 billion for utilizing 150 TMC storage additionally. If the same storage is created under a new reservoir, it would cost not less than Rs 50 billion. Water can be supplied to high level canals at sill 580 ft MSL on both right and left banks without consuming electricity with WPP units to irrigate dry lands further in Nalgonda, Warangal, Khammam, and Guntur districts

## References

- [1] "India: National Register of Large Dams 2009" ([http://www.cwc.nic.in/main/downloads/National Register of Large Dams 2009.pdf](http://www.cwc.nic.in/main/downloads/National_Register_of_Large_Dams_2009.pdf)). Central Water Commission. . Retrieved 7 August 2011.
  - [2] "Nagarjunasagar" (<http://web.archive.org/web/20070124174958/http://www.tourisminap.com/nagarjunasagar.htm>). Archived from the original (<http://www.tourisminap.com/nagarjunasagar.htm>) on 2007-01-24. . Retrieved 2007-01-25.
  - [3] "Rao, K.L., Cusecs Candidate: Memoirs of an Engineers hi, 1978, Metropolitan, p. 31" (<http://books.google.com/books?id=850aAAAAMAAJ&q=muktyala+raja&dq=muktyala+raja&pgis=1>)
  - [4] The Hindu : Magazine / Focus : Taming the Krishna (<http://www.hindu.com/mag/2005/12/18/stories/2005121800150200.htm>)
  - [5] Welcome to APGENCO ([http://apgenco.com/inner.asp?frm=viewcontents&filename=HomePgCategory.xml&Tagname=HP\\_Cat242 & subhname=WhatsNew](http://apgenco.com/inner.asp?frm=viewcontents&filename=HomePgCategory.xml&Tagname=HP_Cat242 & subhname=WhatsNew))
  - [6] "Taming the Krishna" (<http://www.hindu.com/mag/2005/12/18/stories/2005121800150200.htm>). *The Hindu* (Chennai, India). 2005-12-18. . Retrieved 2007-01-24.
  - [7] "Nagarjunakonda" (<http://www.art-and-archaeology.com/india/nkonda/nk01.html>). . Retrieved 2007-01-25.
  - [8] Brief Profile of Nagarjuna Sagar Dam (<http://irrigation.cgg.gov.in/CompMaj/NagarjunaSagarBrief.htm>)
  - [9] Andhra Pradesh Hydrel Power plants ([http://www.apgenco.com/inner.asp?frm=our\\_pow\\_plants\\_hydel1](http://www.apgenco.com/inner.asp?frm=our_pow_plants_hydel1))
  - [10] Nagarjuna Sagar Water Powered pump (WPP) Units (<http://www.scribd.com/doc/58789354/Nagarjuna-Sagar-WPP-Units>)
- [www.aponline.gov.in](http://www.aponline.gov.in) (<http://www.aponline.gov.in/apportal/departments/departments.asp?dep=20&org=154&category=About>)

## External links

- Article on the dam in The Hindu (<http://www.hindu.com/mag/2005/12/18/stories/2005121800150200.htm>)
- Nalgonda District Tourist Opportunities (<http://www.nalgonda.org/places/places.htm>)
- Tale of Nagarjuna Sagar (<http://www.nagarjunasagar.com/>)

# Article Sources and Contributors

**Nagarjuna Sagar Dam** *Source:* <http://en.wikipedia.org/w/index.php?oldid=522848621> *Contributors:* Altruism, Anbu121, Andyjsmith, Apstate, Avsnarayan, BL Lacertae, Bgwhite, Bobblewik, Brutaldeluxe, Can't sleep, clown will eat me, CasualObserver48, Chandan Guha, Chris the speller, Cmdrjameson, Colonies Chris, Coren, Dav subrajathan.357, Dora.tella, Dottydotdot, Dvavasour, Ewlyahoom, GFellows, Ganeshk, Gkstata, Gnt, Gwen-chan, Hadrianheugh, Hariehr, Hooperbloob, Hugo999, IndianGeneralist, JHunterJ, Jasper33, Jay-Sebastos, Jean.servin, Jeff3000, John of Reading, Kranix, Kumarrao, Kwdt2, Leszek Jańczuk, Liam Skoda, Lightmouse, Lockley, Magioladitis, Matisse, Mboverload, Mike65535, Newone, NortyNort, Nssreddy.icar, Omicronpersei8, PAPA RAO KVSKS, Pavancivilian, Ppavan1, Prithvi kon, Randhirreddy, Raveenn4u, Rehman, Rjwilmsi, Rojypala, Roland zh, Runewiki777, Salilb, Salix alba, Saroshp, Shadowjams, Shyamsunder, SivaKumar, Skarebo, Sumanthk, Sun Creator, Tabletop, Tejas.B, The wub, Thebogusman, Thiseye, Topbanana, Tyke27, User5910, Vamshikrishna reddy7, Vegaswikian1, Viveksinha in, Wantsallanger, Warofdreams, Wavelength, Wozzle, 134 anonymous edits

# Image Sources, Licenses and Contributors

**File:NagarjunaSagarDam.JPG** *Source:* <http://en.wikipedia.org/w/index.php?title=File:NagarjunaSagarDam.JPG> *License:* Public Domain *Contributors:* Original uploader was Sumanthk at en.wikipedia

**file:Andhra Pradesh locator map.svg** *Source:* [http://en.wikipedia.org/w/index.php?title=File:Andhra\\_Pradesh\\_locator\\_map.svg](http://en.wikipedia.org/w/index.php?title=File:Andhra_Pradesh_locator_map.svg) *License:* unknown *Contributors:* Arjun red555, Hugehunk, Planemad, Türelío, Utcursch, 1 anonymous edits

**File:Red pog.svg** *Source:* [http://en.wikipedia.org/w/index.php?title=File:Red\\_pog.svg](http://en.wikipedia.org/w/index.php?title=File:Red_pog.svg) *License:* Public Domain *Contributors:* Anomie

**Image:NagarjunaSagarLeftCanal.JPG** *Source:* <http://en.wikipedia.org/w/index.php?title=File:NagarjunaSagarLeftCanal.JPG> *License:* Public Domain *Contributors:* Sumanthk

# License

---

Creative Commons Attribution-Share Alike 3.0 Unported  
//creativecommons.org/licenses/by-sa/3.0/