

Godavari River

The **Godavari** is India's second longest river after the Ganga. Its source is in Triambakeshwar, Maharashtra^[4] It flows east for 1,465 kilometres (910 mi) draining the states of Maharashtra (48.6%), Telangana (18.8%), Andhra Pradesh (4.5%), Chhattisgarh (10.9%), Madhya Pradesh (10.0%), Odisha (5.7%), Karnataka (1.4%) and Puducherry (Yanam) and emptying into Bay of Bengal through its extensive network of tributaries.^[5] Measuring up to 312,812 km² (120,777 sq mi), it forms one of the largest river basins in the Indian subcontinent, with only the Ganges and Indus rivers having a larger drainage basin.^[6] In terms of length, catchment area and discharge, the Godavari river is the largest in peninsular India, and had been dubbed as the **Dakshina Ganga**– Ganges of the South!^[7]

The river has been revered in Hindu scriptures for many millennia and continues to harbor and nourish a rich cultural heritage. In the past few decades, the river has been barricaded by a number of barrages and dams, restricting its flow. The river delta supports 729 persons/km² – nearly twice the density average for the nation, and has been categorized as having substantial to greater risk of flooding with rising sea levels!^{[8][9]}

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Godavari	
Dakshina Ganga River	
	
Dummugudem weir across the Godavari in Khammam District	
Country	India
States	Maharashtra, Telangana, Chhattisgarh, Andhra Pradesh, Puducherry (Yanam)
Region	South India, Western India
Tributaries	
- left	Banganga, Kadva, Shivana, Purna, Kadam, Pranahita, Indravati, Taliperu, Sabari
- right	Nasardi, Darna, Pravara, Sindphana, Manjira, Manair, Kinnerasani
Source	
- location	Brahmagiri Mountain, Tryambakeshwar, Nashik, Maharashtra, India
- elevation	920 m (3,018 ft)
- coordinates	19°55′48″N 73°31′39″E
Mouth	
- location	Antarvedi into Bay of Bengal, East Godavari, Andhra Pradesh, India
- elevation	0 m (0 ft)
- coordinates	17°0'N 81°48'E ^[1]
Length	1,465 km (910 mi)
Basin	312,812 km ² (120,777 sq mi)
Discharge	
- average	3,505 m ³ /s

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Course

The Godavari originates in the Western Ghats of central India near Nasik in Maharashtra, 80 km (50 mi) from the Arabian Sea. It flows for 1,465 km (910 mi), first eastwards across the Deccan Plateau then turns southeast, entering the West Godavari district and East Godavari district of Andhra Pradesh, until it splits into two distributaries that widen into a large river delta and flow into the Bay of Bengal.^[11]

The Godavari River has a coverage area of 312,812 km² (120,777 sq mi), which is nearly one-tenth of the area of India and is greater than the areas of England and Ireland put together. The river basin is considered to be divided into 3 sections:

- Upper (source to confluence with Manjira),
- Middle (between confluence of Manjira and Pranhita) and
- Lower (Pranhita confluence to mouth).

These put together account for 24.2% of the total basin area.^[12] The rivers annual average water inflows are nearly 110 billion cubic metres.^[13] Nearly 50% of the water availability is being harnessed. The water allocation from the river among the riparian states are governed by the Godavari Water Disputes Tribunal. The river has highest flood flows in India and experienced recorded flood of 3.6 million cusecs in the year 1986 and annual flood of 1.0 million cusecs is normal.^{[14][15]}

Within Maharashtra

In Maharashtra state where it takes origin, the river has an extensive course, the upper basin (origin to its confluence with Manjira) of which lies entirely within the state, cumulatively draining an area as large as 152,199 km² (58,764 sq mi) – about half the area of Maharashtra.^[16] Within Nashik District the river assumes a north-easterly course till it flows into the Gangapur Reservoir created by a dam of the same name. The reservoir along with the Kashypi Dam provides potable water to Nashik, one of the largest cities located on its banks. The river as it emerges through the dam, some 8 km (5.0 mi) upstream from Nashik, flows on a rocky bed undulated by a series of chasms and rocky ledges, resulting in the formation of two significant waterfalls – the Gangapur waterfalls and the Someshwar Waterfalls, the latter, located at Someshwar and more popularly known as the Dudhsagar Waterfall^[17] About 10 km (6.2 mi) east of Gangapur the river passes the town of Nashik where it collects its effluents in the form of the river Nasardi on its right bank.

(123,778 cu ft/s)^[2]

Discharge elsewhere (average)

- Polavaram (1901–1979) 3,061.18 m³/s
(108,105 cu ft/s)^[3]



Path of the Godavari through the South Indian Peninsula



Godavari river basin.



Godavari River delta extending into the Bay of Bengal (upper river in image).

About 0.5 km (0.31 mi) south direction from Nashik, the river bends sharply to the east, washing the base of a high cliff formerly the site of a Mughal fort, but which is now being eaten away by the action of floods. About 25 km (16 mi) below Nashik is the confluence of the Godavari and one of its tributaries, the Darna river. The stream occupies, for nine months in the year, a small space in a wide and gravelly bed, the greyish banks being 4 to 6 m (13 to 20 ft) high, topped with a deep layer of black soil. A few kilometres after its meeting with the Darna, the Godavari swerves to the north-east, till the Banganga, from the north-west, meets it on the left. The course of the main stream then tends more decidedly south. At NandurMadhmeshwar, the Kadva, a second large affluent, brings considerable increase to the waters of the Godavari. The river begins its southeasterly course characteristic of rivers of the Deccan Plateau. The river beyond exits the Niphad Taluka of Nashik and enter the Kopargaon taluka, Ahmednagar District. Within Ahmednagar the river quickly completes its short course, flowing alongside the town of Kopargaon and reaching Puntamba. Beyond this the river has been deployed as a natural boundary between the following districts :



Bhadrachalam Temple during 2005 floods^[10]

- Ahmednagar and Aurangabad: Along the boundary here, it receives its first major tributary Pravara River, draining the former district, the confluence located at Pravarasangam. By virtue of a sub-tributary of Pravara – Mandohol, which originates in Pune District – the basin impinges the Pune District. The river at Paithan has been impounded by the Jayakwadi Dam forming the NathSagar Reservoir. Kalsubai located in Godavari basin, is the highest peak in Maharashtra.
- Beed and Jalna
- Beed and Parbhani: Located along here is its merger with Sindphana, an important tributary^[18] which drains a considerably large area within Beed. The sub-tributary river Bindusara forms a landmark at Beed.

The river beyond, near the village Sonpeth, flows into Parbhani. Its course is relatively non-significant except for receiving two smaller streams – Indrayani and Masuli – merging at its left and right banks respectively. Within the last taluka of the district Parbhani, Purna, the river drains a major tributary of the same name Purna^[19]

It then exits into the neighboring district of Nanded where 10 km (6.2 mi) before reaching the town Nanded, is impounded by the Vishnupuri Dam and thus with it, bringing Asia's largest lift irrigation projects to life. A little downstream from Nanded, the river receives Asna, a small stream, on its left bank. It then runs into the controversial Babli project soon ends its course within Maharashtra, albeit temporarily at its merger with a major tributary – Manjira.

The river after flowing into Telangana, re-emerges to run as a state boundary separating the Mancherial, Telangana from Gadchiroli, Maharashtra. At the state border, it runs between Sironcha and Somnoor Sangam receiving one tributary at each of those nodal points – the Pranhita and subsequently the Indravati.

Within Telangana



Road Bridge over Godavari River at Bhadrachalam

Godavari enters into Telangana in Nizamabad district at Kandakurthy where Manjira, Haridra rivers joins Godavari and forms Triveni Sangamam. The river flows along the border between Nirmal and Mancherial districts in the north and Nizamabad, Jagityal, Peddapalli Ramagundam districts to its south. About 12 km (7.5 mi) after entering Telangana it merges with the back waters of the Sriram Sagar Dam. The river after emerging through the dam gates, enjoys a wide river bed, often splitting to encase sandy islands. The river receives a minor but significant tributary Kadam river. It then emerges at its eastern side to act as state border with Maharashtra only to later enter into Bhadradi Kothagudem district. In this district

the river flows through an important Hindu pilgrimage town Bhadrachalam.

The river further swells after receiving a minor tributary Kinnerasani River and exits into Andhra Pradesh

Within Andhra Pradesh

Within the state of Andhra Pradesh, it flows through hilly terrain of the Eastern Ghats known as the Papi hills which explains the narrowing of its bed as it flows through a gorge for a few km, only to re-widen at Polavaram. Before crossing the Papi hills, it receives its last major tributary Sabari River on its left bank. The river upon reaching the plains begins to widen out until it reaches Rajamundry. Arma Konda or Jindhagada Peak (1,680 m (5,510 ft) above msl) located near Paderu is the highest peak in the Godavari river basin as well as in Eastern Ghats.^{[20][21]}

After crossing Rajahmundry, the Godavari splits into two branches which are called Vridhdha Gautami (Gautami Godavari) and Vasishta Godavari. Again the Gautami branch splits into two branches namely Gautami and Nilarevu. Similarly the Vasishta splits into two branches named Vasishta and Vainateya. These four branches which join the Bay of Bengal at different places, are forming a delta of length 170 km (110 mi) along the coast of the Bay of Bengal and is called the Konaseema region. This delta along with the delta of the Krishna River is called the *Rice Granary* of South India.^[22]



The river at Papi Hills in Andhra Pradesh.



The river near Yanam.

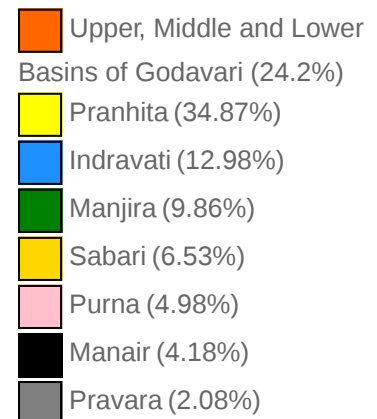
Tributaries

The major tributaries of the river can be classified^[23] as the left bank tributaries which include the Purna, Pranhita, Indravati and Sabari River covering nearly 59.7% of the total catchment area of the basin and the right bank tributaries Pravara, Manjira, Manair together contributing 16.1% of the basin.

Pranhita is the largest tributary covering about 34% of its drainage basin. Though the river proper flows only for 113 km (70 mi), by virtue of its extensive tributaries Wardha, Wainganga, Penganga, the sub-basin drains all of Vidharba region as well as the southern slopes of the Satpura Ranges. Indravati is the 2nd largest tributary, known as the "lifeline" of the Kalahandi, Nabarangapur of Odisha & Bastar district of Chhattisgarh. Due to their enormous sub-basins both Indravati and Pranhita are considered rivers in their own right. Manjira is the longest tributary and holds the Nizam Sagar reservoir. Purna is a prime river in the water scarce Marathwada region of Maharashtra.



Drainage Basin of Godavari^[24]



Major Tributaries of Godavari River

Tributary	Bank	Confluence Location	Confluence Elevation	Length	Sub-basin area
<u>Pravara</u>	Right	Pravara Sangam, Nevasa, <u>Ahmednagar</u> , <u>Maharashtra</u>	463 m (1,519 ft)	208 km (129 mi)	6,537 km ² (2,524 sq mi)
<u>Purna</u>	Left	Jambulbet, Parbhani, <u>Marathwada</u> , <u>Maharashtra</u>	358 m (1,175 ft)	373 km (232 mi)	15,579 km ² (6,015 sq mi)
<u>Manjira</u>	Right	Kandakurthi, Renjal, <u>Nizamabad</u> , <u>Telangana</u>	332 m (1,089 ft)	724 km (450 mi)	30,844 km ² (11,909 sq mi)
<u>Manair</u>	Right	Arenda, Manthani, <u>Karimnagar</u> , <u>Telangana</u>	115 m (377 ft)	225 km (140 mi)	13,106 km ² (5,060 sq mi)
<u>Pranhita</u>	Left	Kaleshwaram, Mahadevpur, <u>Karimnagar</u> , <u>Telangana</u>	99 m (325 ft)	113 km (70 mi)	109,078 km ² (42,115 sq mi)
<u>Indravati</u>	Left	Somnoor Sangam, <u>Sironcha</u> , <u>Gadchiroli</u> , <u>Maharashtra</u>	82 m (269 ft)	535 km (332 mi)	41,655 km ² (16,083 sq mi)
<u>Sabari</u>	Left	Kunawaram, <u>East Godavari</u> , <u>Andhra Pradesh</u>	25 m (82 ft)	418 km (260 mi)	20,427 km ² (7,887 sq mi)

Other than these 7 principal ones, it has many smaller but significant ones draining into it.

Religious significance

The river is sacred to Hindus and has several places on its banks, that have been places of pilgrimage for thousands of years. Amongst the huge numbers of people who have bathed in her waters as a rite of cleansing are said to have been the deity Baladeva 5000 years ago and the saint Chaitanya Mahaprabhu 500 years ago. Every twelve years, Pushkaram fair is held on the banks of the river.



Goddess Godavari

A legend has it that the sage Gautama lived in the Brahmagiri Hills at Tryambakeshwar with his wife Ahalya. The couple lived the rest of their lives in the then village called Govuru, known as Kovvur ("cow") since the British rule. Ahalya lived in a nearby place called Thagami (now Thogummi). The sage, as a reason for the practice of annadanam ("giving away food" to the needy), started cultivating rice crops and other crops. Once, the god Ganesha, on the wish of the munis, sent a miraculous cow maaya-dhenu, which resembled a normal cow. It entered the sage's abode and started spoiling the rice while he was meditating. Since cattle is sacred to Hindus and shall always be treated with respect, he put the dharbha grass on the cow. But, to his surprise, it fell dead. Seeing what happened before their eyes, the munis and their wives cried out, "We thought that Gautama-maharishi is a righteous man, but he committed bovicide (killing of a cow or cattle)!" The sage wished to atone for this grievous sin. Therefore, he went to Nashik and observed tapas to Lord Tryambakeshwara (a manifestation of the god Shiva), on the advice of the munis, praying for atonement and asking Him to make the Ganges flow over the cow. Shiva was pleased with the sage and diverted the Ganges which washed away the cow and gave rise to the Godavari river in Nashik. The water stream flowed past Kovvur and ultimately merged with the Bay of Bengal.

Settlements along the Godavari



Trimbakeshwar

Maharashtra

- Nashik (Holy city and site of Simhastha Kumbha Melabathing festivals)
- Trimbakeshwar (shrine to the Jyotirlinga of the god Shiva)
- Kopargaon
- Puntamba – A place of pilgrimage with a number of ancient temples including the last resting place (Samadhi) of Sant Changdev in Puntamba.
- Paithan (Ancient capital of the Satavahana dynasty)
- Gangakhed
- Nanded (Location of the Hazur Sahib Nanded Sikh gurdwara)
- Sironcha (Town situated near the confluence of Godavari and Pranahita rivers)

Telangana

- Basara, Nirmal district (Gnana Saraswati Temple)
- Goodem gutta, Adilabad (Temple) Luxettipet, Adilabad.
- Mancheria, Adilabad
- Nirmal, Nirmal district (Nirmal Toys)
- Chennur, Adilabad
- Tadpakal, Nizamabad (Armoor Toys)
- Battapur, Nizamabad (Armoor Toys)
- Dharmapuri, Telangana | Dharmapuri, Karimnagar (Narasimha Swamy Temple)
- Godavarikhani, Ramagundam, Sripada Yellampalli project
- Manthani, Peddapalli district (Gautameshwara Swami (Siva) Temple, Sri Rama, Sarswathi Temples)
- Kaleshwaram, Jayashankar Bhupalpally district (Kaleswara Mukhteswara swamy (Siva) Temple)
- Mahadevpur Jayashankar Bhupalpally district
- Eturunagaram, Jayashankar Bhupalpally district
- Bhadrachalam, Bhadradri Kothagudem district



Kaleshwara Mukteswara Swamy Temple

Andhra Pradesh

- Rajamundry, East Godavari (Sri Kotilingeswara Alayam)
 - Mukteswaram, East Godavari (Sri Kshana Muktheswaraswamivari Devalayam)
 - Ravulapalem, East Godavari
 - Dowleswaram, East Godavari (Where the Akhanda Godavari splits into two streams called "Gautami" and "Vashista" before joining Bay of Bengal)
 - Kotipalli, East Godavari (Sri Someswaraswamivari Alayam)
 - Antarvedi, East Godavari (Antarvedi is famous for the Sri Laxmi Narasimhaswamivari Mandhiram constructed between the 15th and 16th centuries. There is also a temple of Lord Siva that is older than Narasimha Swamy temple. The temple's idol of Lord Siva was installed by Lord Srirama.
 - Yanam (Yanam is located in East Godavari District, where the Gautami joins Bay of Bengal)
 - Polavaram, West Godavari (Sri Bhadrakalisametha Sri Veereswaraswamivari Mandhiram)
 - Pattiseema, West Godavari (Sri Veerabhadraswamivari Devalayam)
- Kovvur, West Godavari (Sundareswaraswamivari Alayam)
 - Tallapudi, West Godavari
 - Narsapur, West Godavari



Antarvedi temple

Places of interest

Sites of pilgrimage include:

- Basar (originally, Vyasara) – Sri GyanaSaraswati temple is situated on the banks of Godavari in Adilabad district, Telangana. It is about 210 km (130 mi) from state capital Hyderabad and accessible by road and rail (nearest major station: Nizamabad, although Basar station also exists). It is considered that the sage Vyasa wrote the Mahabharata on the banks of Godavari at this location near Harsha house it is the beautiful scenario, and thus the place came to be known as Vyasara.
- Bhadrachalam – Hindu Temple of Lord Rama.
- Dharmapuri, Telangana – Hindu Temple of Lord Narasimha. Godavari flows from north to south in Dharmapuri, hence the river is locally called 'Dakshina dhini' [South Flowing]
- Kaleshwaram – Sri Kaleswara Mukhteswara swamy Temple is situated here on the banks of Tiveni sangamam of rivers godavari and pranahita. It is 125 kilometres away from Karimnagar city, 115 km away from Warangal city.
- Trimbakeshwar – One of the twelve Jyotirlingas and ancient temple of Lord Shiva.
- Nanded – Takht Sri Hazur Sahib one of the five most sacred places in Sikhism.
- Nashik – One of the four Sinhashtha Kumbh Mela, Hindu pilgrimage place.
- Paithan – Saint Eknath's native place, famous Jayakwadi dam, and a beautiful garden named after Sant Dnyaneshwar.
- Antarvedi, East Godavari (Antarvedi is famous for the Laxmi Narasimha Swamy temple constructed between the 15th and 16th centuries. There is also a temple of Lord Siva that is older than Narasimha Swamy temple. The temple's idol of Lord Siva was installed by Lord Srirama.
- Konaseema – Delta of Godavari.
- Pattiseema – A village where a Hindu temple is located on a small hill on an island in the river
- Kovvur – A village where cows resided and a place where the maaya-dhenu fell dead. Footprints of the maaya-dhenu were seen even today in the famous place Kovvur called "Goshpadakshetram" also called "Gopadala Revu" where the footprints of the holy cow are seen near the temple of Lord Shiva. Also a village which is the reason for the birth of river Godavari. Famous for a Sanskrit school which has been built 63 years back.
- Rajahmundry – A town known for its role in Telugu culture and birthplace of writers such as Nannaya, one of the Kavitrayment trinity of poets who translated the Mahabharata into Telugu. The Godavari Pushkaralu is a major local festival that is staged every 12 years.

- Araku Valley which is a popular hill station in Vishakhapatnam District
- Lambasingi hill station known for snowfall during winter season in Vishakhapatnam district.
- Deomali peak located in the Godavari basin is the highest peak (1672 mmsl) in Odisha state.
- Mandasa village in Srikakulam district- famous for Sri Vasudev Perumal temple, famous for sweet Kova", near mahendragiri hill (highest peak in eastern ghats).



Scenic View of Araku Valley in Andhra Pradesh

Flora and fauna

- The Krishna Godavari Basins one of the main nesting sites of the endangered Olive Ridley sea turtle Godavari is also a home to the endangered fringed-lipped carp (Labeo fimbriatus).^[25]
- The Coringa mangrove forests in the Godavari delta are the second largest mangrove formation in the country. Part of this has been declared as the Coringa Wildlife Sanctuary, renowned for reptiles. They also provide an important habitat to a wide variety of fish and crustaceans. These forests also act as barriers against cyclones, tropical storms and storm surges, thus protecting the nearby villages.
- The Jayakwadi Bird Sanctuary is another haven for birds located near the town of Paithan spread across the back waters of the NathSagar Reservoir formed by impounding the Godavari by the massive Jayakwadi Dam. Its 341 km² area is dotted by islands within the reservoir which serve as nesting sites for the birds.^[26]
- The Nandurmadmeshwar Bird Sanctuary is located along the back waters of the Godavari river near Nashik at its confluence with Kadva River.^[27] It is known as the Bharatpur of Maharashtra for the wide diversity of bird life that it harbours.

The following are few other wildlife sanctuaries located in the river basin.

- | | |
|---|---------------------------------------|
| ▪ <u>Papikonda Wildlife Sanctuary</u> | ▪ <u>Tadoba Andhari Tiger Project</u> |
| ▪ <u>Indravati National Park</u> | ▪ <u>Pench National Park</u> |
| ▪ <u>Kanger Ghati National Park</u> | ▪ <u>Bor Wildlife Sanctuary</u> |
| ▪ <u>Eturnagaram Wildlife Sanctuary</u> | ▪ <u>Navegaon National Park</u> |
| ▪ <u>Kawal Wildlife Sanctuary</u> | ▪ <u>Nagzira Wildlife Sanctuary</u> |
| ▪ <u>Kinnerasani Wildlife Sanctuary</u> | ▪ <u>Gautala Wildlife Sanctuary</u> |
| ▪ <u>Manjira Wildlife Sanctuary</u> | ▪ <u>Tipeshwar Wildlife Sanctuary</u> |
| ▪ <u>Pocharam Forest & Wildlife Sanctuary</u> | ▪ <u>Painganga Wildlife Sanctuary</u> |
| ▪ <u>Pranahita Wildlife Sanctuary</u> | |

Waterfalls

Duduma Waterfalls is 175 metres (574 ft) high and one of the highest waterfalls in southern India. It is located on the Sileru river which forms boundary between Andhra Pradesh and Odisha states. The following are few other waterfalls located in the river basin

- | | |
|------------------------|------------------|
| ▪ <u>Teerathgarh</u> | ▪ <u>Kuntala</u> |
| ▪ <u>Chitrakoot</u> | ▪ <u>Pochera</u> |
| ▪ <u>Sahastrakunda</u> | ▪ <u>Bogatha</u> |



Panoramic view of downstream pond below the Chitrakoot Falls

Crossings



Havelock Bridge on the left and Godavari Arch Bridge on the right

There are 4 bridges spanning the river between East Godavari and West Godavari districts.

1. Old Godavari Bridge (also known as Havelock bridge, and named after then Madras governor)
2. Godavari Bridge (also known as Rail-cum-road bridge and Kovvur-Rajahmundry Bridge)
3. Godavari Arch Bridge (also known as New railway bridge)
4. Fourth Bridge (also known as new road bridge)

■ Old Godavari Bridge

Construction of this bridge started in 1876, and was completed in 1897. It was constructed under the supervision of F.T. Granville Walton who had constructed the Dufferin Bridge over the Ganges, and Granville Mills, both British engineers.

Spanning over 3 km in length, it linked the East Godavari and West Godavari districts. The bridge has been a vital link enabling trains to run between Chennai and Howrah. Trains continued over the bridge for a century until 1997, when train services over the bridge were suspended after the construction of two additional bridges.

■ Godavari Bridge

Construction of this bridge started in 1970, and was completed in 1974. It serves as both a railway and a roadway between the East Godavari and West Godavari Districts.

■ Godavari Arch Bridge

This bridge was completed in 1997, was built upstream of the earlier bridges.

■ Fourth Bridge

This bridge is the newest. It was opened to public from Godavari Pushkaras 2015. This is a road connectivity bridge link supposed to ease traffic flow between Rajahmundry and Kovvur.

Dams

The main Godavari River up to the confluence with Pranhita tributary is dammed fully to utilize the available water for irrigation. However, its main tributaries Pranhita, Indravati and Sabari which join in the lower reaches of the basin, carry three times more water compared to main Godavari. In 2015, the water surplus Godavari River is linked to the water deficit Krishna River by commissioning the Polavaram right bank canal with the help of Pattiseema lift scheme to augment water availability to the Prakasam Barrage located in Andhra Pradesh. More dams are constructed in the Godavari River basin than in any other river basin of India.^[28] The following are the few dams located in the river basin:

- **Gangapur Dam**: This is a large earth fill dam with gross water storage of 215.88 million cubic metres^[29] and located 10 km (6.2 mi) upstream from Nashik city. The reservoir known as the Gangapur ~~and~~ Sagar provides drinking water to the Nashik city and also supplies water to the thermal power station situated downstream at ~~E~~klahare.
- **Jayakwadi dam**: Located near Paithan, it is one of the largest earthen dams in India. This dam was built to address the dual problems of flooding along the banks, during monsoon months, and that of drought, rest of the year, in the Marathwada region. Two 'left' and 'right' canals provide the irrigation to fertile land up to Nanded district. This dam has contributed to industrial development of Aurangabad and Jalna, Maharashtra^[30] Majalgaon Dam is also constructed under Jayakwadi stage 2 to expand the irrigation potential further in Parbhani, Nanded and Beed districts.
- **Vishnupuri barrage**: Asia's Largest Lift Irrigation project, the Vishnupuri Prakalp^[31] has been constructed on the river at a distance of 5 km (3.1 mi) from the city Nanded.
- **Ghatghar Dam** was built for hydro power generation by diverting the water of Pravara tributary outside Godavari river basin to a west flowing river which joins Arabian sea.
- **Upper Vaitarna reservoir** was built across west flowing Vaitarna river merging some part of Godavari river catchment area. Godavari water impounded in this reservoir is diverted outside the river basin for Mumbai city drinking water supply after generating hydro power
- **Sriram Sagar Dam**: This is another multipurpose project on the Godavari River on the borders of Adilabad and Nizamabad District. It is near the town of Pochampad, 60 km away from Nizamabad. It has been described by The Hindu as a "lifeline for a large part of Telangana".^[32] It serves the irrigation needs in Karimnagar, Warangal, Adilabad, Nalgonda, and Khammam districts and also generates power
- **Dowleswaram Barrage** was built by Sir Arthur Cotton in 1852. It got damaged in 1987 floods, and rebuilt as a barrage cum roadway soon after and named after him. The roadway connects Dowleswaram in East Godavari and Vijjeswaram in West Godavari. The irrigation canals of this barrage also form part of National Waterway 4.



An upstream view of Jayakwadi Dam.

Sriram Sagar Dam



Dowleswaram Dam near Rajahmundry on the river

Hydro power stations

The Godavari River is one of the rivers whose water energy is least harnessed for generating hydro electricity^[33] The 600 MW capacity Upper Indravati hydro power station is the biggest hydro power station which diverts Godavari River water to the Mahanadi River basin.^[34] The following is the list of hydro electric power stations excluding small and medium installations.

Hydroelectric power stations on Godavari river

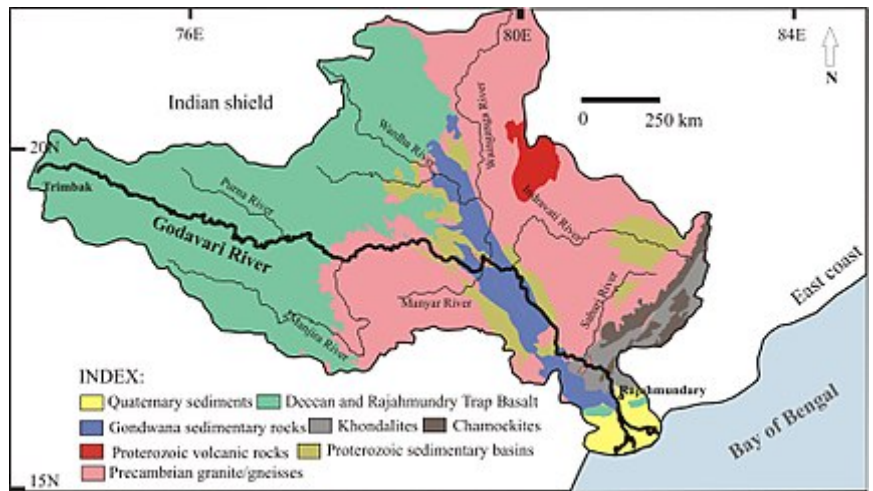
Name of the project	Rated Power (in MW)
Upper Indravati	600
<u>Machkund</u>	120
<u>Balimela</u>	510
<u>Upper Sileru</u>	240
<u>Lower Sileru</u>	460
Upper Kolab	320
<u>Pench</u>	160
<u>Ghatghar pumped storage</u>	250
<u>Polavaram</u> (under construction)	960



Upper Indravati power house

Geology and sediment transfer in the Godavari Drainage Basin

The primary/initial catchment of the Godavari drainage basin is largely represented by the basalt of the Deccan Volcanic Province (~50% of the total basin area). This is followed by the Precambrian granites and gneisses of the eastern Dharwar Craton, sandstones, shales and limestones of the Gondwana Supergroup, various sedimentary units of Cuddapah and Vindhyan basins, charnockites and khondalites of the Proterozoic Eastern Ghats Mobile Belt and the sandstones of the Rajahmundry Formation.^[35] The Godavari River carries the largest sediment load among the peninsular rivers and the majority



Generalized Geological Map of Godavari Drainage Basin

of the mass transfer in Godavari occurs during the monsoon.^[36] Mineral magnetic studies of the Godavari River sediments suggest that the floodplains in the entire stretch of the river are characterized by a Deccan basalt source. The bed loads on the other hand are of sourced from local bedrock. Influx of Deccan source in the Godavari River up to the delta regions and possibly in the Bay of Bengal off the Godavari, therefore, can be related to the intensive chemical weathering in the Deccan basalts.^[37] Abrupt increase in $\delta^{13}\text{C}$ values and decrease in TOC content accompanied with a significant increase in ferrimagnetic mineral concentration in Bay of Bengal sediments from ~3.2 to 3.1 cal. ka BP reflected a shift of organic carbon and sediment source and a severe decline in vegetation coverage. Such phenomena indicate intensified deforestation and soil/rock erosion in the Deccan Plateau producing higher ferrimagnetic mineral inputs, which is in agreement with significant expansion of agricultural activities in the Deccan Chalcolithic cultural period.^[38]

Mineral deposits

Godavari river basin is endowed with rich mineral deposits such as oil & gas, coal, iron, lime stone, manganese, copper, bauxite, granite, laterite, etc. The following are the few noted deposits:

- Krishna Godavari Basin oil & gas
- Godavari Valley Coalfield, coal
- Wardha Valley Coalfield, coal
- Pench Kanhan Coalfield coal
- Bailadila iron, iron
- Rowghat Mines, iron
- Araku hills, bauxite
- Malanjhand, copper
- MOIL, manganese

Ecological concerns

The frequent drying up of the Godavari river in the drier months has been a matter of great concern. Indiscriminate damming along the river has been cited as an obvious reason. Within Maharashtra sugarcane irrigation has been blamed as one of the foremost causes.^[39]

In 2013, the river was at its all-time low in the Nizamabad district of Telangana. This had hit the growth of fish, making the life of fishermen miserable. The water-level was so low that people could easily walk into the middle of the river. Shortage in rainfall and closure of the controversial Babli project gates in Maharashtra was thought to have affected the water flow in the river and water availability to the Sriram Sagar Project except during above 20% excess monsoon (i.e. one out of four years) years.^[40]

A study has found that the delta is at a greater risk as the rate of sediment aggradation (raising the level of the delta through sediment deposition) no longer exceeds relative sea-level rise.^[41] It further states that the suspended sediment load at the delta has reduced from 150·2 million tons during 1970–1979 to 57·2 million tons by 2000–2006,^[42] which translates into a three-fold decline in the past 4 decades. Impacts of this can be seen in destroyed villages like Uppada in Godavari delta,^[43] destruction of Mangrove forests and fragmentation of shoreline – possibly a fallout of dam construction.

Said to further epitomise the insensitivity towards Godavari, is the Polavaram Project which is touted to be gigantic – both in terms of size and violations.^[44] Deemed as being pointless and politically driven,^[45] the project raises questions about environmental clearance, displacement of upstream human habitations,^[46] loss of forest cover, technicalities in the dam design which are said to play down flood threats and unsafe embankments.

High alkalinity water is discharged from the ash dump areas of many coal fired power stations into the river which further increases the alkalinity of the river water whose water is naturally of high alkalinity since the river basin is draining vast area of basalt formations.^[47] This problem aggravates during the lean flow months in entire river basin. Already the Godavari basin area in Telangana is suffering from high alkalinity and salinity water problem which is converting soils in to unproductive sodic alkali soils.^[48] The following are the few coal fired power stations located in the river basin:

Thermal power stations in Godavari river basin

Name of Power Station	Rated Power (in MW)
<u>Koradi Thermal Power Station</u>	2,600
<u>Khaparkheda Thermal Power Station</u>	1,340
<u>Tirora Thermal Power Station</u>	3,300
<u>Butibori Power Project</u>	600
<u>RattanIndia Nashik TPS</u>	1,350
<u>Chandrapur STPS</u>	3,340
<u>Mauda Super Thermal Power Station</u>	1,000
<u>Parli Thermal Power Station</u>	1,130
<u>Dhariwal Power Station</u>	300
<u>Nashik Thermal Power Station</u>	910
<u>Wardha Warora Power Plant</u>	540
<u>Pench Thermal Power Plant</u>	1,320
<u>Lanco Vidarbha Thermal Power</u>	1,320
<u>NTPC Ramagundam</u>	2,600
<u>Kothagudem Thermal Power Station</u>	1,720
<u>Kakatiya Thermal Power Station</u>	1,100
<u>Ramagundam B Thermal Power Station</u>	60
<u>Manuguru Heavy waterplant's power station</u>	N/A
<u>Singareni thermal power station</u>	1,800
<u>Bhadradi Thermal Power Plant</u>	1,080



Dried up Godavari exposing flood basalt river bed as seen from the back of Changdev temple in Puntamba

In popular culture

One of the ships of the Indian Navy has been named INS Godavari after the river

See also

- Godavari Water Disputes Tribunal
- Detailed list of Tributaries
- Godavari River Basin Irrigation Projects
- Godavari Arch Bridge
- Godavari Bridge
- Old Godavari Bridge
- List of dams and reservoirs in India
- River basins in Madhya Pradesh
- Godavari Maha Pushkaram

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