STUDY SMART COURSE

Major Dams and Hydropower projects

By Dr. Gaurav Garg

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Most important dams in the world

Hoover Dam - (USA) – Colorado River, Lake Mead

Tarbela Dam (Pakistan) – Indus River
Mangla Dam (Pakistan) – Jhelum River, PoK
Contra Dam - Switzerland
Almendra Dam (Spain) – Tormes River

Most important dams in the world

Itaipu Dam (Brazil) – Parana River
Monticello Dam - California, USA
Atatürk Dam (Turkey) – Euphrates River

Kariba Dam (Zimbabwe) – Zambezi River

What is the classification of Hydro Projects based on Installed Capacity?

Micro: upto 100 KW
Mini: 101KW to 2 MW
Small: 2 MW to 25 MW

Mega:
Hydro projects with installed capacity >= 500 MW
Thermal Projects with installed capacity >=1500 MW

Highest Dam in India- Tehri Dam (Uttarakhand)
Height: 260 meters, River: Bhagirathi

Longest Dam in India - Hirakud Dam (Odisha)
Total Length: 25.79 km
Length of Main Dam:4.8 km
River: Mahanadi

Oldest Dam in India - Kallanai Dam (Tamil Nadu)
River: Kaveri
Also known as Grand Anicut Dam
Built by Chola Empire kings in 2nd century AD

Which is the largest Hydropower station in the world?

The Three Gorges Dam is the largest hydroelectric dam in the world. It is located in the middle of the three gorges on the Yangtze River, the third longest in the world, in the Hubei Province of China.

Installed capacity of around 22500 MW.

Run of River Hydro power plants

They do not have large reservoirs to store water. Because they can't store water they usually generate much less power than hydroelectric dams.

In run of river systems, running water is diverted from a flowing river and guided down a channel, or penstock, which leads to a generating house. There the force of the moving water spins a turbine and drives a generator. The water is fed back into the main river further downstream.

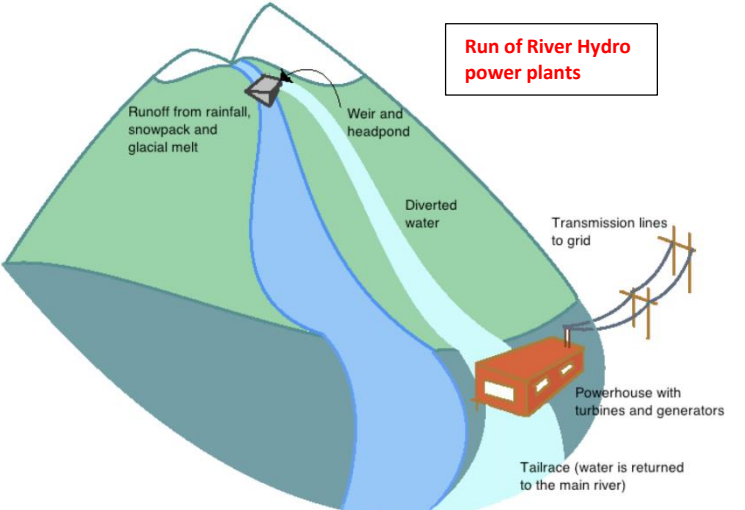
The difference between run-of-river and large hydropower is that run of river systems do not dam the river to create a water reservoir. Most run of river facilities do use a small dam, or weir, to ensure enough water enters the penstock and have a small reservoir called pondage to store small amounts of water for same-day use. However they cannot store large amounts of water for future use.

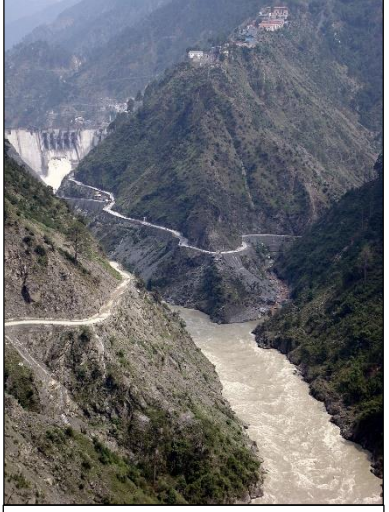
Run of River Hydro power plants

The absence of a major reservoir has two main implications. The first is that if or when the river's water levels are depleted because of drought or water extraction, the 'fuel' for the run of river system is reduced or becomes entirely unavailable. Without a dam for storing water, there is no stored power.

They can't be relied on in emergency or when peak-load increases. However, they cause less environmental harm.

Run of River Hydro power plants





Baglihar Dam

Baglihar Dam also known as Baglihar Hydroelectric Power Project, is a run-of-the-river power project on the Chenab River in the Ramban district of the Indian union territory of Jammu and Kashmir.


INDIA-WRIS

Etalin Hydroelectric Project

3,097 MW Etalin Hydroelectric Project in Arunachal Pradesh

The Project is based on the river Dibang.

Dibang is a tributary of the Brahmaputra river

It envisages construction of two dams over the tributaries of Dibang: Dir and Tangon.

Polavaram Hydroelectric Project

Located on the Godavari River in the West Godavari District and East Godavari District in Andhra Pradesh.

Capacity: 960 MW

The Subansiri Lower Dam

Under construction gravity dam on the Subansiri River in NorthEastern India.

It is located 2.3 km (1.4 mi) upstream of Gerukamukh village in Dhemaji District and Lower Subansiri District on the border of Assam and Arunachal Pradesh. Described as a run-of-the-river project by NHPC Limited, the Project is expected to supply 2,000 MW of power when completed.

The Kaleshwaram Lift Irrigation Project is a multi-purpose irrigation project on the Godavari River in Kaleshwaram, Bhoopalpally, Telangana, India.

Currently the world's largest multi-stage lift irrigation project.

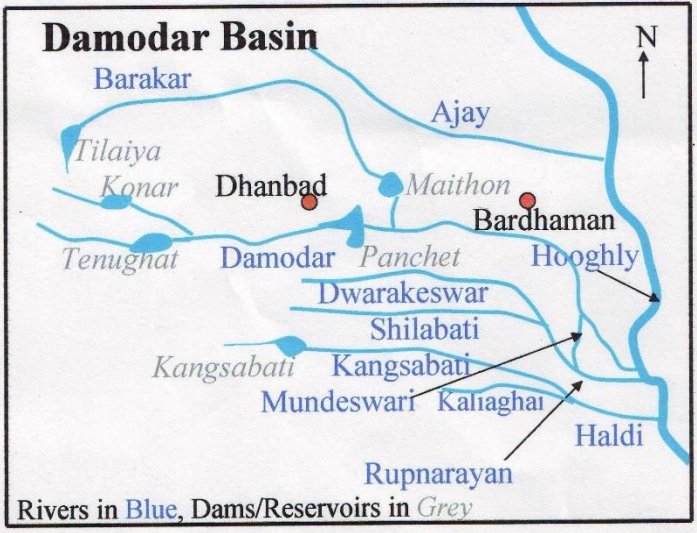
The Ukai Dam, constructed across the Tapi River, is the second largest reservoir in Gujarat after the Sardar Sarovar.

It is also known as Vallabh Sagar.

Surat district, Gujarat

Installed capacity - 300 MW

Tilaiya and Maithon on Barakar River, Panchet on Damodar river and Konar on Konar river



Massanjore Dam is a hydropower generating dam over the Mayurakshi River located at Massanjore near Dumka in the state of Jharkhand, India

Panchet - It was constructed across the Damodar River at Panchet in Dhanbad district in the Indian state of Jharkhand, and opened in 1959. Installed capacity is 80 MW

The Maithon Dam is located at Maithon, 48 km from Dhanbad, in the state of Jharkhand. The dam is constructed on the Barakar River.

Tilaiya Dam - It was constructed across the Barakar River, at Tilaiya in Koderma district in the Indian state of Jharkhand

Nagarjunasagar Hydro Electric Power plant

Dam: Nagarjuna Sagar Dam across the Krishna River.

Location: Guntur district, Andhra Pradesh and Nalgonda district, Telangana

Capacity: The hydroelectric plant has a power generation capacity of 815.6 MW with 8 units (1x110 MW+7x100.8 MW).

The Mettur Dam is one of the largest dams in India and the largest in Tamil Nadu, located across the river Cauvery

Krishna Raja Sagara Dams located in Karnataka.
It lies just below the confluence of river Kaveri with its tributaries Hemavati and Lakshmana Tirtha, in the district of Mandya.

The Bhavanisagar Dam

Bhavanisagar Dam or Lower Bhavani Dam, is located in Erode district, Tamil Nadu, constructed on the Bhavani River, located very near to Sathyamangalam, tiger reserve.

Almatti Dam

River - Krishna
Location - Bijapur district, Karnataka
The Lal Bahadur Shastri Dam is also known as Almatti Dam is a hydroelectric project on the Krishna River in North Karnataka

The Almatti Dam is the main reservoir of the Upper Krishna Irrigation Project; the 290 MW power station is located on the right side of the Almatti Dam.

Srisailam Hydro Electric Power plant

Dam : The Srisailam Dam is constructed across the Krishna River.

Locations: Kurnool district, Andhra Pradesh.
The dam was constructed in a deep gorge in the Nallamala Hills in between Kurnool and Mahabubnagar districts,
It is the 2nd largest capacity working hydroelectric station in the country.

Installed Capacity: 1,670 MW

Renukaji dam multipurpose project

It includes 3 projects

Lakhwar project on the Yamuna in Uttarakhand

Kisau on the Tons in Uttarakhand and Himachal

Renukaji on the Giri in Himachal.

Dams on Chambal River

The Gandhi Sagar dam is the first of the four dams built on the Chambal River, located on the Rajasthan-Madhya Pradesh border. (Mandsaur-Neemuch districts)

The Rana Pratap Sagar dam is a dam located 52 km downstream of Gandhi Sagar dam on across the Chambal River near Rawatbhata in Chittorgarh district in Rajasthan.

The Jawahar Sagar Dam is the third dam in the series of Chambal Valley Projects, located 29 km upstream of Kota city and 26 km downstream of Rana Pratap Sagar dam.

Bisalpur Dam is a gravity dam on the Banas River near Deoli in Tonk district, Rajasthan, India.

Jaswant Sagar Dam on Luni River in Jodhpur

Kangsabati Dam – On Kangsabati river, Bankura, West Bengal

Cheruthoni Dam on Cheruthoni river, Kerala

Banasur Sagar – On the Karamanathodu tributary of the Kabini River, Kerala

Mulla-Periyar Dam – Periyar River, Kerala

Dul Hasti Hydroelectric Plant

Located on: Chandra River, a tributary of Chenab River in Kishtwar, Jammu and Kashmir

Capacity: 390 MW

Kiru hydro-electric project

It is a run-of-river scheme is located, in Kishtwar district of J&K State and is about 40 kms from Kishtwar. The Kiru H E Project of 624 MW installed capacity is proposed on river Chenab

The Shahpurkandi Dam project is located on the Ravi River in Pathankot district, Punjab, India, downstream from the existing Ranjit Sagar Dam.

Multipurpose Jamrani Dam Project is proposed to be Constructed in District Nanital of Uttaranchal State on Gola River.

The Ranjit Sagar Dam/Thein Dam, on Ravi River on the Border of two states of India Jammu and Kashmir and Punjab. Pathankot of Punjab and Kathua district in J&K.

Pakal Dul Hydroelectric Project - It is a reservoir based scheme proposed on river Marusudar, the main right bank tributary of river Chenab in Doda District in Jammu & Kashmir.

Kishanganga Power station (3x110MW) It is located on Kishanganga River, a tributary of river Jhelum in Bandipora District of Jammu & Kashmir.

The Ratle Hydroelectric project - It is a run-of-the-river hydroelectric power station currently under construction on the Chenab River in Kishtwar district of Jammu and Kashmir.

Machkund Hydro Electric Power plant

Dam: Jalaput Dam built on the Machkund River, a tributary of the Godavari River.

Location: Jalaput village, Visakhapatnam district, Andhra Pradesh. Jalaput is a border village between Odisha and Andhra Pradesh.

Capacity: 120 MW

Machkund river forms Duduma Waterfalls also

Sardar Sarovar Hydro Electric Power plant

Dam: Sardar Sarovar Dam is a concrete gravity dam on the Narmada river.

Location: Kevadia, Narmada district, Gujarat

Four Indian states, Gujarat, Madhya Pradesh, Maharashtra and Rajasthan, receive water and electricity supplied from the dam

Capacity: The total installed capacity of the power facilities is 1,450 MW.

Baira-Siul Hydroelectric Power plant

Baira Siul Power Station is a major step towards harnessing hydroelectric potential in Himachal Pradesh.

It envisages utilization of the combined inflow of three tributaries of the Ravi river, namely Baira, Siul and Bhaledh for generation of power on run-of-the-river basis.

The installed capacity is 180 MW (3 x 60MW).

Bhakra Nangal Hydroelectric Power plant

Dam: Bhakra Dam is a concrete gravity dam on the Sutlej River.

Nangal Dam is another dam in Punjab downstream of Bhakra Dam.

However, sometimes both the dams together are called Bhakra-Nangal Dam though they are two separate dams.

Location: Bilaspur, Himachal Pradesh

Capacity: The two power houses have a total capacity of 1325 MW

The power generated at Bhakra Dam is distributed among partner states of Himachal Pradesh, Punjab, Haryana, Rajasthan, Chandigarh and Delhi.

Dehar Hydroelectric Power plant

Dam: Pandoh Dam is an embankment dam on the Beas River.

Location: Mandi district, Himachal Pradesh

The Beas water is used for power generation at the Dehar Power House before being discharged into the Sutlej River, connecting both rivers.

The Dehar Power Plant is situated on the banks of the Satluj at the Slapper bridge.

Capacity: 990 MW

Nathpa Jhakri Hydroelectric Power plant

Dam: Nathpa Jhakri Dam is on the Sutlej river.

Location: Himachal Pradesh

Capacity: 1,500 MW

Salal Hydro Electric Power plant

Dam: Salal Dam is located on the Chenab River

Location: Reasi district of the Jammu and Kashmir

It was the first hydropower project built by India in Jammu and Kashmir under the Indus Water Treaty regime.

Capacity: 690 MW

Uri Hydro Electric Power plant

Dam: Uri Dam built on Jhelum River.

Location: Uri in Baramula district of the Jammu and Kashmir, India.

Capacity: 480 MW

Subarnarekha Hydroelectric Power plant

Dam: Subarnarekha River

Location: Jharkhand

Capacity: 130 MW

Kalinadi Nagjhari Hydroelectric Power Plant

Dam: Kadra Dam is built on Kalinadi

Location: Uttara Kannada district of Karnataka state in India.

Capacity: 150 MW

Sharavathi Hydro Power Plant

Dam: Linganamakki dam & Gersoppa dam built on Sharavathi River

Location: Shimoga District , Karnataka.

Capacity: 1035 MW

Sidrapong Hydroelectric Power Station

Sidrapong Hydroelectric Power Station is located at the foothills of Arya Tea Estate 12 km (7.5 mi) from Darjeeling town in West Bengal.

It is the oldest hydel power station or hydroelectric power plant in India as per power ministry's official website.

was commissioned on 10 November 1897, its original capacity was 2 × 65 kW, which was expanded in phases for increased demands to a total 1000 kW in 1916.

Shivanasamudra Hydroelectric Power plant

Located: It is situated along the river Kaveri in Mandya District, Karnataka.

It is India's second hydro-electric power station and is located at the waterfall and is still functional. It was commissioned in 1902.

Capacity: 42 MW

Idukki Hydro Electric Power plant

Dam: Idukki Dam is a double curvature Arch dam constructed across the Periyar River

Location: Idukki taluk, Kerala

Capacity: 780 MW

Bansagar Hydroelectric Power plant

Dam: Ban Sagar Dam built on Sone River

Location: Shahdol District, Madhya Pradesh

Capacity: 435 MW

The project was called "Bansagar" after Bana Bhatt, the renowned Sanskrit scholar of the 7th century.

Indira Sagar Hydro Electric Power plant

Dam: Indira Sagar Dam built on Narmada River

Location: Khandwa district, Madhya Pradesh

Capacity: 1,000 MW (8x125 MW)

Bargi Dam

Narmada River, Jabalpur

Rani Avantibai Lodhi Sagar Project has been developed by Bargi Dam.

The Bhadra Dam is located on the Bhadra River a tributary of Tungabhadra River in Karnataka

The Tungabhadra Dam also known as Pampa Sagar is constructed across the Tungabhadra River, a tributary of the Krishna River.The dam is in Hosapete, Ballari district of Karnataka.

Rihand Hydroelectric Power plant

Dam: Rihand Dam built on Rihand River, a tributary of the Son River. .

The reservoir of Rihand Dam is called Govind Ballabh Pant Sagar

Location: Sonbhadra District in Uttar Pradesh

Installed: 300 MW

Matatila Dam

The Matatila Dam is a dam in district Lalitpur, Uttar Pradesh
Built on the Betwa River

RAJGHAT Dam – Betwa, Lalitpur

Sharda Sagar Dam – Sharda River, Pilibhit

Parichha Dam, Jhansi Parichha Dam is built on river Betwa and located 25 kilometers near Parichha town in Jhansi.

Koyna Hydroelectric Power plant

Dam: It is a complex project with four dams including the largest dam on the Koyna River

Location: Satara district, Maharashtra

The total capacity of the project is 1,960 MW

Loktak Hydro Electric Power plant

Loktak Power Station (3 x 35 MW) is a multipurpose storage scheme to harness the hydro power potential of Loktak lake fed by Khuga and Imphal river.

It is located in Churachandpur district of Manipur

Balimela Hydro Electric Power plant

Dam: Balimela dam on river Sileru, which is a tributary of the Sabari River which in turn is a tributary of Godavari river

Location: Odisha

Capacity: 510 MW.

Hirakud Hydro Electric Power plant

Dam: Hirakud Dam is built across the Mahanadi River.

Location: Sambalpur, Odisha

Capacity: 347.5 MW

Rangit Hydroelectric Power plant

Dam: Rangit Dam built on Ranjit River, a major tributary of the Tista River.

Location: Sikkim

Capacity: 60 MW

Tehri Hydro Electric Power plant

Dam: Tehri dam built on Bhagirathi River

Location: Tehri, Uttarakhand

Capacity: 1,000 MW

Koteshwar Dam

It is a gravity dam on the Bhagirathi River, located 22 km (14 mi) downstream of the Tehri Dam in Tehri District, Uttarakhand, India.

Pancheshwar Dam is a rock-fill dam which is being constructed on the Sharda River (also known as Mahakali in Nepal), which forms the international boundary between India and Nepal. It will be built in Uttarakhand.

Baspa Hydro-electric project

The project is located on the river Baspa, a tributary of river Satluj in Kinnaur District of Himachal Pradesh

Baspa Stage –II project has Karcham-Wangtoo hydel project on its downstream.

Capacity: 300 MW, is the first plant of this size in the private sector and is an environment friendly devoid of any rehabilitation or resettlement issue.

Karcham Wangtoo Hydroelectric Plant

Capacity: 1,000 megawatts on Sutlej River in Kinnaur district of Himachal Pradesh, India.

In 2015 Jaypee Group sold out Karcham Wangtoo Project to JSW Group

Just upstream of the dam is the 300 MW Baspa II Hydroelectric Plant and downstream of the Karcham Wangtoo is the 1,500 MW Nathpa Jhakri Dam

Chamera Hydro Power Station

Dam: The Chamera Dam on Ravi River

Location: Chamba district, Himachal Pradesh

Pong Hydropower Project

Dam: Pong dam/Beas Dam is built on Beas River

Location: Talwara Township, Kangra District, Himachal Pradesh, India

Capacity: 396 MW

Dibang multipurpose hydro power

Location: Dibang River, Lower Dibang Valley District in Arunachal Pradesh

The project will generate 2880 mw (12x240 mw) power and is the largest ever hydro electric project to be constructed in India.

The dam is 278 metres high and will be the highest dam in India once completed.

Tanakpur Hydroelectric Project

Tanakpur Power Station (3 x 31.4 MW) is a run of the river scheme to harness the hydro power potential of Sharda River (Mahakali River in Nepal).

It is located near the town of Tanakpur in the district of Champawat, Uttarakhand

Omkareshwar Hydro Power Plant

Dam: Omkareshwar Dam built on Narmada River.

Location: Khandwa district, Madhya Pradesh.

Capacity: 520 MW

Dhauliganga Power Station (4x70 MW) is a run of the river scheme with small pondage to harness the hydro power potential of Dhauliganga river.

It is located in Pithoragarh district of Uttarakhand.

Installed capacity - 280 MW houses

Which is the first multipurpose river valley project of the independent India?

A. Damodar Valley Project
B. Bhakhra-Nangal Project
C. Almatti Dam Project
D. Mettur Dam

Thein dam is another name of which of the following dams?

Balimela dam
Indira Sagar dam
Jawahar Sagar project
Ranjit Sagar dam

Which is not correctly matched?

A. Nathpajhakari Project - Sutlej River
B. Mayurakshi Project - Canada Dam
C. Balimela Dam – Sileru River
D. Ukai Dam - Narmada River

Which dam is known as pampa sagar?

Mettur Dam
Almatti Dam
Tungabhadra Dam
Koyana Dam

Which of the following dams is not on River Krishna?

Nagarjuna Sagar Dam
Krishnaraja Sagar Dam
Srisailam Dam
Alamatti Dam

Which of the following dams is also known as Maharana Pratap Sagar?

Bansagar Dam
Thein Dam
Koyna Dam
Pong Dam

The oldest dam of India is built on which river?

Krishna River
Kaveri River
Damodar River
Periyar River

Q) The planned Bedabahal Ultra Mega Power Project is in which of the following states?

Tamil Nadu
Madhya Pradesh
Uttar Pradesh
Odisha

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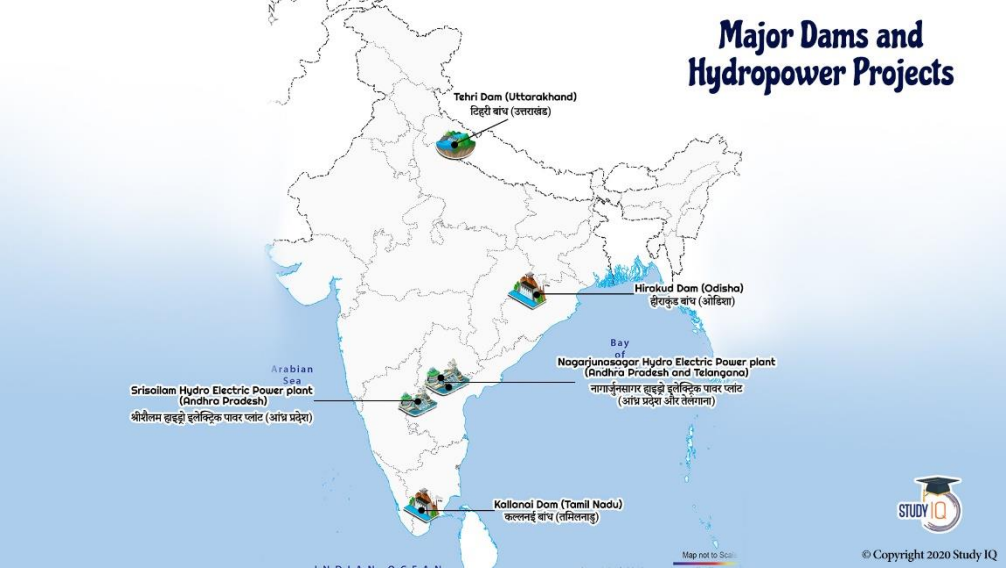

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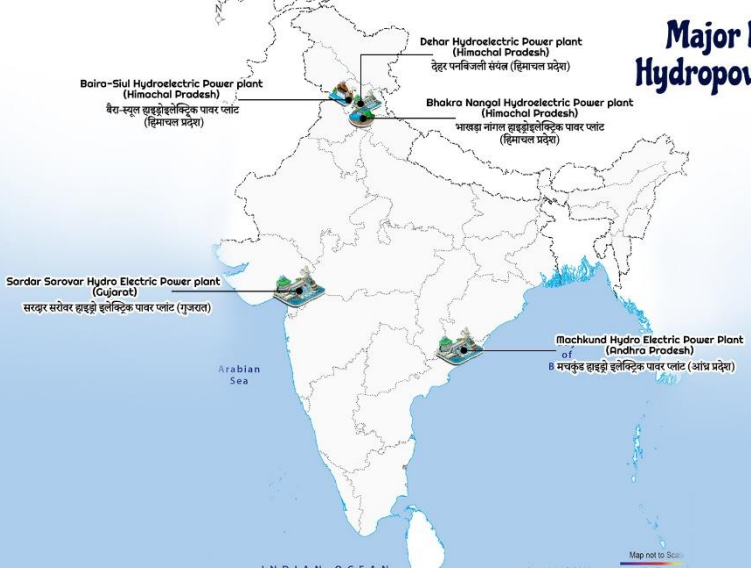

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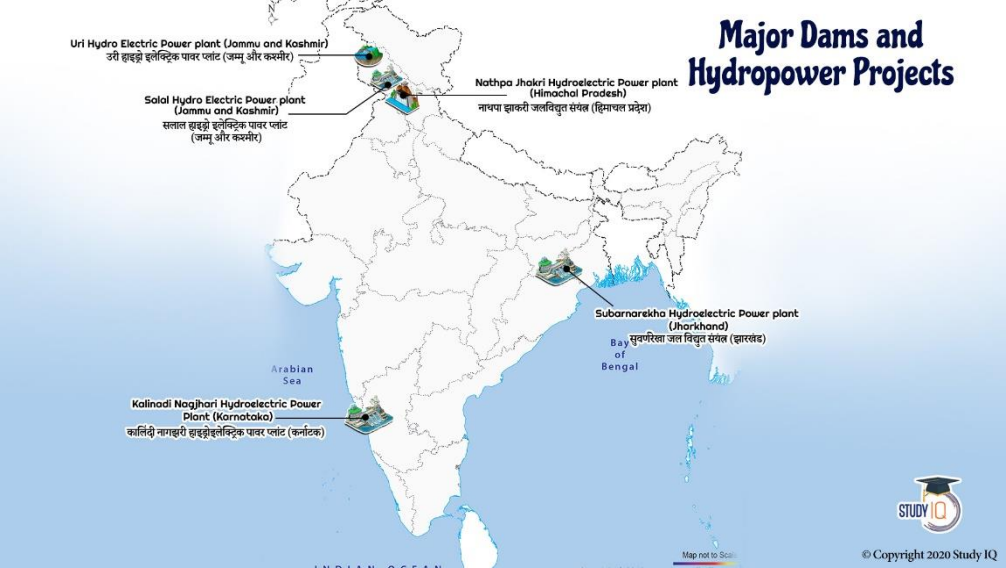

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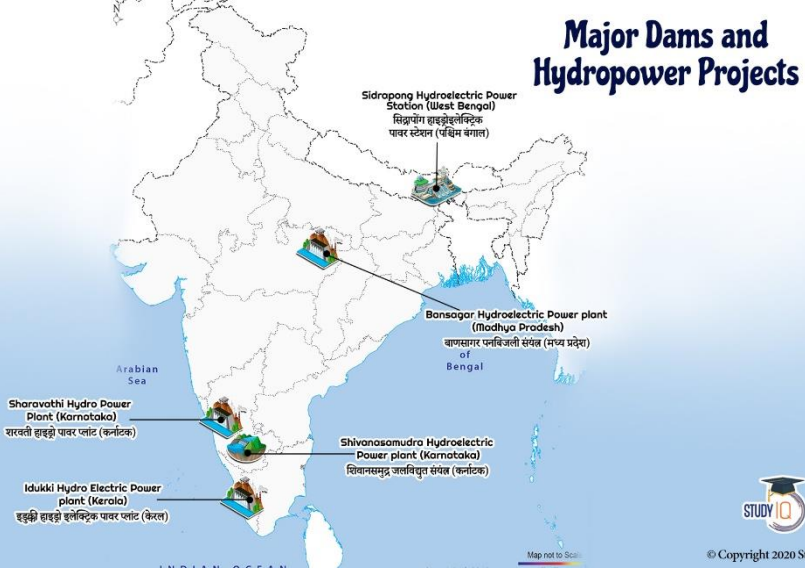

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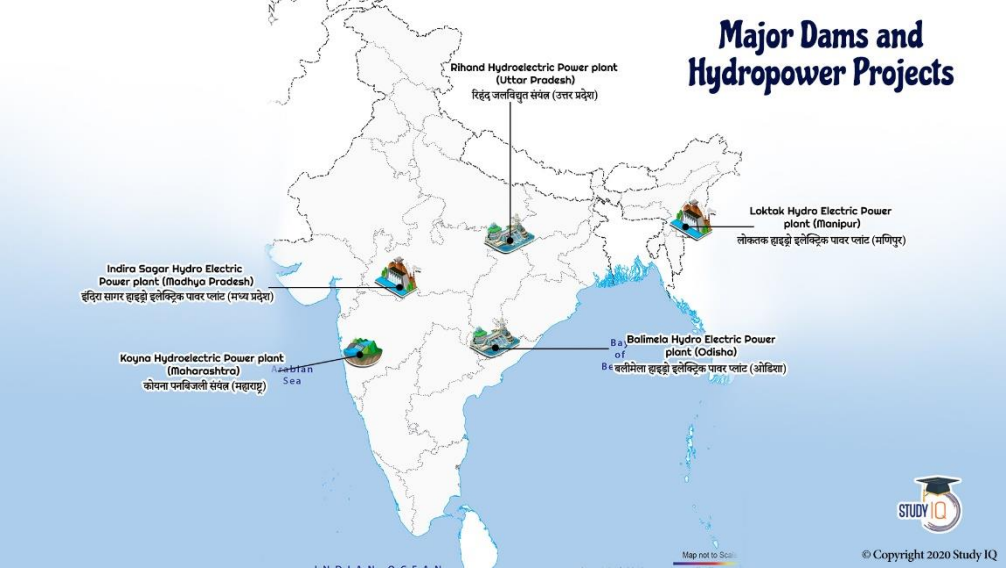

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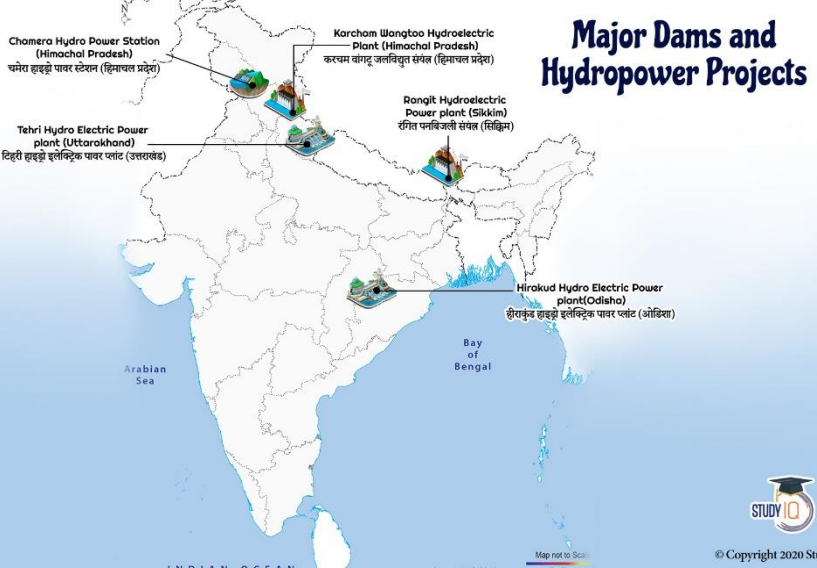

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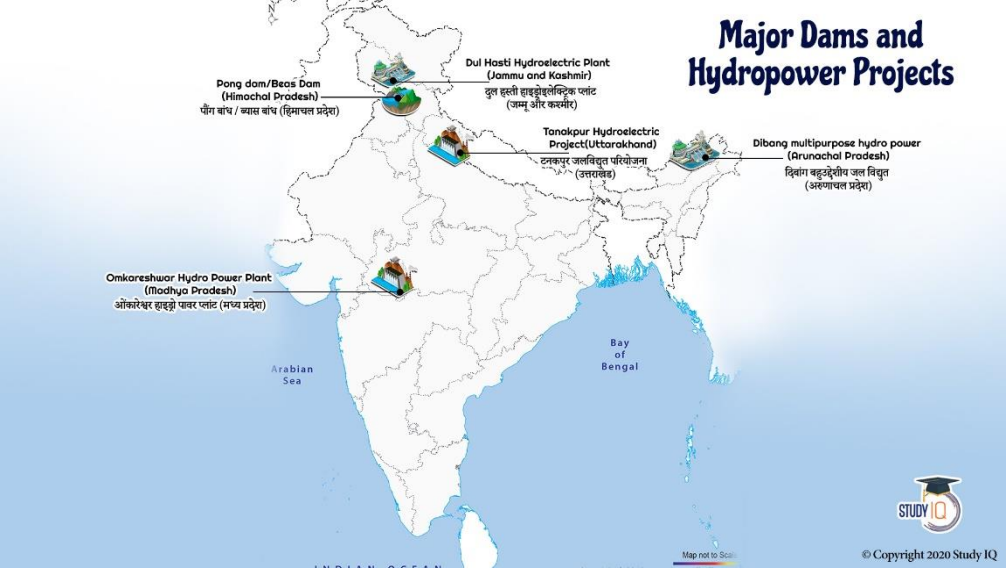

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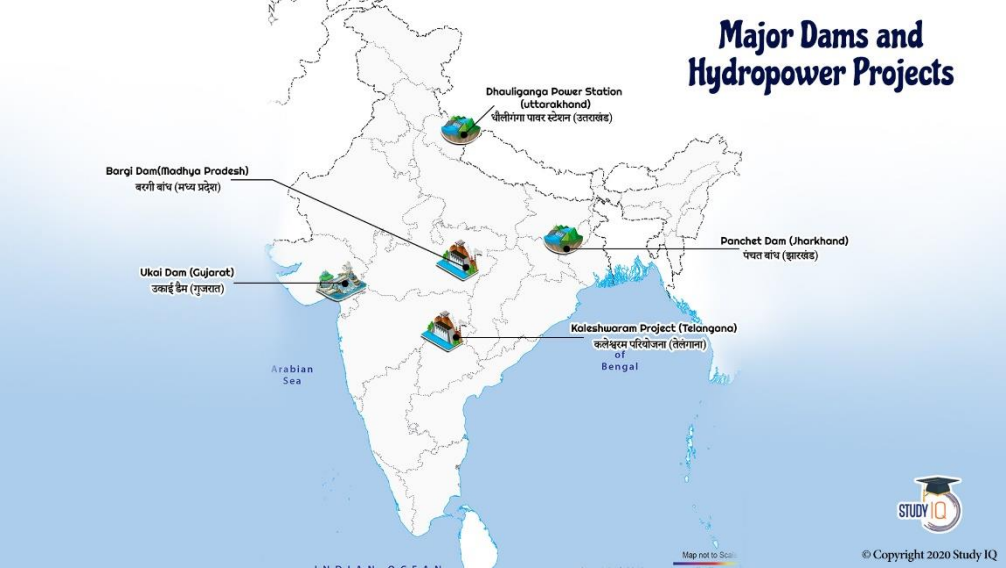

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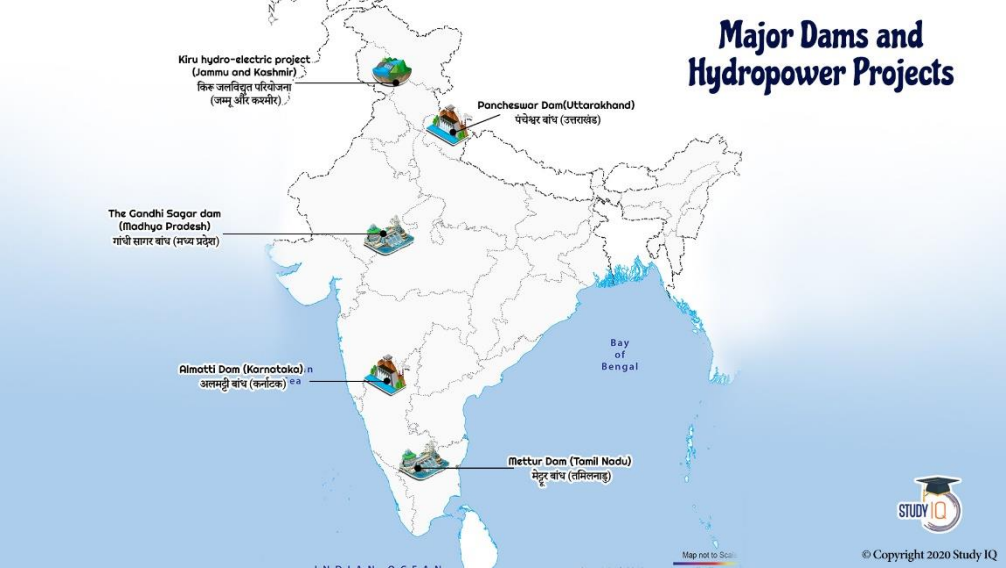

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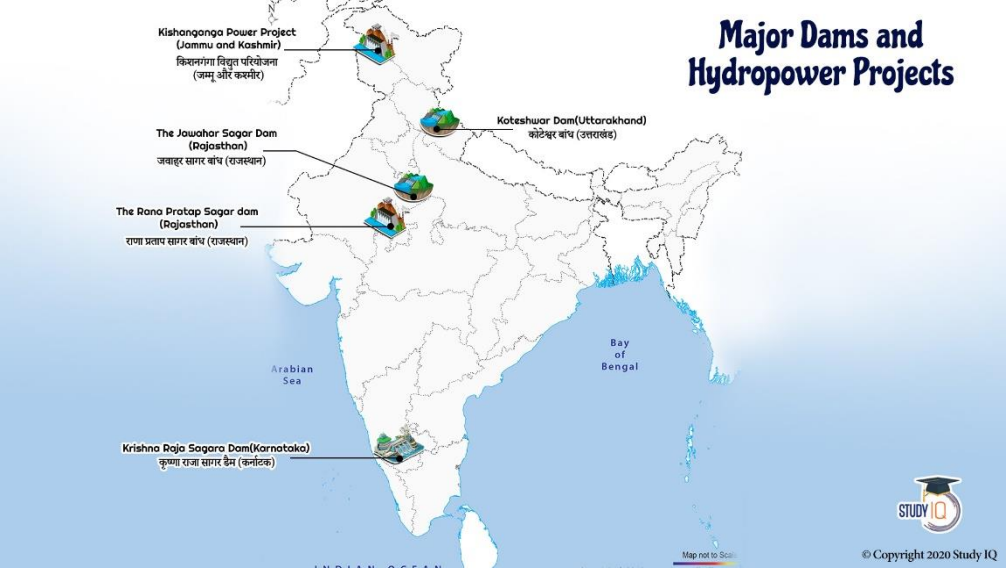

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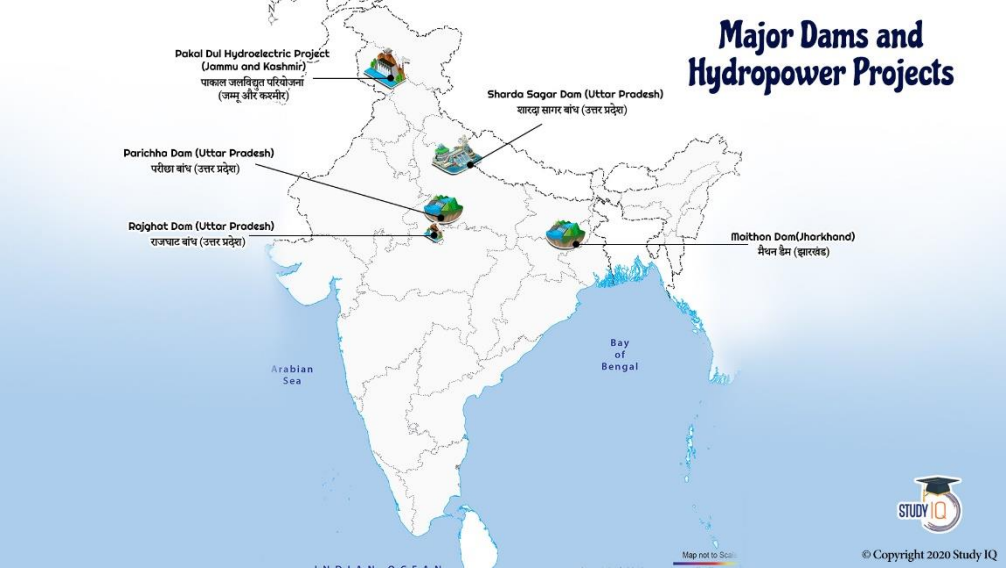

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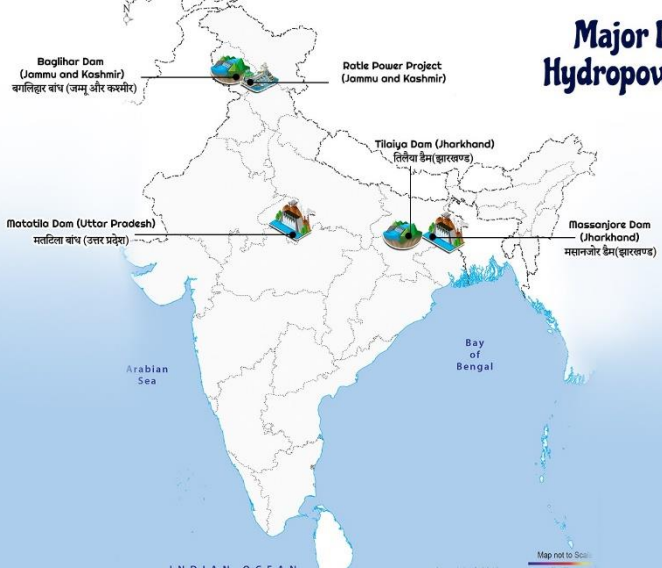

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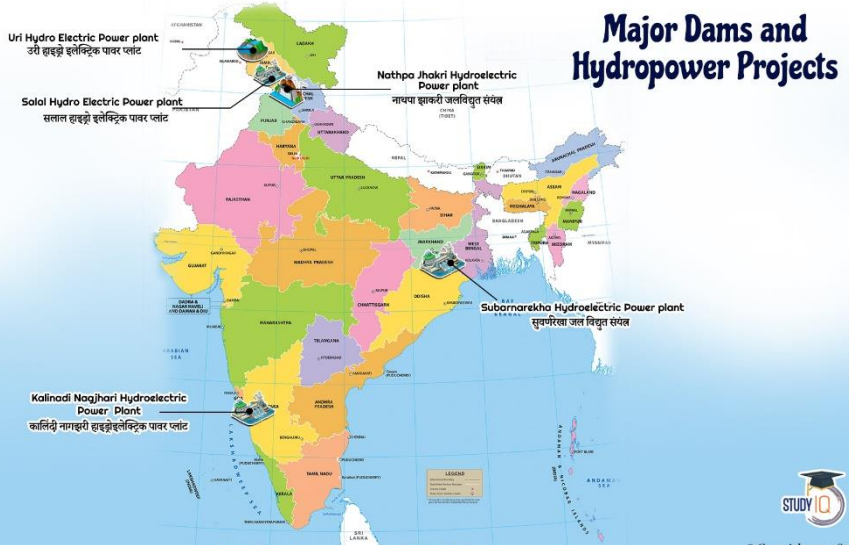

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