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Original Research Article

DAMs IN MAHARASHTRA AND ITS ENVIRONMENTAL EFFECTS

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Introduction:

A dam is a multipurpose project. India is a tropical country. After monsoon there is shortage of water in remaining eight months. Storage of water through dam reservoirs is necessary for agriculture and industrial manufacturing. Also, hydroelectricity is one of the important goals satisfied through dam Construction. Maharashtra rank first in dam construction in India. There are around 1821 large and small dams in Maharashtra. Koyana dam is the largest and tallest dam and then Bhatsa and Vaitarana dam. Ujjani Dam is the largest dam in Maharashtra in terms of total storage capacity of 3,140.000.000 m3.

In this paper main focus is on some positive and negative points of Dams in Maharashtra. How the biodiversity affected by construction of dams. The role dams of also important for the change of local climate condition and landscape features.

Key words: agricultural progress, flood control, Drought prone area in Maharashtra, climate change, local area benefits, hydroelectricity and rehabilitation issues.

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Aims and objectives:

1. Maharashtra ranks first in large dams' construction in India. It is a study of how many large dams in Maharashtra and their importance.
2. Dams of Drought prone area are change the agriculture system and beneficiary to the local environment also.
3. There are some issues related with large dam's construction. Mainly supply of water, maintenance etc.
4. Problems of rehabilitations of villages and agricultural lands etc.
5. Overall study of environmental changes after construction of dams in local area.

Dam in Maharashtra and its environmental effects:

There are around 1821 large and small dams in Maharashtra. Koyana dam is the largest and tallest dam and then Bhatsa and Vaitarana dam. Ujjani Dam is the largest dam in Maharashtra in terms of total storage capacity of 3,140.000.000 m3.

Koyana Dam constructed on Koyana river in the western Ghats, it has also largest hydroelectricity power plant in India. The main purpose of the dam is hydro with some irrigation in neighbouring areas. Today the Koyana Hydroelectric Projects the largest completed hydroelectric power plant in India having a total installed capacity of 1,960 MW. Due to its electricity generating potential Koyna River is considered as the 'life line of Maharashtra.

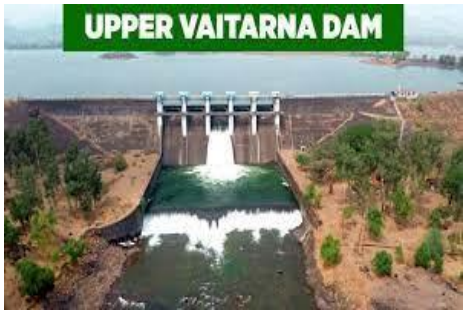
Bhatsa Dam (88.5 m) Thane.- Bhatsa Dam near Shahapur in Thane district is an earthfill and gravity dam with 88.5 m height and 959 m length is second highest dam in Maharashtra by height, the power plant has a capacity of 15MW.

Bhatsa dam with 88.5 m height has one of the largest surface area and water capacity in terms of gross storage capacity.

Middle Vaitarna Dam (84 m)

Middle Vaitarana Dam is the third tallest dam in Maharashtra by height built on the Vaitarna river. Vaitarna river. Vaitarna Dam (82 m) and Upper Vaitarna Dam are two more dams built on Middle Vaitarna Dam (84 m) Middle Vaitarana Dam is the third tallest dam in Maharashtra by height built on the Vaitarna river. Vaitarna river. Vaitarna Dam (82m) and Upper Vaitarna Dam are two more dams built on Bhandaradara Dam (82.35)

Bhandardara Dam



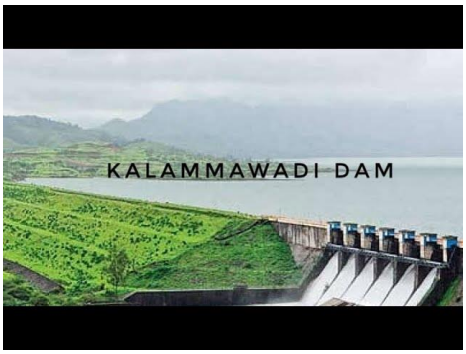
Wilson Dam is known as Bhandardara Dam and the reservoirs know as Arthur Lake, located near the holiday resort village called Bhandardara. Bhandardara is a famous tourist place of Maharashtra, home to Mount Kalsubai, Randha falls, Wilson Dam, Amriteshwar Temple, Ghatghar, Ratnagad fort, Arthur Lake, Sandhan valley and also popular place for angling in India.

Totladoh Dam (74.5m)

Totladoh Dam and reservoir built on Pench river in Nagpur district, also with adjoining state of Madhya Pradesh. The Pench right canal supplies water to Nagpur, the koradi Thermal Power Station, of the water is use for irrigation in Parseoni taluka, Kalmeshwar taluka, Saoner taluka, Kamthi taluka, and rural Nagpur The Pench left canal irrigates Parseoni taluka, Ramtek taluka, and Mauda taluka and provides water for the NTPC Mauda Super Thermal Power Station and other industrial purposes.

Kalammawadi Dam (73.08m), Kolhapur

Kalammawadi Dam near Radhanagari is the biggest dam in Kolhapur, used for irrigation as well as listed as one of the best places for Kolhapur Tourism. The gravity dam built on Dudhaganga river and the surrounding forest area is home to endangered Indian bison wild animal.



Ujjani Dam, Solapur The Ujjani Dam on Bhima River, also known as Bhima Dam is an earthfill cum Masonry gravity dam, located in Solapur district of Maharashtra. The large reservoir created by Ujjani dam offers benefits of irrigation, fisheries and also a good bird watching point near Pune especially flamingos.

Jayakwadi Dam, Aurangabad

Jayakwadi Dam and reservoir provides water for industrial, drinking and irrigation usage for Aurangabad and Jalna district. The project is listed as one of the largest irrigation projects in Maharashtra, build on Godavari River also the dam is listed as one of the largest earthen dams in Asia. The water is mainly used to irrigate agricultural land in the drought-prone Marathwada region of the state. It also provides water for drinking and industrial usage to nearby towns and villages and to the municipalities and industrial areas of Aurangabad and Jalna districts. The surrounding area of the dam has a garden and a bird sanctuary.

Positive impact of Dams:

1. **Water providing to drought prone areas.**

This study was conducted in India's dryland districts, namely, Dahod in Gujarat and Jhalawar and Banswara in Rajasthan state, to assess the impacts of small dams. Data on dams, sustainability, groundwater levels and benefits to farmers were systematically collected to analyse advantages offered by check dams with reference to climate change mitigation. Findings – The study shows that 356 check dams built during 1990-2012 across the tribal drylands of India, with a cost of USD 17 million, benefited over one million people from farming communities. The dams also increased groundwater levels in villages, revived rivers during dry season and increased forest growth along rivers, ultimately mitigating local climate change-imposed negative consequences. Research limitations/implications – Data on small dams are limited in India, as public have no access to such data because the work is done mainly by local contractors. Practical implications – The check dams, the role of which is highlighted here, are simple, eco-friendly and cost-effective. If it is adopted across the vast drylands of India and elsewhere, it has the potential to increase agricultural output; guarantee food security; enhance groundwater resources; and, above all, mitigate local climate change consequences. Social implications – If check dams are built in large numbers across India, it has the potential to increase agricultural output; guarantee food security; enhance groundwater resources; and, above all, mitigate climate change. Originality/value.

2. Electricity production

Electricity is very important to run the economy. The role of hydroelectricity is very little in total energy supply. It is 5 to 10 gigawatts. But the importance of this small hydroelectricity power plant is more valuable. for eg. Koyana Dam project is considered as lifeline of Maharashtra. Electricity of this plant supply Navi Mumbai industrial area and nearby area. Industrialization requires more energy for manufacturing units. The total capacity of the dam is 1960 MW. The project consists of four stages of power generation. All the generators are located in underground powerhouses excavated deep inside the mountains of the Western Ghats.

3. Flood control

It is one of the main roles to construct the dam is to control flood. This situation is more critical in North Indian States were Himalayan perennial over flooded in rainy season. But when talk about Dams in Maharashtra the situation is too worst when heavy downpour in Konkan and other districts. The dams of North India control the floods of Ganga, Yamuna, and other major rivers. The surplus water is channelized to dry channel in monsoon. This is mainly practice in Punjab, Haryana and Uttar Pradesh. This water is use for agriculture.

4. Soil improvement and agricultural development

The soil of the nearby area is always wet due underground supply of water. The irrigation is well developed in dam area. Due to groundwater available throughout the year agriculture is developed in surrounding area. People or farmers have direct pipelines from dams to their own farm which is parallel to dam having very less distance. They take twice a rice production in monsoon and early monsoon period. A highly populated country like India understands the importance of food grains and self-sufficiency in agricultural.

5. **Fish farming and transportation.**

Dams are providing very cheapest mode of transportation and pure water fish farming demand is increasing. Rohu, Cattala, crabs, and other small fish are the important source of local tribes of koli peoples and kat Kari is a famous tribal group they sell this type of dam fish. It is not developed on commercial farming like sea fishing. But the percentage wise the inland water fish market is comparatively more develop.

Negative impact of big dams in Maharashtra:

1. **Over flooded situation in rainy season.**

India is a monsoon country. Most of the time the situation is more dangers in month of July. In Maharashtra many rivers overflow and flood occur.

River Krishna and river Pancha Ganga, river Godavari having problem of over flooded. It causes huge agricultural

loss, living things and properties.

2. **Disputes of dam between two states.**

The main reason of over flood dams is not open dams' doors. Poor coordination, and week management are created main problem. The Krishna River having political disputes with state Karnataka. The Almatti dams in Karnataka. The management not support to open the doors of dams and water moves backward which cause heavy flood. The huge loss of agricultural produce of sugarcane, rice, oilseeds, cotton, fruits and vegetable orchids etc. beside that the roads are damage, people have to face the problem of many deceases like cholera, fever, cough and cold, drinking polluted water and loss of properties.

3. **Disturbs the biodiversity of surrounding reasons**.

Dams present a barrier to fish that need to migrate to spawn and reproduce downstream and upstream along a river. This not only impacts the populations of the fish themselves, but it can negatively impact other species in the food chains that either eat that fish or are preyed upon by that fish. Floods in upstream areas can kill or displace many different organisms, including plants, wildlife, and humans.

4. **Increase Greenhouse gases**

The flooding of surrounding habitat around dams kills trees and other plant life that than decomposes and releases large amount of carbon into the atmosphere. Because the river is not no longer flowing freely, the water become stagnant and the bottom of the reservoir creates a situation where methane is produced from the decomposition of the plant materials at the bottom of the reservoir that eventually get released into the atmosphere, contributing to global climate change.

5. **Downstream sediment erosion:**

Due to the restriction in the sediment flow above a dam, the lack of sediments that would have flowed downstream and sediment load increase in downstream erosion. Fish want sediment to give eggs. If the downstream load increase it impact negatively on fish production. Oxygen demand become low and change in local plant life which convert after some time into "dead zones". Incapable of supporting river life of any kind. (Http: // dristiias.com daily news analysis. 6th May 2019.)

6. **Issues of rehabilitations**

Construction of dam is not an easy process. Many villages shift from the original place and settled in new place. The problem of Koyana dam rehabilitation people still not happy with government policies of compensations. No proper support from new villagers and problems of facing their legal documentations. Government delay the promises and it cause loss of peace in villagers who lost their land, properties etc.

7. Maintenance of Dam

The large dams are neither useful for irrigation nor are they cost effective .Net area irrigated by them have actually fallen in the last 25 years. Small check dams are more useful to storage purpose and use it in summer season. Maintenance of check dam or small dams are little.

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