



JALDURG OR ISLAND FORTS IN THE COASTAL REGION OF MAHARASHTRA-HISTORY OF SUSTAINABLE WATER UTILIZATION

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ABSTRACT:

The history and development of culture are intrinsically linked to availability of water and its sustainable utilization. The coastal forts of Maharashtra have witnessed a rich plethora of historical developments. Many local as well as foreign powers fought very bitter battles on and off the field to rein control over 80 strong coastal forts in Maharashtra. But the real strength of these forts has always been the availability of resources inside the fort which enabled the local rulers to protect their forts against mighty attackers for months. The most precious resource on the island fort has always been sweet, fresh and potable water and almost 35 of them have shown us the way of managing water sustainably in the most distinguished manner.

INTRODUCTION:

Western Coastline of India is a 720 Km long and it consists of coastal districts of Western Indian States of Karnataka, Goa and Maharashtra.

In Maharashtra the Coastal region is popularly known as Konkan and consists of 4 districts, Raigad, Ratnagiri, Sindhudurg and Thane.

Maharashtra has more than 80 strategically located coastal forts which were built to control the surrounding areas, trade in seas and oceans and establish supremacy in the region. The coastal forts have witnessed a long history of warfare in which it faced threats from other Indian emperors and a number of colonial invaders.

These coastal forts are known as island forts or Jaldurgas. The prominent ones amongst coastal forts in Konkan region are Arnala fort (Coordinates: 19.46577° N, 72.73247°E, Arnala, Thane District, Maharashtra), Khanderi fort and Underi fort (18.7042°N, 72.8331°E, Raigad district, Maharashtra), Colaba fort (Alibaug District, Maharashtra 18.6344°N, 72.8642°E) Padmadurg and Janjira (18.299773°N, 72.964239°E, Raigad District) and Sindhudurg (16.042°N, 73.460°E Sindhudurg district, Maharashtra, India).

These forts are also known for their wonderful Water resources. The forts house may people and welcome many visitors on day to day basis. The management of the most precious resource that is water is being done in such a way that it quenched the thirst of warriors who fought for to control over the forts and are quenching the thirst of those who visit these historical forts to understand our glorious past.

The history and development of culture are intrinsically linked to availability of water and its sustainable use. The coastal forts of Maharashtra have shown us the way of doing it in the most distinguished manner.

Some of the forts along the coastal line of Maharashtra are observed and the observations are recorded as follows:



ARNALA FORT:

Introduction and History:

Arnala fort is built on an island in the mouth of river Vaitarna, where the river meets Arabian Sea. From Virar, Mumbai one has to reach this fort by small ferry boats. This fort was built by Sultan of Gujrat, Sultan Mahmud Begda in 1516.

This was taken over by Portuguese in 1530, built new structures on it. Maratha rulers took it over in 1737 and in 1818 it was handed over to British.

In the eastern part of this fort there is a memorial of a saint, Nityanand Swami, who had stayed on the fort for some time.

This fort is in a proper condition today. The fortification is with 30 feet outer wall. The bastions are in good condition even today. For strengthening and fortifications there was renovation of this fort in 1737 by Peshwa Bajirao I. An inscription on the door of the fort describes the process of this rebuilding and there is this interesting mention of year according to Shaka Almanac. The inscription says 'Anka 9, Bana 5, Rasa 6, Chandra Shakate' which means 'The number at unit's place is 9, Number at ten's place is 5, Number at hundred's place is 6 and number at thousand place is 1' which gives us value as Shaka Year 1659 and reveals the year as per Gregorian Calendar as 1737.

Water Management :

What is most important is this fort is inhabited by people even today and the reason for this is the well planned water management system. In fort there is a temple of 'Trambakeshwar or Ambakeshwar' and there is also a well built octagonal lake or tank of water which is known as "Pushkarni" close to it. Abhyanga snana of God Shiva and Goddess Mata Bhavani is done using this water for years. Also, there are well built wells to supply water to the residents of Arnala.

This fort is also having one more temple of Durgadevi and two tombs (Kabars) of Muslim Saints.

KHANDERI FORT:

Introduction and History:

This fort was built by Shivaji Maharaj Bhosale during 1672 to 1679. He had appointed Maynak Bhandari to complete the work of this fort. He had completed the task while facing the attacks from the foreign power, British and local navy of Mir Kasim. 400 workers worked 24 hours for 8 years to complete this gigantic work. While the work was going on cannons from both the sides were belching fire. Shivaji Maharaj stationed 5000 soldiers in Kalyan, a close by town to counter all this. This forced the British to withdraw and sign a treaty with Shivaji Maharaj which stated that the British would not attack Khanderi and Shivaji Maharaj would withdraw his army which was threatening to attack Mumbai.

All this was done with the support of great manpower which required huge resources. Out of which water is the most basic resource which was already taken care of. There is a wonderful well and a well-constructed water tank close to Bhavanimata Temple which even today quenches thirst of many who visit this place.

This water is then taken using pump and pipeline to newly constructed 'Deepagraha' that is 'Light House' which is an octagonal construction of 25 ft. done in 1867 by British who could win over this place only in 1840. There was a searchlight which could revolve in 225° and would guide the wandering ships in ocean.

UNDERI FORT:

Introduction and History:



This fort is a twin fort of Khanderi Fort. This fort was built on Underi island in 1680 by Siddi of Janjira. But this Island was initially under the control of Marathas. Peshwas won it back in 1760 and renamed it as 'Jaydurga'. British won it along with Khanderi fort in 1840 and renamed it again as 'Henry'.

Underi fort is covered by thick cover of vegetation symbolizing a good water table, but there is no source of water to be seen here on the fort. So probably this was the reason why Underi fort was mainly used as a jail for Criminals.

COLABA JALDURG:

Introduction and History:

Colaba fort is built on a rocky island known as Mauje Navghar. The great Shivaji Maharaj wanted to build a fort on this island but his sad demise delayed the project. After 1684, his follower Bhivaji Gujjar completed his dream.

'Col' means from all sides and 'apa' means water, therefore the name 'Colapa' or 'Colaba.' And the water is there everywhere as Jaldurgas are built on the islands in the seas or oceans, but, here in Colaba fort, one finds ample water inside too.

The Jaldurgas are built using a special method, the rectangular stoneslabs are first carved out of available Basalt rocks. The slabs are then kept one above the other and they are cemented together by using limestone solution or better so, by melted Lead (Pb).

Water Management:

Alongwith the fortifications, these forts house many temples viz. temple of Bhavani Mata who is known as fort goddess, temples of Shri Padmavati and Mahishasurmardini, also known as Gulbai locally. Near the temple of this Gulbai is a well constructed pond known as "Pushkarni" or "Pokharni" which is 100 feet by 125 feet in size. There are steps which take you to the base of the tank.

But there is bigger and better pond present in the same fort known as "Padmavati Tale" close to Padmavati Temple. This is a wonderfully constructed tank constructed using stones. This structure also accompanies a well. Water percolates down from the Padmavati Tank and gets filtered during its journey from tank to well. This is an example of ingenious method of filtration adopted by our ancestors.

JANJIRA AND PADMADURG:

Introduction and History:

Janjira was a fort originally known as Medhekot and was initially built using temporary wooden structures by fishermen in late 15th Century. Ram Patil, the head of fishermen community, ruled over the area during this time and had built temples of Shiva and Rampanchayatan.

In 16th Century, Nizam took over this fort and rebuilt this fort using hard basalt rock blocks. This structure spreads over 22 acres and circumference of fortification is almost 2.5 k.m. This is an extraordinary example of construction of a fort which is still facing the salt water of Arabian Sea for last 450 years.

The construction was completed between 1567-71. In 17th Century the fort was won over by Siddis.

There are two reservoirs in this fort. The bigger reservoir is close to main door. This was a major source of water for the residents of fort. There were many residential structures around this reservoir. Nawab's residential complex was 5 floors high and servants used to draw water through windows using very long ropes.



Shivaji Maharaj attempted to defeat Siddis six times but, in vain. He then decided to build one more fort close to Janjira and he was in search of place which was having enough sources of water and his search ended with 'Kasa' island on which he had built 'Padmadurg'. Shivaji Maharaj had built this fort with the sole aim of taking control over Janjira. But, unfortunately during his lifetime he had to witness, exactly opposite situation. Siddis attacked Padmadurg and established their control over it.

Today Padmadurga is not in good condition and many tanks which used to provide water to many valiant fighters of yester years are in state of ruins.

SINDHUDURG:

Introduction and History:

This is a fort which was built on Karate island encompasses circumference of 4 k.m. In 1664, Shivaji Maharaj won control over a close by town Malvan and appointed Hiroji Indulkar to construct Sindhudurg. The funds were arranged from Surat attacks. But Shivaji Maharaj was kept in inhouse confinement in 1665 by Aurangzeb. So, the construction was delayed. But Hiroji Indulkar took loans to complete this fort by 1667 with 500 stone workers (Patharwats), 200 Ironsmiths, 3000 laborers and hundreds of experts from various departments of construction of forts on islands in the seas and oceans.

Water Management:

Amongst many temples, this fort also houses only temple of Shri Shivaji Maharaj.

This fort is blessed with 3 wells namely Dudhbaao, Dahibaao and Sakharbaao. There is a perennial water tank near Mahapurush Mandir. The care of these water resources is taken by Zilla Parishad nowadays and supplies water to 30 households, a School and a few agricultural farms.

Forts In Ratnagiri District :

Apart from abovementioned forts 28 forts were also studied in Ratnagiri district. The study concentrated on forts which were studied taluka wise. There are around 10 talukas and 28 forts which were studied.

The observations are recorded in a tabular form;

Observation Table:

S No	Name of Fort	Co-ordinates, Geographic Location	Source of Water in the Fort and Status of Availability of Water
1.	Himmatgad (Bankot)	N 17 ⁰ 58', 23.74" E 73 ⁰ 02' 23.04" Taluka : Mandangad	Water source : Well Availability Status : No as the well is dry
2.	Mandangad	N 17 ⁰ 58' 43-40" E 73 ⁰ 14' 39.32" Taluka : Mandangad	Water source : Lake Availability Status: Yes, potable water is available throughout the year.
3.	Harne Durg (Goa- Killa)	17 ⁰ 48' 56.56" 73 ⁰ 05' 25.69" Taluka : Dapoli	Water source :Well-constructed tank Availability Status : Water is Not potable



4.	Kanakdurg	17 ⁰ 48' 31.35" 73 ⁰ 05' 21.23" Taluka : Dapoli	Water source : Well-constructed tanks of water Out of 9 tanks, in 7 tanks potable water is available. In one tank water is available but not potable. One tank is dry.
5.	Fattehdurg	17 ⁰ 48' 44.50" 73 ⁰ 05' 23.08" Taluka : Dapoli	Water source: No water source available in the fort.
6.	Suvarndurg	17 ⁰ 49' 01.05" 23 ⁰ 05' 23.08" Taluka : Dapoli	Water source: Yes, there are 3 tanks carved in stones and are inter connected. Potable water is available throughout the year.
7.	Padmanabdurg (Pranalakdurg)	17 ⁰ 38' 36.11" 73 ⁰ 14' 29.96" Taluka : Dapoli	Water source and Availability Status : Out of 3 tanks, 1 is with potable water 1 is full of silt and 1 is half filled with silt.
8.	Palgad	17 ⁰ 48' 55.57" 23 ⁰ 21' 02.53" Taluka : Khed	Water source : No
9.	Mahipatgad	17 ⁰ 50' 23.64" 73 ⁰ 29' 54.59" Taluka : Khed	Water source: Well in which water is available. Old bund is also there which is not functional.
10.	Sumangad	17 ⁰ 48' 32.01" 73 ⁰ 30' 41.02" Taluka : Khed	Water source: 2 tanks excavated in Basalt rock and a tunnel filled with water and silt. Availability status: Water is not potable.
11.	Rasalgad	17 ⁰ 45' 54.16" 73 ⁰ 30' 41.87" Taluka : Khed	Water source: 2 tanks, 2 lakes and a special Pillar Tank constructed by excavating a basalt rocky patch have potable water and one lake which is dry.
12.	Govalkot (Govindgad)	17 ⁰ 32' 48.15" 73 ⁰ 29' 16.64" Taluka : Chiplun	Water source: Well-built tank but it is dry today.
13.	Bhairvgad	17 ⁰ 19' 30.97" 73 ⁰ 40' 34.83" Taluka : Chiplun	Water source: Water is available in the only tank that is excavated in Basalt rock.
14.	Manikdurg	17 ⁰ 22' 05.70" 73 ⁰ 30' 20.60" Taluka : Chiplun	Water source: 1) Tank 15 ft + 15 ft dept. 3 ft. 2) 18' x 12' x 5 1/2', both full of silt, so no water is available in the fort. Availability Status: No water as both the tanks is full of silt.
15.	Kille Navale	17 ⁰ 24' 47.20" 73 ⁰ 24' 07.50" Taluka : Chiplun	Water source: In 1956 a bund on stream was built but in 1967, it was broken and it flooded the village. There is 1 excavated tank but it is also dry.
16.	Gopalgad	17 ⁰ 34' 17.06" 73 ⁰ 09' 06.18" Taluka : Guhagar	Water source: Water only in rainy season. There is a constructed tank or lake and a well but all of them are dry otherwise.
17.	Kasardurg	17 ⁰ 22', 56.10" 73 ⁰ 19 51.50" Taluka : Guhagar	Water source: No water inside the fort but, 350 Ft. long and 12 to 14 ft deep trench surrounds the fort and fort is also surrounded by river kutgiri. So, slope given



			to it on the side of fort and water is stored in the Khandak. But it is full of silt, so storage is meager and trees have grown in it.
18	Vijaygad	17 ⁰ 18' 10.95" 73 ⁰ 14' 29.90" Taluka : Guhagar	Water source: Water is not available in the fort.
19	Prachitgad (Uchitgad)	17 ⁰ 13' 34.55" 73 ⁰ 41' 29.00" Tal : Sangameshwar	Water source: 5 excavated tanks which are interlinked Availability Status: Water is available throughout the year.
20	Bhavanigad	17 ⁰ 14' 50.39" 73 ⁰ 34' 11.09" Tal : Sangameshwar	Water source: 3 excavated tanks which are known as Sakhartake, Ranjantake and Palanakale out of which 2 tanks are Pillar Tanks. Availability Status: Water is available throughout the year.
21	Mahimatgad	73 ⁰ .0.5' 22.83" 73 ⁰ .42' 46.66" Taluka : Devrukh	Water source: 4 Tanks are carved in rock out of which 2 tanks are full of potable water, 1 Pillar Tank is also full of water. 1 tank close to Maruti Temple is fully filled with water.
22	Jaygad	17 ⁰ 18' 03.14" 73 ⁰ 13' 17.12" Taluka : Ratnagiri	Water source : A big constructed reservoir and 2 Wells. Availability Status: Yearlong water source for the entire Jaygad Village.
23	Ratnadurg	16 ⁰ 59' 46.54" 73 ⁰ 16' 72.56" Taluka : Ratnagiri	Water source: Well water, Availability Status: A yearlong supply to Koli or fishermen vasahat.
24	Purngad	16 ⁰ 48' 29.07" 73 ⁰ 18' 53.60" Taluka : Ratnagiri	No source of water inside but a well is outside the main door supplies water to the fort.
25	Sathawali	16 ⁰ 45' 50.25" 73 ⁰ 27' 02.99" Taluka : Lanja	No water is available in the properly constructed rectangular well. A tree has grown inside the well and it is full of slit.
26	Yashwantgad	16 ⁰ 37' 52.23" 73 ⁰ 21' 25.06" Taluka : Rajapur	No water inside the fort but well in "Khandak" provides water to the fort.
27	Ambolgad	16 ⁰ 37' 24.59" 73 ⁰ 20' 11.52" Taluka : Rajapur	No water as silt has filled the rectangular well in the fort. One better was there but now it is completely covered by silt.
28	Rajapur Fort	16 ⁰ 39' 11.32" 73 ⁰ 30' 46.05" Taluka : Rajapur	Water Source: Well with steps. Availability Status: This huge well supplies water to residents of Police Colony and to Govt. Offices inside the fort.

CONCLUSIONS:

Out of the 35 forts considered for present research 17 forts still have a good quality potable water available inside the fort. Remaining forts show availability of water but it would need filtration before consumption. In some forts, structures like wells and tanks are in place but



they are filled with silt and even trees have grown inside. But, some efforts in repairing and maintenance will replenish these resources. Based on these observations we can conclude that most of the forts have adopted ways of sustainable water management methods throughout the course of history.

REFERENCES:

1. Apt B.K., A History of the Maratha Navy, 1973.
2. Joshi Prakash, Maharashtra Jalyashay, Manovikas, Prakashan, 2007.
3. Joshi Sachin, Durgjidyasa, Bookmark Publications, 2011.
4. Maharashtra State Darshanika Vibhag, Maharashtra, State Colaba Gazetteer, 1964.
5. Maharashtra State Darshanika Vibhag, Ratnagiri District Gazetteer.
6. Mehendale G. B., Shivchatrapatinche Armar, 2010.
7. Palande Anand, Dongaryatra, Giripremi Granth, Prakashan Samiti, Pune, 1995.