

# Marginalised Madakas

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*Madakas have been in use for hundreds of years at several places in the coastal districts of Dakshina Kannada and Kasargod. Though seemingly a lot like tanks and ponds, madakas are in actual fact, quite different from them, in both design and use. Constructed by the community at a very low cost, the utilitarian value of the madaka is unique and is ideally suited for coastal areas.*

**M**adaka is one of the most common traditional systems of water conservation followed in several places in coastal Karnataka. It has been in use for hundreds of years at several places in the districts of Dakshina Kannada and Kasargod. However, this system is not unique or restricted to Karnataka. Since *madakas* can be constructed in hard stone surfaces as also in clayey regions, these are also found in other states, though these are known by different names. There are similar structures in Rajasthan which called *johads*. The traditional *pemghara* in Orissa also resembles the *madaka*.

The cycle of water is that after rain falls on earth, it joins the streams and rivers and flows into sea before getting absorbed by the clouds to result in rain once again. In this process, some of the rainwater is absorbed by the soil to form





groundwater. It is this resource that meets the needs of the community in times of scarcity.

Over time, indiscriminate use of groundwater has led to a situation where even coastal districts like Dakshina Kannada and Kasargod have low water levels by the end of January. This becomes even more acute before the onset of summer. This is unfortunate since coastal districts receive an average annual rainfall of about 400 cm. Yet due to the geographical terrain, most of the rainwater flows into the sea. With little effort to recharge the groundwater, water shortage becomes a harsh reality by the end of January, despite the heavy rains received.

However, in addition to run-off of rainwater, population increase in recent decades, extension of agricultural land, changes in the crop pattern, construction of borewells, irrigation by electric motors, destruction of forests and other factors have also been instrumental in creating a situation of water scarcity.

The simplest and most sustainable answer to the problem of water scarcity is rainwater harvesting. This can be in the form of roof-top collection in urban areas and by conserving water in *madakas* in the rural areas.

### **What is a *madaka*?**

Very simply put, a *madaka* is a large soak pit. *Madakas* are mostly found in geographical areas that have high terrain on three sides and a shallow area on the fourth. In physical terms, a *madaka* is a natural formation that has high terrain on three sides and a shallow manmade bank or a barricade on the fourth side. As these mostly make use of natural formations, very little human effort is needed to create a *madaka*.

The water that flows down from the higher level collects in the *madaka* and slowly percolates into the soil. The laterite soil in agricultural areas is ideal for *madakas* as it allows slow percolation of water through the cracks. As a result of this, water oozes through springs and other outlets into manmade tanks or wells which are located near the point of water collection in the *madaka*.

*Madakas* are normally constructed in laterite soil. Though this type of soil does not have the quality which allows water to trickle into the earth, the construction of a bank or a barricade enables the process of seepage. The bank or barricade is erected by joining stones together with the help of sticky soil or cement.

Provision is made to make sure that excess water which flows out from the top of the barricade. Small channels are constructed to allow the flow of excess water collected in the *madaka* into agricultural fields, which are utilised by farmers to cultivate paddy. As the flow follows the natural gradient, a pump is unnecessary. However as water scarcity was not a concern in earlier times, people were content with using the *madaka* as a collection point for water to only irrigate their lands. They did not realise that *madakas* also had the capacity to absorb water.

Proper care has to be taken to ensure that the first or second rainfall does not flow into the *madaka*. This is necessary as the rainwater flowing down the hill carries dry leaves, weeds etc. along with top-soil. If this is deposited in the *madaka*, it



reduces the volume of space for water collection. A greater threat is from the flow of the top-soil into the *madaka* bed, which can fill the cracks, thereby rendering this system useless.

Sometimes a tank constructed for water harvesting is also called a *madaka*. Though both serve the same purpose, yet there is a major difference. A tank is generally manmade and is normally constructed on agricultural land. As opposed to this, the *madaka* depends on natural features and is must be at an elevated place. Only the bank or the barricade of a *madaka* on one side is manmade. Water from the tank is directly used for irrigation whereas instances of directly lifting water for irrigation from the *madaka* are far and few. This is because the water in a *madaka* percolates into the soil, making the soil moist and cultivable.

### Why is a *madaka* relevant today?

However, with the gradual increase in population, the demand for water also increased. Cash crops, such as areca and coconut which required higher quantities of water became popular in coastal areas, and these very often replacing paddy. The *madakas* lost their importance and fell into disuse. At some places, even shops and shopping complexes were built where the *madaka* once existed. About three decades ago when electric motors invaded the market, borewells and submersible pumps completely erased the *madakas* from the farm lands.

Let's see how the *madakas* are relevant today:

- *Madakas* enhance the decreasing groundwater level. This ensures rejuvenation of the subterranean water.
- *Madakas* increase the water levels in wells, tanks and borewells.
- Pumping of water to irrigate the land just below the *madaka* is considerably lessened. This in turn prevents irresponsible use and exploitation of groundwater and water in wells, tanks and borewells.

Afforestation is imperative in order to prevent silt deposits in the *madakas*. This step also augments the level of water. It creates new ecosystem as various animals and birds seek shelter in the forest. The water in the *madaka* also nurtures aquatic life.

In fact *madaka* can be erected even where it does not exist as all that it needs is a minimum of two natural barricades at a slight height, although barricades on three sides is ideal. Some expense and human labour may be needed to construct the *madaka* on the fourth side. Yet this expense will be trivial when compared to the benefit of getting water from the well. The construction of a *madaka* in the plains may be slightly difficult, though in Malnad and coastal areas, it does not pose any problem. Over the centuries, these constructions have a proven track record of augmenting water levels in the surrounding tanks and wells, and as such, any amount spent on them will be worth it.

## Reviving *madakas*

A deeper study on the *madakas* brings to light many facts. At some places, farmers have retained the system which reflects their pride about a traditional water source as well as a commitment to preserve it for future generations. There are others who have rejuvenated or built afresh *madakas*. Let us look at some success stories.

### The Kanavu *madaka*

The case of Kanavu Gopalakrishna Bhat of Peruvaje village in Sulya Taluk, Dakshina Kannada is a typical case in point. Though he and his brother Tirumaleswara Bhat have separate lands, they have a common water source – the *madaka*. The *madaka* spreads over three and a half acres and provides water to over 50 acres of areca plantation. Their father, Narasimha Bhat, settled in Kanavu in the year 1945 and Gopalakrishna Bhat recalls the drought condition of the plantation just two months after the rainy season. The following years only aggravated the situation. In about 1950, they built a small stone tank at an altitude inside the plantation. “Unexpectedly water started springing forth and this set us thinking in terms of building a tank,” says Bhat. “Instead, we opted for a *madaka*.”

The topography here is ideal for constructing a *madaka* since this is an area endowed with heights on three sides and different types of vegetation. Gopalakrishna Bhat explains, “We do not even clear the dry leaves here as the layer created is beneficial in preventing soil erosion. The rainfall also does not run off hastily. It is slowly absorbed by the soil.”

Bhat recalls the time when the bank built against the *madaka* crumbled down. “It was in the year 1972. Nobody knows how. Unfortunately, the bund collapsed and the plantations at the lower level were washed away. Ours was not the only plantation to be affected. Water flooded many other plantations and caused some



serious problems. Each farmer was aware of the loss caused to the others, so nobody complained. Even now, people of the village enquire whether the bund is in good condition and whether the annual repairs are carried out properly. This is because they know that if the *madaka* is maintained, storage levels of the wells and ponds in the vicinity will go up.”

Bhat’s areca plantation is at the lower part of the *madaka* and the plantation has seven tanks. He uses sprinklers while drawing water from these tanks. He explains, “With the slow trickling of water into the earth, the initial ‘deposit’ of water remains intact. What we use is only the ‘interest’ on it – sufficient for irrigating the plantation.”

### **The *madakas* of Joklakatte and Aringula**

The Joklakatte and Aringula *madakas* are situated in Kasargod. According to Dr. Chandrasekhar Chowta, an elderly agriculturist, the Joklakatte *madaka* has a history of hundreds of years. The basin of this *madaka* is large with laterite formations on three sides and a shallow area at the centre. A bund has been erected on the fourth side using laterite pieces which have been glued together with mud. “Water that collects in this *madaka* has been a boon to the paddy farmers of many villages. Even a delayed monsoon does not impact on the cultivation,” says Chowta. Children play around it and hence the name *Joklakatte*

The Aringula *madaka* is located near Manjeswara near Kasargod and means ‘rice pond’ as paddy is cultivated in the lands around the *madaka*. This is located in a shallow area within a vast expanse of land where about four feet of water collects during the rainy season. This water is used in the paddy fields near the bund.

### **The *madaka* of Mundur**

Monappa Karkera is an experienced agriculturist of Mundur, a small village near Puttur in Dakshina Kannada. He often thought of raising a coconut farm on his fields. But due to the persistent water problem, he gave up this idea and instead built a spacious *madaka* of about 10 feet deep at the same place. He explains, “By the end of January, every year we would be anxious about water for the areca crop. But within one year of building the *madaka*, it has yielded results. When I found an overflow of water in the borewell below the *madaka*, I knew that this was because of the *madaka*. This water is available till the end of summer.” Karkera intends to increase the height of the *madaka* to collect more water. His plantation is now full of not only areca and coconut, but also vegetables, mango, custard apple and other fruit bearing trees. The *madaka* has been very fruitful to the plantation and profitable to him too.

In today’s scenario where the water crisis is getting acute by the day, structures like the *madaka* are very relevant. It is an unfortunate fact that though there are

about 1,000 *madakas* in the districts of Dakshina Kannada, Kasargod and Udupi, water tankers to the villages is a common sight.

Experience shows that some districts of Rajasthan have made an effort to conserve water through traditional systems where they have been successful. The question that arises is when areas with scanty rainfall have been able to manage water using indigenous systems, why have the *madakas* been neglected? Despite receiving good rainfall, why do the coastal districts of Karnataka face water shortage?

Reviving the old *madakas* and building new ones should be two important programmes. When this happens, *madakas* will move out from the pages of history and become a part of our lives once again.

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