

CGR PUBLISHING

# AMAZING LIFE IN VILLAGES AND SUSTAINABILITY



SAI BHASKAR REDDY NAKKA



SAI BHASKAR REDDY NAKKA

Amazing Life in Villages and  
Sustainability

*First published by Council for Green Revolution 2019*

*Copyright © 2019 by Sai Bhaskar Reddy Nakka*

*Sai Bhaskar Reddy Nakka asserts the moral right to be identified as the author of this work.*

*This is an 'Open Knowledge' book as declared by the author. email: saibhaskarnakka@gmail.com | <http://saibhaskar.com> | The cover page image is attributed to <https://clipartxtras.com>*

*Published by: Council for Green Revolution (CGR): # 1448, Street No.17, Banjara Green Colony, Road No.12, Banjara Hills, Hyderabad – 500034, Telangana, India. Email: [contact@cgrindia.org](mailto:contact@cgrindia.org), Website: <http://cgrindia.org>, Mobile: 9676957000*

*First edition*

*This book was professionally typeset on Reedsy.  
Find out more at [reedsy.com](https://reedsy.com)*







*To the people living in the Villages*



# Contents

<i>Preface</i>	iii
Village visit	1
Smell of manure	3
Water point	5
Bullocks	7
Stream	10
Monkeys	12
Mud house	15
Special summers	19
Simple food	22
Stoves smoke	24
Toddy tappers	28
Connecting People	31
Playing in the fields	33
Banamathi	36
Traditional medicine	39
White horse	41
Betel Leaves	46
Learn to swim	48
Transformation of villages	52
The culture of tribals	54
Poverty doesn't defeat pride	57
Sacrificing villages for development	59

Wild animals in villages	62
A village failed to offer a cup of tea	65
Poor and destitute	68
Farmers	71
Sustainable Rural Livelihoods	76
Smart villages	79
About Council for Green Revolution	85
<i>About the Author</i>	86

## Preface

Traditional Villages are very rare to be seen. This is the watermark in history, where the urban population exceeded the rural population. Villages are evolving into towns and cities. The characteristics of the villages are being lost.

This book 'Amazing Life in Villages and Sustainability' written by Dr Sai Bhaskar Reddy Nakka brings various perspectives of the villages. In this book, the glimpses of the villages - past life, present situation and future adaptation options are presented. The sustainability and continuity of villages are shared here by the author. The book is also a historic document on how the villages existed and transformed especially in the last four decades. It covers the values, beliefs, gender, systems and practices in the villages.

The author is having a broad understanding of the villages. He is a keen observer and contributed to the sustainable development of the villages. He has traveled extensively and visited more than ten thousand villages in parts of India and other developing countries. The narration style and the language- including the usage of words specific to Telangana region - makes it most interesting. There is freedom in the expression. A book for everyone interested to know about the villages.





## Village visit

I have so many memories of the time spent in the villages since childhood. I was born in Regadi Mamidipally village, it is the native place of my mother located about Seventy-five kilometres from Hyderabad. Assisted by a *Mantrasani* (midwife), was born in the night. It was December month and it was so cool due to winter. To keep me warm in the night, my grandmother, warmed me by the heat of a biomass stove in the kitchen. In those days, the tradition was that daughters always delivered their babies at the mother's place. So, the birthplace was mostly the place of ones mother's home. In those days, for technical reasons, one cannot claim the original birthplace but need to be associated with the native village or the place of education for all purposes in life.

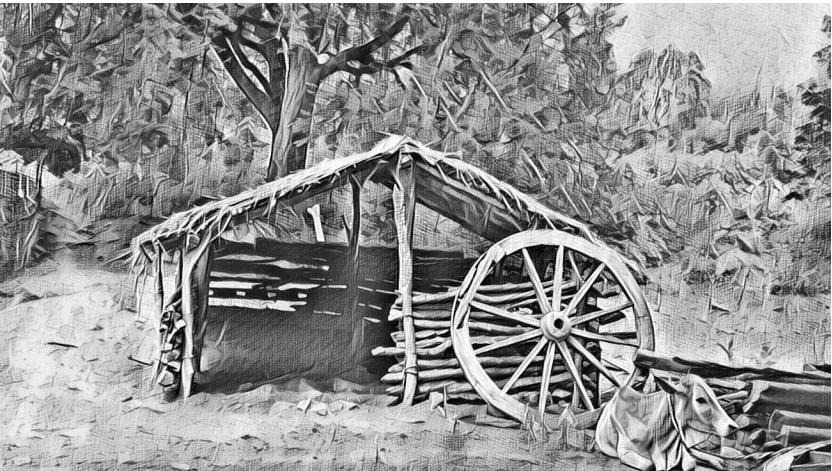
In the 1970s and 1980s, there were very a few transportation's means to go to my mother's village. It was remote in those days. To reach the village, after getting down a bus, we used to walk about Ten kilometres - all the way need to walk from Koukuntla gate, via Chanugomla village and have to cross Sangamla Vagu (a stream) on the way. It was nice to drink some fresh water from the stream. This Regadi Mamidipally village had black cotton soils predominantly, therefore it got the prefix Regadi, it means Black Soil. During the rainy season, it was almost impossible to walk with chappals as the black cotton soil holds the feet and slippers tightly. The Shahbad chappals made up of leather and used tyre

piece as the sole were much stronger.

Especially after reaching the village, it was even more difficult to walk due to the dry thorny branches of *Nalla Thumma* (*Acacia nilotica* plant species) which is used for fencing on either side of the dirt road to protect the fields from domestic animals. Often, the scattered thorns of these branches pierced the wet-feet without any mercy. It was challenging to identify some of the thorns which mixed with the black damp mud and many times they pierced my feet. The embedded thorns were often removed with the help of someone using a safety-pin after rubbing the place with some saliva.

After reaching the village, the guests would be directed to a *Jarat* for washing the feet - it is an open place used for washing and bathing in the centre of the house.

I have visited more than 10,000 villages in different parts of India. Each village has its own charm and identity.



*A scene on the way to a village*

## Smell of manure

In the past, one could easily guess that one has reached a village habitation. At first, one would see and smell the Farm Yard Manure from the *Pentalu* or farmyard manure compost pits located on either side of the road leading to the habitation. Some people also had a *Doddi* near the habitations. *Doddi* is an enclosed place with vegetative fencing as a boundary. The domestic animals such as cattle were kept here and the dry grass used as fodder for them was also stored in heaps. The farmyard manure pits are also located within the premises of a *Doddi*. The waste material collected from a house after sweeping also ended up in the farmyard manure pits. Sometimes the family members also used the place as an open toilet in turns. It was well protected and had some privacy especially for women.

Annually the Farm Yard Manure was taken from the compost pits and spread in the fields in the peak summer, that is done before the arrival of monsoon rains. Often the manure was dug using a *Dante* (a wooden scrapper) and collected in the vine baskets, it was lifted onto the Bullock carts and spread in their respective fields. The well-matured compost appeared in the colour of coffee and always smelled very good. The smell of compost is the smell of the happy microbial life living in the soil. Probably these close observations later in my life helped me to work on biochar compost.



*The smell of compost is the smell of mother womb*

## Water point

The village well is another place for the interaction and socialisation for women every day, especially during the early mornings and evenings. The wells were located in the centre of the habitations. There is always commotion of women drawing water from the well. The *Girikha-chappudu* (noise of the pulley wheel) and the splashing sound of the water while being drawn, mixed with the chatting sounds of the women.

It was a kind of relief for women, after attending the daily chorus. Similarly, another place for gossip is on the banks of a stream and ponds, where women also collected the water, washed clothes and took bath. With the groundwater depletion, almost all the open wells and surface water bodies are dry in the villages. This water is accessible through bore-wells fitted with the hand-pumps or the water is supplied through pipes. Such interaction places for women is a rare thing.





*Women in a village fetching water*

## Bullocks

My uncle had two big bullocks, bought them from Belgaum, Karnataka. They were called Ram-aha and Bheem-aha. These animals were kept next to the house for extra care. Once I was standing at the main door, then they have returned from the field. One of them hit me with its horns. I fell down, and my hand got fractured. It took several months to heal. Initially, my mother took me to Shalibanda for a bandage. It did not cure completely. Based on the advice of my mother's friend, she used *Saraswathi plant* Leaves. There were two *Saraswathi* plants in our house on either side of the gate. The very dark green coloured leaves heated on a pan with a pinch of oil were tied at the place of fracture with a piece of cloth. This was done every night and over a period my hand fracture disappeared.

This was a better option with less pain, as compared to the treatment that I had at rather Shalibanda, where they rub an oil without any mercy and tie a cloth. This was a famous Muslim family treating fractured bones traditionally, the place was called *Shalibanda Katla Dawakhana*, it was near the historic Charminar Monument in Hyderabad.

*Mulkatte* is a stick with a steel needle at one end. It was used to ward off stray animals eating the crops or to make the bullocks tied to a cart or plough move forward fast by gently piercing their hips. It is heartening to see the oozing blood as points and dried

on either side of the bullocks hips. Some people use Charnakola (or a whip) to control the animals. The whip was made with a combination of leather and jute material and looked beautiful. Some things which cause harm look beautiful and attractive.

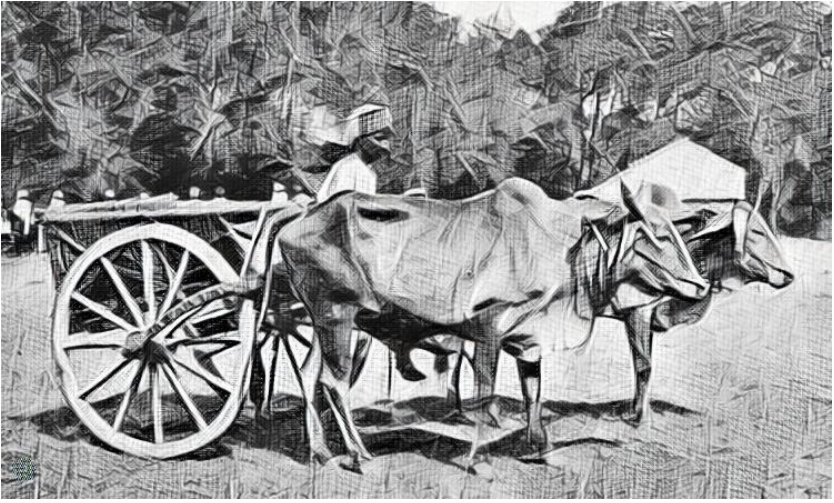
Bullock cart was very interesting for me. I travelled many times in the villages, that I have visited. Once, after my brother-in-law's marriage, we all travelled on a chain of bullock carts to his wife's place. It was so beautiful and always cherished this journey. It was a dirt road and the day before it rained. I could still feel the smell of the soil that I experienced on the way.

Once my sister was playing on the road, and there was a bullock cart which came running very fast, and it went over her, but nothing happened to her as a miracle. Animals are also sensitive and avoid to harm someone unnecessarily. If it was a tractor, probably who would have been crushed. In the villages, we find many people who have broken their bones, while travelling on the rough roads and their bullock carts overturned. Especially while crossing *Vodkalu* or small streams the chances for such accidents were more.

My dream was to have a bullock cart procession with family members at the time of my marriage. It did not happen as I got married in the city. Still, as a memory for my marriage invitation card, I have chosen the card with a bullock cart picture.



BULLOCKS



*A bullock cart driven by two bulls*

## Stream

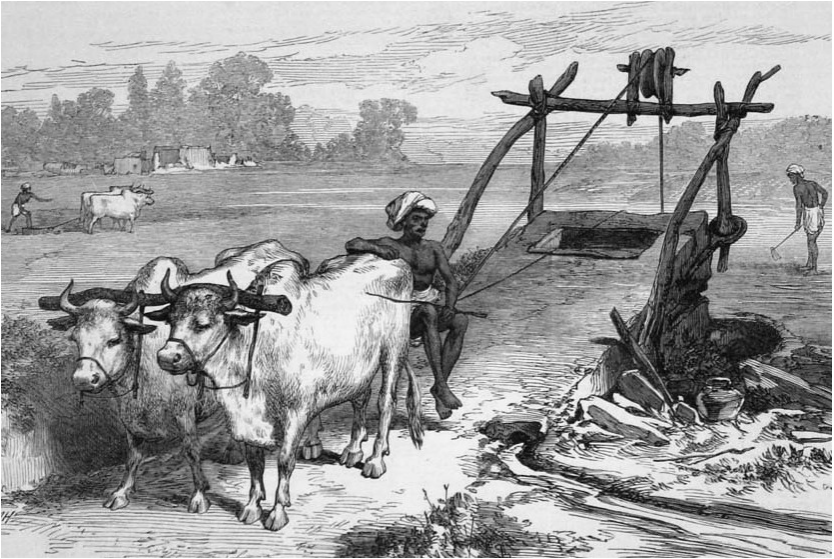
In the Pedda Vagu- a big stream called as Esi River, it was very close to the village, my Mama had a *Mota Bhavi*, which is an open well adjoining the stream. It is recharged continuously by the subsurface flow of water beneath the sand. From this well, the water was drawn for irrigation using a large-sized iron bucket tied to a rope and usually pulled by a pair of bullocks. A *Girka* -a wooden pulley wheel, is attached to a pair of granite posts hanging over the open well. The bucket bottom was made up of a leather tube, while pulling up the bucket it was closed with a string, for letting the water flow, the string was released. I used to sit on the frame connected to the bullocks which went to and fro while my Mama irrigated the fields.

In those days electricity supply to the villages was not regular. To pump water from open wells and the stream bed, some people used diesel pump sets also. To start them, a slurry of cattle dung was poured into the pipes first. And by rotating the fly-wheel with a handle, the engine is started. These engines made lots of noise and the sound sometimes was heard up to a kilometer or more distance. The otherwise villages with natural sounds are disturbed with the sound made by the diesel pumps.

In the villages, people preferred to consume clean and fresh water every day from flowing streams or open wells. And they never drank the stored water overnight. Sometimes, *Chelma*

## STREAM

(water oozing from depression in the stream bed) is the source of drinking water. This water was always cool and fresh. People rarely used pesticides and chemical fertilizers, so the water was clean. Cattle also drank from those *Chelmas*. As the water always flows out of a *Chelma*, it is never contaminated. People also drank like animals with their mouth directly touching the surface of the water and bending on their knees and two hands.



*A Mota Bhavi, buckets of water is pulled by two bullocks for irrigating the fields*

## Monkeys

Usually, the onions are ready for harvesting in the summers. For storing the onions, the *Ulligadda Mande* were constructed. *Mande* is an elongated structure, prepared with the stone pillars and the walls are covered with *Kandi Katte* or pigeon pea sticks. The top was covered with grass. The porous shelter with good aeration increased the storability of the onions. The ploughed onions are collected and the women by sitting under the shade of tamarind trees cleaned them of the straw and stored in the *Mande*.

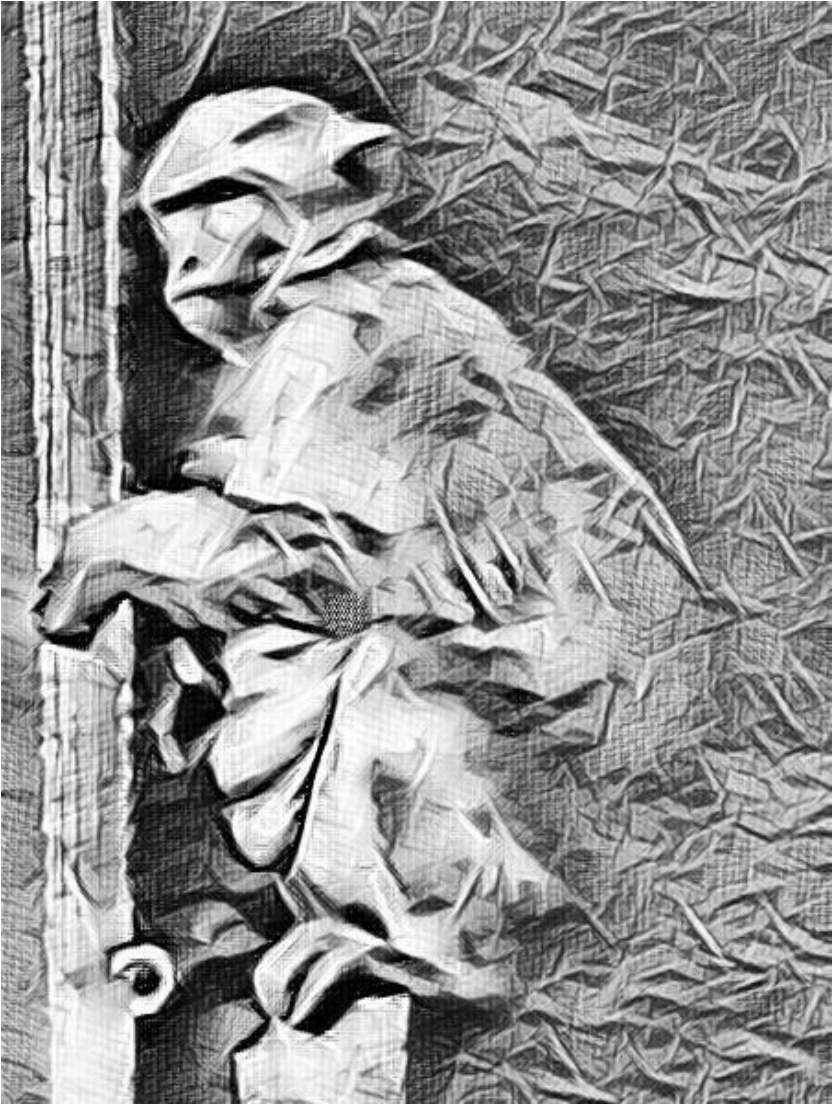
Villagers, especially women and children were afraid when they saw *Kodangalu* - they are the black-faced Langoors, in the village. *Kodangalu* damaged the crops and especially loved to eat onions and the fruits of *Cheema Chintakaya*. By jumping over the roof, they also broke a few roof tiles. Similarly, the monkeys (Rhesus macaques) in the villages also caused lots of damage.

In the Bundelkhand region, when I visited the villages, it was strange that there were not many big trees. The farmers said that the monkeys are a menace here and eat away the crops, so they don't grow the trees bid and also chopped down the existing big trees. The trees are favoured by the monkeys to use them as their home too during the nights. The people respect monkeys and they are in millions in and around the town. One gets to see the most intelligent monkeys in the Karwi railway station.

Also in Mathura and Brindhavan cities of Uttar Pradesh State,

## MONKEYS

there are many monkeys. People have taken all kinds of protection measures, to prevent them from entering their homes. For the monkey's sake literally every home is modified as a prison with iron grills and barbed wire, and the people are living in them.



*A Rhesus Macaque, most commonly found monkey in India*

## Mud house

I got into the basics of understanding the traditional houses and I love them.

In the villages, during my visits and stay, I observed that a house is much more to the people rather just a place to stay.

Traditionally, people used local materials for construction; necessary spaces were created for use as per the need and occupation; easy for maintenance; they had cultural and aesthetic values; living spaces meet the aspirations of people; they are the spaces created which could bring peace and enhance one's spirituality. The natural interacting aspects, such as light, air circulation, the flow of water; temperature and relative humidity were also considered as per their limits to achieve comfort. Based on the above observations, I was giving lectures. Sometimes the architecture students and builders said that what I taught was practical and not found in their textbooks.

While developing the GEO Research centre, I was conscious to build the environment-friendly structures mostly using local materials, and reuse of materials. The thumb rule was that they should be maintenance free and low-cost. I have constructed one room with *Pati-Matti* as in villages many houses were built in the past. *Pati Matti* is the old soil or earth, procured from the place where once a village existed. It is the remnant soil of a degraded or disintegrated village which existed in the past. It had all the pieces



of evidence of the people living there such as pottery shards, pieces of charcoal, bones, broken glass bangles and pieces of bottles, slag, shells, etc. This soil is resistant to erosion and had outstanding compactness and strength.

The challenge was to identify the person who could construct the house. I came to know that in this village, about 30 years back the last house was built with mud walls. I found one old person in the village who had some experience of constructing the mud-walls when he was young. I requested him to guide the labour in preparation of the material and support in the construction of the house with mud. To get the *Pati-Matti*, I searched the fields near a 500 years old temple around which there was a village in the past. Now it is a field. I found all the pieces of evidence of the village in the soil. I requested the farmer to give me the soil from his field. He agreed, and I collected the soil and brought it to the Geo-Research Center.

The construction of the mud-walls happens in phases. One cannot construct as much as one wants in a day as it is done with the bricks. Only 2 to 3 feet height wall can be constructed in a day. Then it should dry completely for adding another layer of few more feet wall over it. To reach a height of 15 feet, it took more than a one-month time.

First, the *Pati-Matti* is soaked in water and pressed with legs to create a good clay. The balls of clay are prepared and passed on to the person sitting and constructing the wall. The mud ball is pressed to form layers of the wall. Even the smoothening is done by bare hands and fingers. The markings of the fingers moved on the wet wall adds to the texture of the wall. Traditionally the streets in the villages are designed to be narrow, to prevent the erosion of walls from rain, wind and diurnal temperature variation. Plastering was done inside the room with *Dubba-Matti* (a fine soil).



The *Sil-koyya* (sticks for hanging) things, a shelf with doors and two windows were made in the traditional way. The two-winged door is also very traditional.

I love the earthen structures because it is like living in the womb of Mother Earth. They cause less impact on the environment as the embodied energy is very low. It is always locally available and accessible. Even a poor person, can build a house like a bird can build its nest when it is needed. One could start construction of a house without big plans of procuring or importing the exotic materials from elsewhere. Very fewer tools are used in this construction. The bare hands and legs are mostly used for preparing the material. There is no need to depend on outside experts for the construction.

I observed how the tribals construct and maintain their houses with great love. As they are constructed by themselves, the houses reflect their aspirations, needs and aesthetics. They have great love and pride in living in the space, that they made into a home. With maintenance, they always looked new and with the floral and animals designs/drawings on the walls which bring their life world to live with them. They know that space belongs to all and they are only occupying for sometime in space and time. Everything should disintegrate and one day would be part of the same soil where one would rest after death.



*Yellaiah immersed in the construction of mud wall of my house*

## Special summers

When I visited the villages in the summer, the loud noise of cicadas was continuous, mostly during the heat of the day. Close to them, the sound is more than 100 decibels. It is the mating call of the male cicadas. The sounds are made to attract the partners and for territoriality. The sound is not produced by vocal cords, but rather by the buckling of the ribs, the vibration of a membrane and amplification in the cavities of the cicada's abdomen.

For some time in the afternoons, I often try to sleep - as the summer heat sucks the energy and makes one drowsy, especially after a heavy lunch. In those days there were no fans, the hot winds blew through the main door and moved up from the central courtyard, which is surrounded by the rooms.

In the summers the house flies were also many, especially during the daytime. They made a sound by flapping their wings, well heard, as they flew close to the ears. When we tried to sleep, they land on the face and they try to enter the nostrils and ears. Their tiny legs make a tickling sensation, so we rarely slept in peace.

In the afternoons, to sell, some women were bringing mangoes, *Nalla Jeedi* fruits and other local fruits in the baskets. In exchange for grains, they used to give the fruits. Also, from the Peddavagu stream, people caught small fishes called *Jellelu* and other varieties and sold in the village.

The swings were tied to the *Doolam* (the wooden roof frame). It

was very nice swinging in the house on a hot day. Sometimes climbed onto the *Thottela* (a small-bed-swing used for small babies) and enjoyed the swing.

Late afternoon, played the *Oman-guntala-peeta* with dried tamarind seeds, or *Ashta-chemma* and *Paila-pachisu* with shells as dice and pawns. Girls and boys, young and old would play these games. I also often went to play marbles with some children underneath a Neem tree.



*While playing marbles, jumping like a monkey in a squatted position was a good exercise, and the contact with the soil improved the immunity towards the potential allergies.*

## Simple food

In the villages in Telangana, I observed that Jonna Ambali or sorghum gruel was the favourite drink to beat the heat, especially in the summers. It is sipped while munching the raw onions or licking fresh mango pickle occasionally. *Pachhi-Pulusu* is a raw tamarind soup prepared and taken with rice or roti. Sometimes we drank it like soup. It is easy to make the dish; the main ingredient is the liquid extracted from tamarind pods. The tamarind pods are soaked in water and squeezed. Some freshly cut onions and green-chilly pieces are added in it along with some salt. This gave a lot of coolness to the body when taken. *Shega* that is the burnt sensation while passing urine, was very common when we spent time outdoors in the summer. To beat *shega* we used to drink lots of water.

Rice was the principal food, eaten along with a vegetable curry, *Rasam*, *Pachi-Pulusu* (raw tamarind juice + onion + green chilly pieces) and *Sambar* (Yellow dal + tamarind juice + variety of vegetable pieces), additionally had pickle and curd. *Pappu Charu* (prepared like Sambar but without any vegetables) was very common at home. *Upma* (cooked with coarse wheat flour) was the traditional tiffin (snack between meals).

The *thokku* a traditional pickle is prepared with pieces of green mangos added with mustard powder, red chilly powder, crystal salt and with or without oil. It is so hot and would last for one year



easily. The *thokku* is also similarly prepared with green tamarind pods, Lemons, Tomatoes, Cucumber, etc. Pickles add good taste when eaten with Sorghum roti's. Whenever I am in a village, I would request one of those pickles.

*Avisha podi* (Flax seeds powder) prepared with sugar and chilli-powder is grounded on a stone is also good and tasty to eat with hot roti's.

The taste of the food cooked on the biomass cookstoves was delicious when compared to the food cooked on a kerosene or LPG stove that I ate.

In the villages buying snacks was rare that is about 40 years back. The favourite snack was eating together freshly fried peanuts and pieces of jaggery (made from sugarcane juice).

Food didn't have a great variety, but it was tasty and yet it was never less sumptuous. Maybe it was the mother's cooking that had the magic or the expectations were within the means.



*Sorghum roti and Chickpea dal one of the simplest food*

## Stoves smoke

One day I was in a village called Srirangapur in the Ranga Reddy District, Telangana State. I was trying to understand the rural energy situation. I observed that there was heaps of fuelwood stored in the courtyards of many houses. This fuelwood was collected, for use in cooking and which could last for several months for the respective families. It was harvested from the village commons and the nearby-degraded scrubland. I found that, on average, people spend up to four days in a month collecting fuelwood. Considering the rural wage rates being currently offered under government programs, it amounts to no less than Ten US Dollars a month. Where most of the rural poor earn around only one or two US Dollars per day. Their spending on fuelwood sometimes works out costlier than the Liquid Petroleum Gas (LPG) supplied by the government through a range of subsidies.

To understand the biomass stoves being used, randomly I visited about 50 household kitchens. I noticed that about half of the stoves were of 'three-stone' stove type and the rest were made from clay. Such stoves were highly inefficient, rudimentary and primitive. I will never forget those visits; they made me realise how a large number of people are still stuck with the inefficient and highly polluting stoves.

The stoves and the kitchens do not reflect the changes in the lives of the families over the generations. Many people are now living



in concrete houses, eating high-value food, can afford mobile phones, and send their children to English-medium private schools, but they don't have a good and efficient stove. Despite all the winds of change and development, the kitchen remains a smoky place with dark-soot walls and the roof. Even traditionally, kitchens have occupied relatively small spaces inside or outside the house.

I got sensitised and myself declared that my first step would be creating awareness about indoor air pollution and its harmful effects. I went to communities and showed them pictures of their stoves using an LCD projector. Although people-in-general were interested in watching the slideshow, some women objected when it came to seeing their own stoves. This is because the kitchen was not a place of pride for them, even though they respect the stove very much. I then explained to the communities the impact of indoor air pollution and its multiplier effects on them. They were quite interested in adopting efficient stoves, but they were helpless, as they did not have access to good stoves.

In the villages, the state government promoted chimney stoves with grates this was about 15 years back. Those stoves were nowhere to be found. Within a few years, the stoves had disintegrated, the chimneys were choked with soot, the grates were burnt down, and the stoves disappeared. The design of the stoves did not take into account how adaptable they were to local conditions and practices. The stoves were routinely distributed under a government scheme and were also highly subsidised. They were not accepted by the communities for various reasons, and therefore the sustainable demand from the local communities did not exist.

This exposure made me sensitive towards the issues associated with the stoves being used in rural areas. I was motivated to help

and improve their stoves' design. I realised that there could not be a single globally accepted good stove design to meet the local needs. As the challenge was adapting designs to meet the local needs.

As I started off, I could not easily access specialists in the field of good stoves. However, using the internet, I found numerous, and diverse stove designs that evolved around the globe – in response to a variety of food habits, cooking methods, cultural traditions, types of available biomass for fuel, family size, etc. Studying them formed the basis of my initial understanding of stoves, and I continued the research and designed the stoves to meet the specific community needs. In a span of 5 years, I designed more than 50 biomass stoves, which were low-cost efficient and adoptable by the communities as per their requirement for diverse geographies and food habits of the people. I continued my work and facilitated the stoves in parts of India and abroad. My stove designs were very much useful to the recent mass exodus of people, especially from the disturbed countries to the European countries and especially to Germany.

All the information on stove designs was written as a book titled 'Understanding Stoves,' MetaMeta, Netherlands published it. All my work on stoves was declared as open knowledge or creative commons for the common good.

A stove is not just a stove or a piece of equipment, it has so many values around, which are addressed by its use. They reduce the drudgery of women in cooking and in accessing the fuelwood. The health of women and children is improved through less-emissions. Time is saved for women to spend on other aspects required to improve quality of life. The local biomass and biodiversity are conserved. They mitigate smog and CO<sub>2</sub> emissions which is a cause of global warming and climate change. There are so many

## STOVES SMOKE

values around this simple initiative, and I feel very fortunate and happy, for working on this aspect and popularized it globally.



*A woman cooking on three stone stove, suffering from smoke*

## Toddy tappers

It is an alcoholic beverage created from the sap of various species of palm trees such as the Palmyra (*Thati Kallu*) and Date Palms (*Eetha Kallu*). Traditionally it was the primary source to 'drink'. In general, it is called 'Kallu' in Telugu, which is white in colour.

Drinking is considered a wrong thing to do, in some cultures and religious faiths. For someone like me coming from Telangana State in India, it is a cultural practice, especially in the rural areas.

The Palmyra is the official tree of Tamil Nadu State in India. Highly respected in Tamil culture, it is called '*Karpaha Veruksham*' ('celestial tree') because all its parts have a use.

There are types of Toddy extracted from trees. Its quality varies according to the season, soil, species variation and local climate. Especially the Toddy tapped during the summer from the male Palmyra trees is called '*Pothu Thati Kallu*.' The trees importance is highly appreciated by the drinkers as its yield is high in the summers and very much needed. A cool way to beat the miserable heat of the summers.

*Gouds or Goundla*, is a particular community engaged in Toddy tapping. Usually, they wear a '*Budda Gochi*' or a small lion cloth for convenience to climb. They tie a thick rope around their waist and the tree that they climb. This rope has a layer of rubber too, for increasing the friction so that it does not slip. By pushing the body away and lifting both the feet to a higher hold they climb and by

doing the reverse, they climb down. A small ring of rope connects the two legs for the extra grip on the tree trunk. Climbing Toddy tree is no less than an athletic feat!

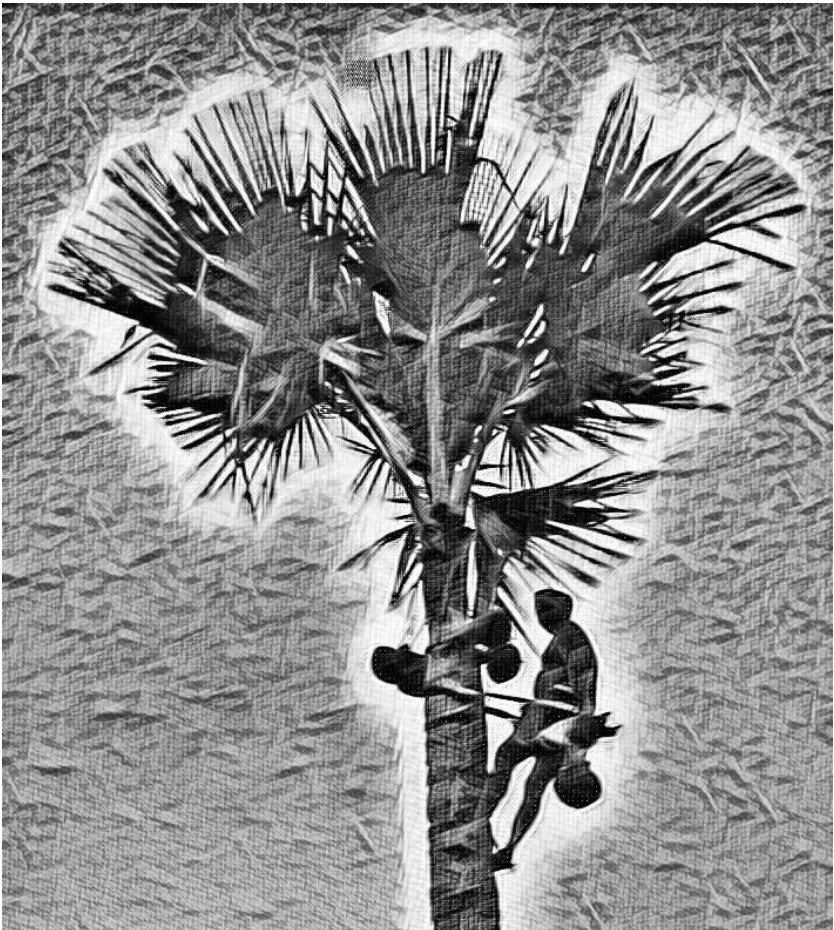
The Toddy is always tapped from a place just below the crown of the tree. They climb the tree carrying a sharp blade made of iron and clay pots hanging behind for collecting the Toddy. They make a cut on the trunk and the sap oozes out. The dripping sap is directed into the empty pots, with small guides. The pots are tied to the tree. If the plants are in a farmer's field, the person who harvests the Toddy on a regular basis, in return shares some part of Toddy. Rest they would sell to others in the village. In the past Toddy was never sold for money, the farmers shared part of their produce after harvesting for the Toddy served to them throughout the year, as part of a traditional jajmani system. Indian economic system in the past, in which lower castes performed various functions for the upper castes and received grains in return in the past. Jajmani system is the bonding between the consumer and the service provider which was lifelong and inter-generational with both parties respecting the rights and obligations.

They had been collecting Toddy from some of the trees for generations. They know the exact taste of Toddy from each tree.

With demand and supply gaps, due to increased population and vanishing palm trees, the Toddy served today in villages is just artificial and a chemical based chloroform intoxicant. It is also called 'Mandhu Kallu'. Many people dependent on the traditional Toddy tapping have lost their livelihoods. The habituated people when they stop consuming such Toddy they go insane too.

The government considers liquor of any kind is bad, and at the same time encourages its selling through licenses that they provide. A habit and addiction of the people is a source of revenue for the government. Sometimes it is calculated that the source of

income to the government from the sale of the liquor in a village is more than the total subsidies and freebies that the government gives to the same villagers. From the villages, in the form of taxes, a government may not get any revenue from agriculture produce, it gets considerable revenue from the liquor sold.



*The Majestic Palm Tree – a toddy tapper collecting the toddy*



## Connecting People

It is common to find a leaders house in a village is centrally located. There used to be enough space for visitors to come and sit. *Arugu* is the platform along the outside front wall of a house. It is the space for socialisation and sharing the information among the people in villages. The space created through these platforms is more than the present day social networking sites. It is very much prominent in every village leaders house. Sometimes a leader is made because of the spatial location of the house, its access and the space provided for people to come and discuss.

In the evenings after returning from a hard days labour, sitting on the *Arugu* was preferred by the people to gossip. My mothers home in her village was centrally located in the village and it was on an elevated area. There was a platform which also faced the village well, many people preferred to come and sit here especially in the evenings. Across the street, the village heads house was there. In those days, we also used to listen to the Telugu film songs on the loudspeaker played over the gramophone records.



*A platform in front of the house, for socialization and communication*



## Playing in the fields

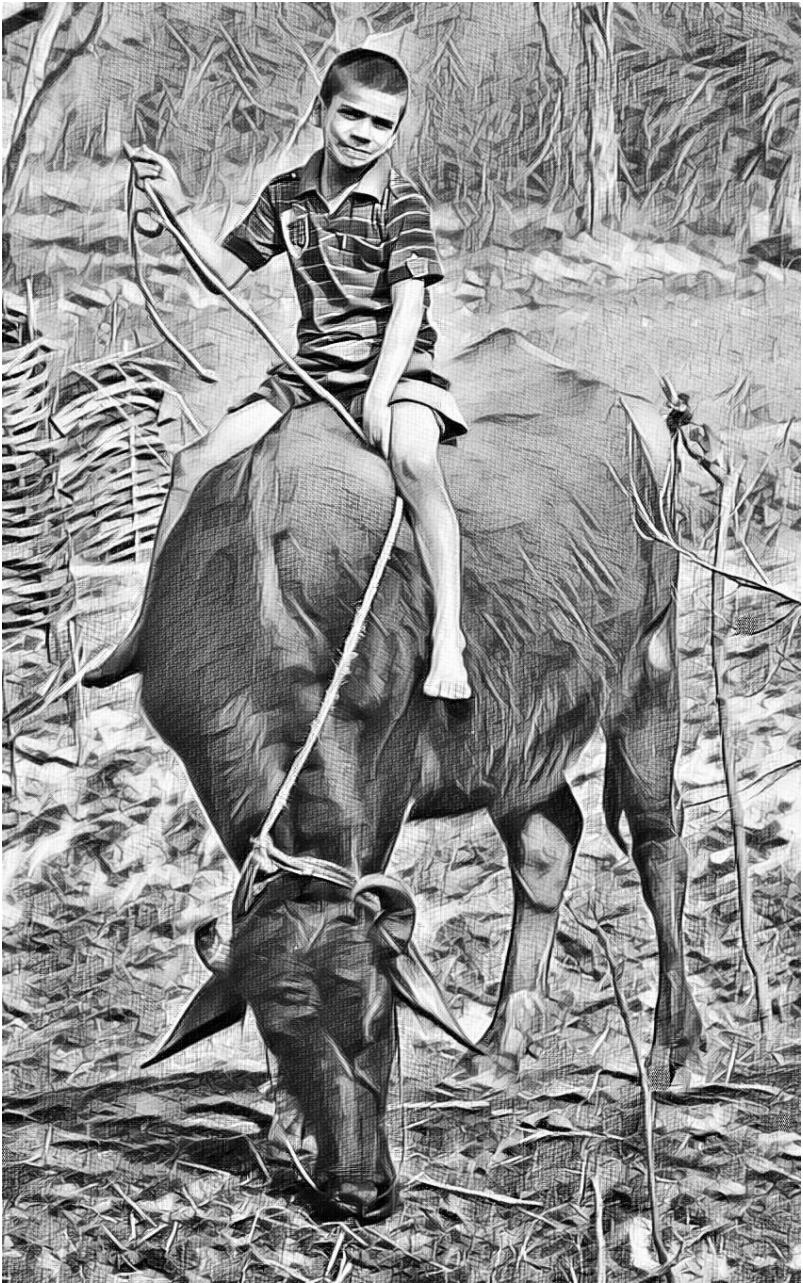
Often I visited the village during the summer holidays. In the fields with other children, played with the Sorghum stalks. The inside white colour soft pith - which appeared like thermocoal, and the sharp bark of the stalks which we used for making the artefacts like bullock carts, pull carts and ornaments.

Whenever I visited the fields after harvesting the grains, often saw the *soppa-kuppa* or heaps of Sorghum stalks. It was used as fodder for the cattle. I loved climbing and jumping from the *soppa* heaps. It was very dangerous. Its outer bark is very thin and razor sharp, and sometimes one might get deep cuts. My Mama often warned me not to jump. The relationship between the Mama and son-in-law i.e., sisters son, is always very special.

I also liked exploring the streams and brooks. The beautiful sand, pebbles and gravel found along the banks were beautiful. The water appeared crystal clear and the shadows of the small fish on the sand is seen very well as compared to the fish in camouflaged colour.

One day, one of my relatives took the Buffaloes for a bath in the stream. I also accompanied him. He climbed on a buffalo and asked me to get on another buffalo. I followed his method and tried to climb from the tail side. Placed my foot on the knee joint and held the two projecting pelvic bones to climb. I succeeded in climbing it. After some time, it did not like me sitting on it. The

buffalo jerked its body and I fell on the soft sand along the banks of the stream. In Madhubani area, Bihar state, in many villages, people sit and also try to sleep on a buffalo while it grazes grass. Especially in the winters, it is a common sight, people and children sit on the buffaloes and they also bask in the warm sunlight.



*A child on a grazing buffalo*

## Banamathi

*Banamathi* is a forgotten word nowadays. About 30 years back and before, it was a common term heard in parts of Telangana. When women used to have *Banamathi*, they get into a sort of trance. Some women shake their body and cry hysterically with hiccups. Some also call the name/s of the people, who made *Banamathi* on them. People, in general, consider it as witchcraft performed on the victim by someone intentionally. Some people say the enemies engage *Mantragallu* - the people who know *Mantra* or *Tantra* and invite the witches to pervade on them. As a result, it was believed that some women suffered from *Banamathi*.

It was more prevalent mainly in rural areas. In poor families, women suffered *Banamathi* more. Otherwise, women suffering from *Banamathi* were also suffering from different family problems. I have observed that as a family started earning a good income, the *Banamathi* started disappearing from such families. Also in those days, girls got married at an early age say seven years onwards. Most of the girls were twelve years old by the time they got married. There was always continuous work at home, as there were joint families, which were large in size. That is about twenty people in each family. They also need to work in the fields. This was a heavy burden on women. The insecurity and suffering of women in a family could be the reason for this psychological condition of women. In disguise, the women through *Banamathi*

could let their emotions out and found some relief.

People in villages identify very few people as *Mantragallu* who are considered as responsible for performing witchcraft which leads to *Banamathi*. Sometimes the villagers upon suspicion, they break their front two teeth, so that they cannot utter the mantras - a kind of sounds. Some of them were killed by the villagers too.

I heard that once there was a good *Mantragadu*, he asked four people to hold the legs of a cot. They said that the cot moved with the men up over the steps and went into a room on the first floor and touched a pillow. Inside the pillow, a plastic doll was found with *kumkum*, turmeric, lemon and bangles. He is said to be having the power to cure women with *Banamathi*. No men ever got *Banamathi*. With the improvement in communications and Television, at present, there is no one suffering from *Banamathi*. Probably such cases of depression and trauma are treated through medicine and psychiatrists.

Recently, I was asking one of the women who suffered *Banamathi* in the past, why it is not much prevalent now in their village as it was used to be 30 years back. Her answer was simple, the *Mantragallu* are not existing to do *Banamathi*. Say in her village of about 400 families at least 40 women had *Banamathi* in the past. She could not comprehend the reasons for the disappearance of *Banamathi* over years.





*The ugly face mask often is used on the facade of new houses and buildings to avoid the attention and jealousy of enemies*

## Traditional medicine

In my childhood days, my mother and younger sister had jaundice almost every alternate year. Apart from having allopathic medicine, they were prescribed lots of glucose to drink and eat. It was believed that by eating the traditional medicine the Jaundice would be cured fast. So, they were having the traditional *Chettu-mandhu* - a herbal medicine that is an extract from plants and followed *Pathyam*. *Pathyam* includes restrictions on what to eat. For people in *Pathyam* food is generally made without vegetable oil. Preferably had Sorghum roti with red chilli powder mixed with garlic paste. Whereas, some of the traditional healers, recommended to consume things quite opposite. That is along with *Chettu-mandhu* they permitted to have cow's milk, sugar cane juice, puffed rice and sometimes Mutton-Biryani too.

The main cause of jaundice was because we were drinking the water from the open well. The groundwater was highly contaminated by the seepage from septic tanks locally. As in our area, the drainage pipeline system was not established. I always went to Rakamcherla, a place close to Ghanapuram about 60 km West of Hyderabad city. There was a person who was giving *Chettu mandhu*. Its source is still kept as a secret by the person giving such a medicine. Every week once, he gave medicine dose, which is lumps of green leaves made into a paste. I went there many times and brought for my sister and mother whenever they had jaundice.

They got cured by this method along with stringent pathyam.



*One of the plants globally self-proclaimed as medicine is hemp*



## White horse

Cultural and traditional aspects of toddy consumption are interesting. People say after drinking toddy, the experience is like riding a white horse.

Palm date tree toddy is very sweet and less intoxicating. Whereas, Palm tree toddy is relatively more intoxicant. When just collected afresh from the tree, it is very sweet and nice. Toddy ferments and turns into alcohol with time and the taste turns from sweet to sour. It is very intoxicating. People enjoy toddy right at the trees where it is brought down. They drink out of leaves by holding them to their mouth while the toddy tapper pours the toddy from an earthen pot.

In the past toddy was sold in the earthen pots called *Kallu Muntha* or an earthen pot, specially designed with a wide bottom and narrow neck. The irony is that a person can fall after consumption, but this pot with toddy will not fall. I have seen that toddy is sold in the glass bottles also called *Kallu Seesalu*, such as reused beer bottles. Ironically in the past, it was sold in the reused Glucose glass (saline) bottles too. When a villager says the old man requires glucose', it means toddy. Some old people with arthritis walk straight and with confidence after drinking toddy.

Crows, monkeys and big black ants also consume the tasty toddy on the trees. After drinking, Crows excrete the fruit seeds that they have consumed. Especially the Indian banyan tree grows around

the Palm trees.

People suffering from Jaundice also consume toddy as part of traditional medical treatment. Toddy is considered to cool the body from heat so there is more consumption of toddy, especially during the summers. Jaggery made from toddy is also good for health.

The nickname of toddy and other beverages is called 'Mandhu' which means medicine in Telugu. The doctor prescribes medicine for one's health, and the other medicine 'drink' is self-prescribed by the people for their happiness. Another irony is that the shop selling medicines are called Medical Shop, in Telugu its translation refers to Liquor Shop that is '*Mandhu Dukanam.*' Too much consumption of anything would finally lead to consuming the real medicine prescribed by a doctor.

In some villages, there would be water shortage for domestic use, but there is plenty of toddy and other beverages always available.

When relatives come home, they are served toddy as an honour. I was ten years old when I first tasted the toddy. It happened that my family visited our relatives in the village Pulmamidi, Ranga Reddy District, Telangana. They brought some fresh toddy for the consumption by the adults. It was kept in a place which is used for storing the onions called '*Ulligadda Mande*'. It is a hut-like structure created with the dry sticks of the pigeon pea plant. It is a relatively cool place inside. My '*Alludu*' that is the cousin's (sister) son, and I were alone sitting in that place, and all the others were busy. He has shown me these toddy bottles stored inside as the place was cool. It was around 4:00 p.m. He said that it tastes like sugar water and good to drink. I tasted a little bit, and it was so nice. Soon, I have completed drinking three bottles, that is equivalent to about two litres. I started feeling drowsy and soon fell into a deep sleep. I am not sure what happened next. In the midnight, I woke

up and called my mother telling that I am hungry. My mom later shared what happened, that I was in a deep sleep after consuming the toddy. And they brought me home in a bullock cart from the field. I was knocked down by the first time experience in life.

Most of the old generation people have the habit of drinking toddy. Men drink more than women, and they drink almost regularly. Men visit the '*Kallu Compound*' a semi-open place where toddy is sold. It has small platforms and a convenient place to interact with friends while consuming toddy. One or two women usually sell the eateries. It is very rare that after consuming toddy people ever misbehaved with the women selling the eateries. They sell items which are not found elsewhere, such as very big size *Papadalu* (crispy wafers), *Ulavalu* (Horse gram), *Bobbarlu* (cowpeas), *Chenagalu* (Chick Pea), *Chudva* (Puffed rice plus other ingredients), *Mirchi Bajji* and boiled eggs. These items being slightly spicy are also very tasty. I always loved to eat those items, if I got a chance.

In villages, every occasion or event is cherished with drinks and made memorable. Being happy is an obvious reason to celebrate. To come out of sadness, it is another reason to drink. And many habituated people, of course, drink every day for no reason. On the day of death of a person, people cry so much in sadness. To forget the sorrow, some of the relatives offer toddy to the bereaved family members. It is called '*Chedu Idavali*' or lose the bitterness. During happy occasions, the host provides the toddy, and during the sad occasions, the guests sponsor the toddy to the bereaved family members.

The agriculture labour called for work in one's field are given their day's wage and also get one or two bottles of toddy. This is a common practice, both men and women labourer's are given toddy. They say only by drinking they could get deep sleep and forget the pains of a day's hard work and be prepared for the next

day's work. Why ignore or deny a cool farewell to the day, after all so much unpleasant order of daily life despite complaints, curses and struggles, which don't change immediately. Why ignore or deny a cool farewell to the day, after all so much unpleasant order of daily life despite complaints, curses and struggles, which don't change immediately. I met an old couple involved in pottery in a village they cook their evening meal by 4:30 p.m. and consume the fresh toddy and sleep before 7 p.m. They woke up early morning by 5:00 a.m. This routine was good for their health and happiness. They are making pottery even in their 80's.

In rural villages, both women and men work equally. Sometimes women work more than men. Toddy is a family drink in many families, especially among the older generation. In quantity, women won't drink as much as men. Sometimes a son drinks and takes toddy to the aged parents. It is a kind of respect and honour given to the parents.

After drinks, I saw women speak on par with men. They talk with an open heart with their husbands. There is no hatred in their minds. The jovial mood created by toddy to the whole family makes a day complete.

Of late beer and whiskey is replacing toddy. It is a burden on the people and also not so good for the health of the people consuming it. It benefits only the multi-billion liquor barons and never addresses the social and local environmental issues.

There is a festival called '*Bonalu*' celebrated in reverence to the Goddess *Durga*. There are many names to Goddess *Durga* geographically like *Yellamma*, *Maisamma* and *Renuka Yellamma*. Sacrificing the animals and offering toddy is common in many temples. They pour toddy before the entrance gate of the temple, called '*Saka Pettadam*.' It is an offering to the deity. They also let the sacrificial animal drink some quantity of toddy before

## WHITE HORSE

sacrificing it in front of the temple. Probably they don't want the slaughtered animal to suffer extremely at the time of death.



*Kallu Muntha is used for drinking toddy*

## Betel Leaves

In the villages, women have a *chekkudu-sanchi*. A pushing bag - that is a small cloth bag with several pockets, part of it is pushed into the sari line at waist - it used for storing a few Betel leaves, nuts, a metal nut breaker, *Sunnam* (Calcium Carbonate) in a small container with lid, *Kasu (Katta) pieces*, Cloves, Cardamoms and some coins. Whenever I visited the villages as a young boy, out of curiosity had a chance to ask for the *Chekkudu-sanchi* of old women and see the things inside. Sometimes also found few small shells too.

Betel leaves added with ingredients is called Pan. It is consumed with great relish and it is good for health, otherwise why people would have consumed it since ages. A betel leaf has the taste of a combination of - Chilly (hot) + Sweet + Umami (in Telugu *Vogaru* to define precisely).

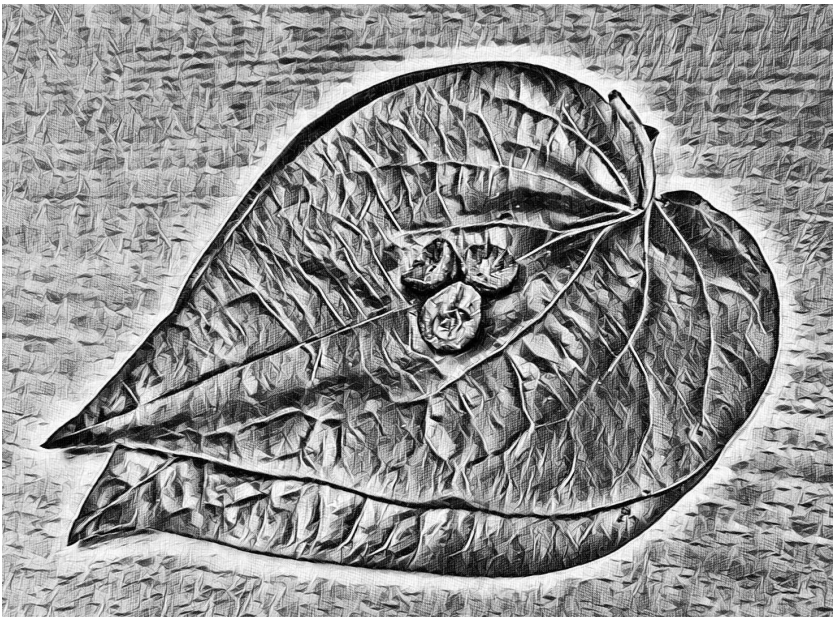
Betel leaves are consumed in almost all parts of India and especially by the people in villages. A 'paan' literally unites different parts of India, the Betel leaf might come from Kolkatta, areca nut from Kerala, *Kasu* or *Katha* (*Katha* is prepared mainly from the water extract of the heartwood of 'khair' tree or Acacia catechu) from Uttar Pradesh and *Chunna* (lime or calcium carbonate) can be procured from elsewhere. It is good for digestion, as its chewing releases saliva juice in plenty. On the whole, it reduces acidity. People consume pan especially when they have a sumptuous meal.



## BETEL LEAVES

The consumption of Pan benefitted especially old women. Women especially suffer from Osteoporosis - weakening of bones due to depletion of calcium density in the bones with age. The Betel leaf is rich in calcium and also some extra calcium carbonate (*Sunnam*) added to the pan, the deficiency of calcium is reduced. These women suffer less from the osteoporosis and their bones become stronger. That could be the main reason in olden days why women consumed more pan compared to men. Even now especially the women's functions called '*Perantam,*' and *Poojas* (Prayers) performed, the women who attend the function are offered two betel leaves, Areca nut pieces and a Banana.

I have introduced Pan eating to my two kids too. My wife and kids eat especially the sweet-pan. Whenever children have sour throat due to cough and cold, we insist the kids eat a pan.



*Betel leaves with Areca nut pieces*

## Learn to swim

In one summer, my brother-in-law i.e., my Mama's son said that he would take me to the village and teach me swimming. I had only ten days of summer vacation. He took me to Regadi Mamidipally village, Ranga Reddy District, Telangana.

I remember my mother sharing an incident, that happened in one of the wells' in the village. Once a man came to take a bath in the well, before that he was washing his clothes while sitting on the steps. Suddenly, the dead body of a woman surfaced from the well and it was floating. Having seen this happening unexpectedly, he feared so much that he ran away from the well leaving the clothes behind. After that, he was in shock for several days. This particular lady surfaced, had committed suicide by jumping into this well. Villagers were searching for her for the past three days elsewhere. Nobody had an idea, that she jumped to death in this particular well. Those committing suicide often leave their chappals near the well as a clue, so that people would know and search in the well. To retrieve the submerged bodies, people often used *Reni-Campa*, it is thorny berries plant branches. It is tied to a rope and dropped into the water and moved in all directions. The dress gets stuck into this bush, and the dead body is retrieved. With so many such incidents happened in the past, while going to the well, I had my own imagination and fear. What if there is someone drowned in the well and yet to be surfaced?



Summer is the best time to learn swimming. The water would be warm and relatively shallow. I was taken to a well, at around 10 a.m. in the morning. Being summer it was already very hot and I was sweating a lot. The first day, my brother-in-law requested a young boy returning after swimming, to give his float. This float is a piece of dry Shagamatta plant trunk. Shagamatta is an agave plant - from a mature plant, a trunk emerges from the centre of the plant about 20 to 30 feet in height. If cut before the trunk emerges that is the heart (piña) of the plant, from which Tequila drink can be prepared. When it is cut and dried, it is one of the lightest wood materials, which is available locally. It absorbs water very slowly, so every day after swimming, it should be dried. People often kept it on the hot tin roof.

The float had a diameter of about one foot, this piece of float about two and a half feet in length is tied with *Paggam-thadu* - a thin and strong rope made up of Jute, otherwise, it is used for tying the bullocks to control them. We could see old people, especially in the summer, making such ropes by rolling jute fibre on their thighs, occasionally wet it with their saliva and water. The float is tied to the waist in such a way that it is on the backside of the waist. It was not so convenient and painful at the waist, as the float pulled the body up through this rope. As this was the only option, so I have used it.

Some children are afraid of water. Along with me, my brother-in-law wanted to take another boy for swimming. But having come to know about brother-in-law's plan, this boy started running all over the village. With the help of five other children finally, we could catch him. We all left to the well by lifting this boy as he cried. After reaching the well he ran away again. He never learnt swimming in his life. Sometimes, fear is the cause of losing beautiful experiences in life.

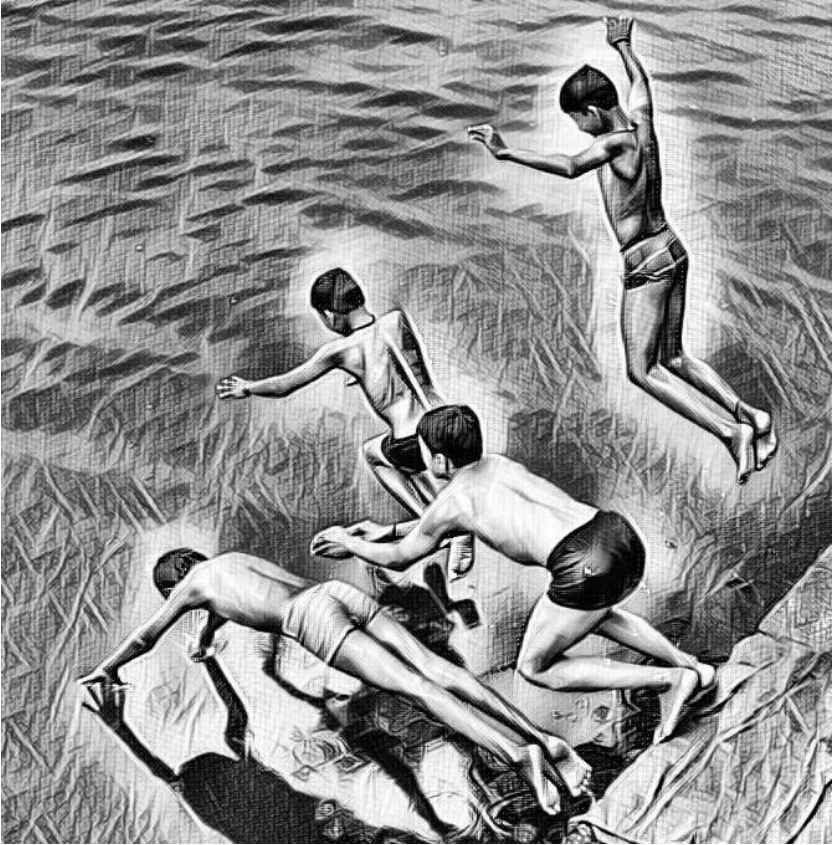
This well was favourite for children as it is close to the village and had relatively clean water. Many boys were swimming and diving into the well from the rim of the well. I could also hear their cacophony shouting and the water splashing sounds.

I took off the shirt, and with my *Chaddi* (Short), I was ready. My brother-in-law tied the float and took me down the well over the steps. To learn swimming, he asked me to make cups with my palms and push water underneath my belly continuously and start hitting the water with my two legs alternatively. I started practising it and soon I could move around. In the well, I swam across to the place where a steel pipe was connected to a diesel engine and it was submerged in the water. It was used as a place to rest by holding it and return back to the steps. To an fro, I practised. It was so crowded with many other children enjoying the cool waters in the hot summer. Some children were playing games such as diving deep and getting the soil from the bottom or finding a coin thrown intentionally. Some were hiding underneath the steps or by holding their breathing were submerged inside the well, it was playing police and thief game. That is to catch someone who is hiding by chasing. Some were bullying other small children by drowning them in the water for some time and making them cry. It was a mess altogether. I had to wade through this kind of situation to learn. But with scorching mid-summer bright and hot day outside, and the cool water in the well gave us some relief. Being in the water and swimming was a pleasure. We returned home in the afternoon after spending 2 to 3 hours in the well and continued for the next eight days. By the time we returned home we were very hungry and tired.

Within eight days, I could learn to swim. On the tenth day as I need to leave the village early. My brother-in-law wanted me to practice once again. He took me to the well by 6:00 a.m. It was

## LEARN TO SWIM

slightly chilly outside. He asked me to jump from the top of the well directly into the well. I jumped, the water was warm, I felt the ultimate freedom without the float. We both did swimming for some time and left back to the city.



*Children diving into the water*

## Transformation of villages

The villages are the dots where the civilisation's emerged and flourished. Over many years, some villages have grown into mega-cities too. The harmony and integrity existed in the villages are becoming rare. The communications and globalization have penetrated the intricate fabric of villages. Communities living in the villages are no more isolated. Villagers are leaving the old houses and moving away from the water sources to the ridge areas where main roads are existing. Some villagers have deserted the villages and moved permanently into the cities and other major towns.

The villages are becoming less sustainable. The village economies contribution to the GDP of the nations is minimal. Many communities have become dependent on respective governments. Although the primary sector is essential for sustenance of life; for governments, villages are less valuable concerning revenue generation. Many villages are like museum pieces, to sustain their existence governments are implementing many schemes. Without such interventions, many villages would be abandoned or become lost villages, and there would be a mass exodus of the population to the urban areas.

TRANSFORMATION OF VILLAGES



*A village is an amalgamation of nature and people*

## The culture of tribals

Once EFICOR (an NGO) asked me to evaluate the project that they have implemented, it was on 'Food Security and Livelihoods.' The stakeholders were the poor and vulnerable Malto tribal community living in the Rajmahal area near the foothills of the Himalayas, Jharkhand State. Malto people are very cultured. They consider the guest as the most important person and give the highest respect. When I walked with the EFICOR team to one of the villages, they were ready with a garland of flowers, water in a container and a big plate. I learnt that they wanted to wash my feet with water. They asked me to place my feet on the big plate. I politely declined their request. Their simplicity and culture touched my heart. There must be historical reasons for this practice.

Once in a village near Kuntala waterfalls, Adilabad district, Telangana State, I went to the house of a tribal head. As I sat in the courtyard, saw that there were many country chickens around; I asked why he is having so many of them? He said that they are mostly for the guests or visitors, including the government officers who occasionally visit their village. Their way of respecting the guests could be another reason for their exploitation historically by the so-called civilised people living in villages and towns.

While I was in the villages around Jagdhalpur, Chhattisgarh State, the local tribals greeted me with a garland of flowers. Almost

in every tribal habitation that I have visited I observed great respect for guests as a distinct element of their culture. Also, I found them equally worshipping animate and inanimate objects in Nature.

Agricultural practices are predominantly need-based coupled with several customs and traditions of conservation. They have festivals to thank Nature, before consuming fruits, vegetables and crops. Nature's kindness is acknowledged by them through their customs and practices. Sharing resources with others is still a common practice. Role of money is minimal in their economy. One could see them using the money, whatever little they have, in weekly shandy for buying products that come from outside. The tribals also respect petty traders, GCC employers, small contractors and government employees. Unfortunately, the outsiders have been displacing the tribals from their land and forest. Much of the conflicts in tribal areas would be resolved if the so-called civilised people from outside learnt to respect these tribals and should not exploit them.





*Tribal women of Jagdhalpur welcoming with water and flowers*



## Poverty doesn't defeat pride

Once I was in Bundelkhand, doing an impact assessment of a project implemented in some villages. In this village, there lived very poor people. It was late evening and there was no power in the village. While I was discussing with the villagers. I saw one girl sitting at a distance studying under the only solar street light. I was inspired by her passion for learning. She was poor inhabiting in a remote village, but her willingness to learn in spite of the challenges inspired me.

I had been visiting Azadpur, a village in the remote Mau Block in Chitrakoot, Uttar Pradesh State. I visited the village on three occasions in 2012, 2014 and 2017. This particular habitation was selected by EFICOR organisation for the implementation of climate change and adaptation project. It falls under the drought-prone region. It is a rocky area with very thin soil. The people in this habitation belong to the scheduled caste and are very poor.

In 2012 when I visited, the streets were dusty, and the houses did not look clean. Majority of the homes had no plaster. I met some children there. I took their pictures casually. I also liked two girls who were very young, and their smile attracted me. They were playing at a distance, I called and took their picture. One of the girls had ear-rings out of Neem leaf spines. The other girl was wearing a black thread with an Iron ring. I liked this picture especially for the smile and the language of their eyes. I also took

pictures of two other girls; they looked so sharp. There was pride in everyone in spite of whatever they are. I revisited the same habitation in 2014 and 2017. Went to the same place and retook their pictures. I could see how their habitation transformed and so the life of the children improved. There was a change in their looks. Delighted to observe that their pride has not come down in any way. Pride is achieved by accepting and accomplishing all the challenges in one's life with dignity. These people have seen and experienced all the shades in their life. Pride is an unprecedented wealth that no one can rob.



*A girl reading under the solar street light in a remote village in  
Bundelkhand, Uttar Pradesh*

## Sacrificing villages for development

After choosing the area for my Doctorate, I have visited the place for the first time in the year 1995. I still remember the strong unpleasant smell that greeted me when I arrived in at Patancheru. Mr Prashanth, my friend, accompanied me to the field area. As we moved to some of the villages, we saw brick kilns in the once fertile lands. The contractors have engaged the poor people from Odisha State to work for brick making. Where the children were also seen working. There are very few standing crops, and they were not healthy. There are two streams with polluted water flowing in the area they are Nakka Vagu (Fox Stream) and Pamula Vagu (Snakes Stream). We saw that a group of sheep and goats were drinking the coloured and obnoxious water from the Pamula Vagu, and the shepherds were washing their hands and feet in the same waters. I was touched by the plight of the people in the region. We heard stories that in some of the pools of water in the area when a buffalo went for a bath, its skin peeled off because the water was highly acidic.

Prof. K. Purushotham Reddy and Dr Kishan Rao were fighting for the rights of the people in the area. They have recorded the blue baby syndrome or a baby born due to excess pollutants which entered into the conceived mother. That is an illness that begins when large amounts of nitrates in water are ingested by an infant.

The skin rashes are easy to be found on many people. From

cancer to all kinds of impacts on the internal and external parts of the people were also observed upon investigation by doctors. Women had often abortions too. Rice cultivated using the polluted water, smelled, turned yellow and it was spoiled by evening.

While transecting the field area, saw an ancient sculpture, the local Hindus have applied a vermilion to it. It is probably a sculpture of more than 1000 years old. Upon enquiry, someone said it was found while excavating the soil for brick making and was kept on the roadside. They said many such statues were unearthed in the area.

In the field of business, there is least caring about the history and the relics. Having seen this, I went to the Archaeology department and learnt that there is a continuous history of people living in the area since the 2nd Century BC. It means the land which sustained agriculture since then has become infertile and is unsustainable due to the so-called industrial development.

Pollution of water, soil and air may be the main cause of fallow lands. On the whole, about 20% of the farms were left fallow in most of the villages. Traditionally there had been two types of irrigation practices in the region, lift irrigation from wells and streams, and irrigation by gravity from tanks. The buckets pulled by bullocks called *Mota* are suitable for irrigating up to 8 acres. *Motas* were in practice until the 1980's. The present practice of lift irrigation is by electric motor pumps. The availability of water from some tanks spread in the region can also be attributed to the prosperity of agriculture. Tanks are adequate in numbers, but now many such tanks are of little use except as storage ponds for industrial effluents. As these tanks are connected in series, the pollutants entering a tank at higher reaches pollutes all other tanks downstream. Presently many farmers shifted to dry-land farming as the water sources are polluted. The pollution of wells

and tanks crippled all those farmers irrigating crops under them.

People don't have access to the drinking water in the area. Some of the villagers were buying water or they were paying for the water supplied by the Government and sometimes buying from private agencies. By the end of my PhD, I have filed a Public Interest Litigation in the High Court of Andhra Pradesh to provide free drinking water under the polluter pays principle. The order came immediately, and the villagers are being provided free drinking water. Sad, the court had to intervene to ensure drinking water which they had from any of the sources since centuries in the region.

The life and livelihoods of the farmers living in Nakka Vagu basin are affected beyond repair.



*Goats drinking the polluted water*

## Wild animals in villages

In parts of Rajasthan and Haryana States in India, there is a drastic difference between the villages where the Bishnoi community lived when compared to villages where others lived. That is the wild animal's density was very high, and they roamed close to the Bishnoi villages. There is a historical reason why the wild animals loved to stay close to Bishnoi community habitations.

During the visit to Bishnoi community villages in Haryana for a study, I met, Mr Vinod, he narrated the story of a lady named Amrita Devi. She is a member of the Bishnoi sect who inspired as many as 362 other Bishnois to go to their deaths in protest against the cutting down of Khejri trees in September 1730. The Khejri tree that is *Prosopis cineraria* is also considered to be sacred by the Bishnois. The Maharajah of Jodhpur, Abhay Singh, requiring wood for the construction of a new palace, sent soldiers to cut trees in the village of Khejarli, which was called Jehnad at that time. Noticing their actions, Devi hugged a tree in an attempt to stop them. Her family then adopted the same strategy, as did other local people when the news spread. She told the soldiers that she considered their actions to be an insult to her faith and that she was prepared to die to save the trees. The soldiers did indeed kill her and others until Abhay Singh was informed of what was going on and intervened to stop the massacre. This is the commitment of the Bishnoi community. And I was there to address one of their

problems.

With Mr Vinod, I started in a vehicle to see the wildlife in the area. Badopal is a village, about 10 km away from Fatehabad town. In the areas around this village, there are 500 nos of Blackbucks, Neelgai (blue bull), deer, and other wildlife inhabit the area. The Government of India planned a Nuclear Power Plant at the Village Gorakhpur and acquired land for the plant, housing and other utilities. They made a fence of steel wire all around the acquired places. The place acquired for the township had Blackbucks, Neelgai (Blue Bull), Deer and other wildlife. They had restrictions on their movement, and some of the animals have stuck in the barbed fence have died recently. During the visit, I could see herds of animals roaming freely in the area.





*A black buck as seen close to a Bishnoi habitation*



## A village failed to offer a cup of tea

About two decades back, of the three major abattoirs existing in India, two were in Telangana State. The cattle sold in the region were slaughtered and the beef was locally consumed or exported to the middle-east countries. As a result, the cattle numbers in the state of Andhra Pradesh reduced and they are one of the cause. The small and marginal farmers dependent on the cattle for farming were suffering due to a reduction in cattle numbers and they could not afford to use the technologies. Therefore a study was proposed by Mr Dharamraj Ranka under the leadership of Prof. K. Purushotham Reddy. Mr. Dharamraj Ranka was running many Goshalas (the cow shelters) in Hyderabad City. Including myself, a team of 6 people was constituted. We in sub-teams visited several villages, cattle markets and interviewed people to assess the situation. Travelled extensively in parts of the State. I have taken photographs of the cattle at great risk, as they were illegally being transported to the abattoirs. The brokers in some places intervened and did not allow us to do the study.

During the study, we went to a village called Chautkur near Jogipet, Medak district, Telangana. While having discussions with the villagers, requested them to offer a cup of tea. Someone went and searched the whole village but could not get a glass of milk. This is due to declining cattle, commercialisation of milk production and selling all the milk to urban areas. Therefore they

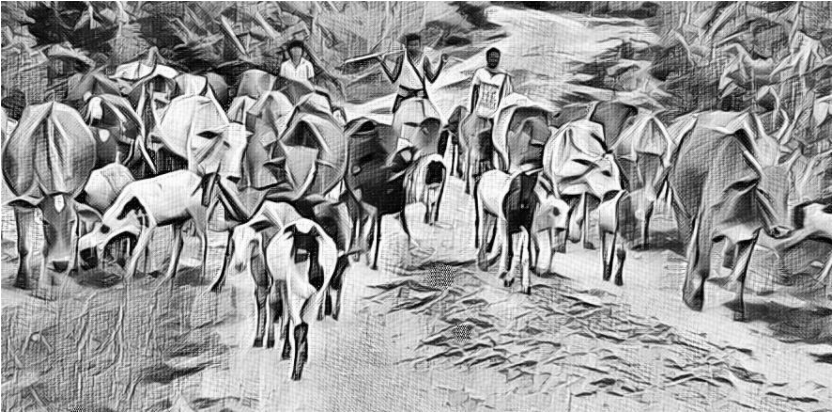
could not provide a cup of tea. We made a statement 'Chautkur pote chai dorkaledu' i.e., Couldn't get a cup of tea in Chautkur village when visited. This is the fate of villages where farmers consume less and sell almost everything. In contrast, Governments permit to sell liquor and it is available all the time in almost every village.

About 40 to 50 years back in the villages milk was plenty. Farmers considered that a calf has the right to drink its mother's milk. Therefore very less milk was taken from cows and still, there was always milk and curd in many homes. People selling milk was never a priority. The other byproducts of milk such as butter, curd and ghee were always available. During my visit to the villages in my childhood, I had the opportunity to have all the products of milk. With the development of commercial dairies, the farmers are considering milk as a source for earning money by selling it. Therefore milk is available more in the cities when compared to the villages where it is produced.

Based on the information collected, we have prepared a report titled 'Game of Numbers' - with details on the situation of cattle. Public Interest Litigation (PIL) was filed in the supreme court of India with all the data and analysis on cattle depletion, to stop the abattoirs and illegal slaughtering of the cattle. This issue was critical to address the needs of small and marginal farmers. The supreme court could stop the abattoirs.

The stubble management in the villages has become a serious issue as the farmers are burning it as the domestic animal's population reduced.

A VILLAGE FAILED TO OFFER A CUP OF TEA



*Without domestic animals, a village loses its identity*

## Poor and destitute

People often discuss about the poor people and poverty. Who is really poor? The person who is worried about the next meal while eating is definitely a poor person. Unless one was poor and experienced poverty, it is not possible to understand what is poverty or to be poor. One may partly succeed to realise poverty by being sensitive, by keenly observing the poor, by listening to their narratives, and by identifying the concerns.

In one of the projects, we wanted to support the poorest of the poor. Therefore, to understand, I started searching for the poorest of the poor in the villages. Wanted to know who are they? How do they look? Where do they live in a village?

Usually, they don't attend meetings or village gatherings, they are afraid to speak especially with the new people, and they don't demand anything even if they speak. They also live in isolation or stay away from the main community. One day, when I was in the thirties, I still remember having seen one old and very poor lady in a village in Mahabubnagar district, Telangana state. She was the most miserable person in the village among the poor and also destitute. When she came out of her makeshift hut, I saw her frail body holding a stick in her hand, and all her hair was white. She lives on the food given by others through compassion. She could not speak much and also did not ask anything from me. Her picture still lingers in my mind whenever I think of the poor.

During an evaluation, I wanted to understand the food security of the Malto tribals. Visited some of the households to see the grains that they have stored in their home and how long they would last for consumption? What do they eat every day? Do they have kitchen gardens and domestic livestock to supplement their food needs? How natural resources are existing, which would support their livelihoods? Do they have alternative livelihood opportunities? I found that they store grains to last for a few months, as their production or income is seasonal and also at risk. They have limited access to the Minor Forest Produce or non-timber forest produce from the forests. The food security and livelihoods of the tribals were at risk. The carrying capacity of their immediate environment is also limited and lessening.

While working on biomass stoves - design and facilitation to the communities, I could visit the houses of many poor families in parts of India. It was a great opportunity to work for the poor and visit their houses.

All are equally born on earth, but the stakes on earth resources are different because some people claim more resources. Birth in space, time and the access to five capitals (Human, Social, Natural, Physical and Financial) makes a person poor or rich in this world - as a system was created by the humans called livelihoods.



*Two Girls from a drought-prone area in Bundelkhand, Uttar Pradesh  
India.*

## Farmers

By occupation farmer is the one who is connected with earth more than anyone else. Why a farmer is not honoured, he is becoming more and more vulnerable? Over a period, the agriculture sector turned from sustainable agriculture to exploitative agriculture. The new practices are degrading the very resources which sustained farming practice and the communities. The soil degradation, water pollution, groundwater depletion, pesticide residues in the produce, greenhouse gasses released, etc., are some of the impacts. The scientific community and the policy makers introducing and promoting GMOs and chemical-based agriculture are also responsible for this pathetic situation.

If the budget component allocated to the farmers and the agriculture sector increases every year, it means that we have not achieved much in sustaining this sector. It is like the number of pills taken by a patient continues and the dose increases, it does not mean that the patient is becoming healthy.

Today our policies, technologies, and other factors made the farmer helpless, dependent and almost like a beggar for everything such as - seeds, fertilizers, support prices for the produce, loans, insurance, power, and water for irrigation. There is a need for serious thought and strategy for the sustainability of farming and farmers' livelihood.

We love farmers and their well-being because they provide food,



fodder, fibre, fuel and much more. Why we are not happy when the prices of their products go up? In the interest of destitute people, the government tries to bring down the price by all means. Finally, the farmers suffer the most in the whole process. No one was bothered when the farmers had been at a loss many times. Even farmers many times paid to dump their produce as garbage when there was no buyer or glut on the market. I myself once dumped flowers as trash, cultivated in our Farm, as the market price was so low. In general, a farmer rarely gets profits that he deserves for the efforts. Farmers feel sorry when the whole system conspires to bring down the prices when they rarely get a good price. On the whole, it is common sense to understand that the prices go high for various reasons such as a particular crop production was not high due to crop failure. In such a case, the farmer would get compensated through an increase in price and so all the dependent people also get compensated.

First of all, every farmer deserves the right price for the produce. Paying the right price means we are not exploiting a farmer. It also means giving due respect to the farmer and the agriculture sector. A farmer lives happily with honour and dignity only when they could sell the produce at the right price with some profit, after deducting expenses on the inputs, labour, processing and other management expenses.

The petrol and gold price also comes down but in contrast, not the water price. In the packaged water business, never the price of a water bottle is reduced. Even during the rainy season, the price of water is the same. There was never an offer like one bottle free for every bottle purchased; or 20% extra water for the same price; or free gifts on purchase of a water bottle. When water is such an important and valuable input in agriculture, why the product of the farmer should be undervalued. The state ensures the minimum

wages for people working in all sectors. How come the state has never protected the minimum wages of farmers. The state has the responsibility to ensure the minimum support to the farmers. There are no labour inspectors in the agriculture sector, who could ensure a minimum wage for the farmers and the human working conditions are ensured.

In history, the farmers paid the taxes and contributed to the economy of the nations. Their share in GDP was high. Since last two decades, the farmers' contribution to the economic development of the nation is least considered, although a majority of the population is still dependent on the agriculture sector. This is because of undervaluing the price of produce and labour.

Earliest civilizations and cultures in parts of the world flourished. The richest kings, great kingdoms and monuments existed because of farmers' contributions. None of the rulers nor kingdoms ever had any debt in the past. At present, every nation is in debt, in billions of dollars. The debt is also on just born babies and those yet to be born. And we never know when this debt would be cleared. The civilizations, culture, and traditions flourished with the development, progress of agriculture, and surplus food production. The great monuments stand testimony to the prosperous agriculture-based economy in the past. A farmer and the allied communities formed the foundation for the existence of civilisations in the past.

But they are now at the receiving end. Over the last 50 years, the pride of the farmers was belittled by the systems. Everyone around the farmer is getting benefited through exploitation but not the real farmer. The government officials, university professors, research scientists, and civil society representatives are happy with their profession. There are multinational companies benefited by selling seeds, pesticides, fertilizers, technologies, processing goods and selling the product. The brokers and other

middlemen are also becoming rich. The debt-ridden farmers are becoming poorer and few are also committing suicides. The dependent secondary stakeholders are not supporting the farmers.

In the past, there was pride to say 'I am a farmer,' because farmers rarely depended on the government systems. A farmer's child is also shy to say that their parent is a farmer. Very rarely any child is coming forward to say that they want to pursue farming as a profession in the future.

Farmer was independent before India got independence, but after independence farmer has become dependent. Our system failed in promoting Gram Swaraj, otherwise, the fate of farmers would not have been so bad.

In the past, the development systems were based on the primary sector such as agriculture which was more sustainable. All the communities existed as a social network and promoted farming.

With the green revolution, the farmer's dependency on the non-sustainable input systems increased. There is nothing 'green' in the green revolution. The increased production is achieved at the cost of degraded environment and ecological systems. The ecological footprint of the farmer is growing. The contribution of greenhouse gases emissions from the agriculture sector is also increasing. The vulnerability of the agriculture sector is growing from newer dimensions such as climate change, pollution, environmental degradation and GMOs. The quality of the produce of a farmer also degraded considering the usage of pesticides and other chemicals, in this situation the farmer is not to be blamed. The whole system is responsible for this situation of the farmers.

Today, the economy is becoming more and more virtual, which is based on printed money, petrodollars, shares, and inflation. The farmers are contributing to the real economy through production. Any day matter is more important than anything else. Through the

right price to the farmer, we could restore the pride of the farmer and also address the food security of the nation. Then the farmer's hand would be a 'giving hand' rather than a 'receiving hand.' The farmers would give up all the subsidies; would get paid worth their labour; would employ people paying the existing labour charges; adopt technologies; pay for power and water; could engage consultants for advice and support too. They would be no more at the mercy of policies. The farmer would also pay taxes to their respective systems for the development of the resources and their social security. Once again we would see debt-free nations.

We are not sensitive to farmers; they are taken for granted. The day will come when everyone realizes the basis of our own existence and it could be too late.



*A farmer preparing land for paddy, in the drought-prone Mahabubnagar District, Telangana, India*

## Sustainable Rural Livelihoods

I am fortunate for having had several opportunities in my life to have vast experience of working with rural communities. That involved travelling across India including some of the remotest areas. Directly or indirectly my work was related to the sustainability of rural livelihoods.

This work made me understand how people in villages are connected to natural resources and making a living. The resources sustainability is critical for the existence of people for their livelihoods. In contrast, the urban areas are existing and thriving at the cost of the degradation of the rural regions and their environments.

Achieving sustainable rural livelihoods is one of the most significant challenges of the 21st Century. The Sustainable Development Goals has prime relevance to the rural development issues in developing countries. A multi-pronged approach is needed for achieving sustainability of the rural areas.

Several rural development programs are being implemented through funding from Government, Non-government, National and International agencies. There is a paradigm shift in rural development approaches, i.e., adaptive rural livelihoods strategies are evolved and are being practised.

There is a progressive change brought in the watershed projects being implemented especially in the semi-arid and arid areas.

Earlier water used to be the single major factor around which livelihoods were perceived. Now the latest thinking evolved is i.e., watersheds is an Approach to ultimately address the livelihoods<sup>7</sup>. Similarly, every activity conceived as a project or activity is an approach to address the sustainable livelihoods which is an ultimate programme.

It is proved that during the drought and especially in the context of climate change, the Natural Resources related livelihoods are not sustainable and often could not prevent migrations. And also in the post-watershed project scenario, the livelihood options and opportunities of most vulnerable people were at stake.

The adaptive Livelihood strategies include a) Diversification – Each family and individual needs to be capable to adopt more than one livelihood; b) Adopting the secondary and tertiary sector livelihoods and c) Non-natural resource related livelihoods could be adopted.

The prevailing insecure rural livelihoods cannot ensure protection and rejuvenation of environment and natural resources. Promotion of sustainable rural livelihoods has to invariably ensure a better quality of resource structure. Budget allocations and piecemeal interventions are no substitute for eco-friendly sustainable rural livelihoods strategy.

The successive governments are failing to address the rural livelihoods. Villages have become some sort of museums and the governments are trying to preserve their very existence. Therefore many schemes and freebies are designed to support the rural livelihoods. Food for Work; Minimum employment guarantee scheme; Cash for work, pension schemes, insurance schemes and loan waiver etc. are being implemented. The universal basic income scheme is also being explored for implementation. Several quasi-universal basic income schemes are already being

experimented too.

The rural areas are considered cheap and less worthy, the urban dominance has belittled the existence of rural areas. The virtual wealth in the form of money can buy and erase the rural areas and its cohesive structure. With the price of one multi-story apartment in an urban area, one could buy a complete village. The GDP contribution of the villages to the national economy is undervalued. Therefore the sustainability of rural livelihoods is a big question. With more than 50% population in the urban areas globally, the focus is shifting towards urban areas. The very basis of civilisations which depended on the prosperity of rural areas is no more relevant with the paradigm shift of urban areas based economies.



*During the drought or lean period, people are provided works such as desilting of the tanks – a village in Mahabubnagar District*



## Smart villages

Working hard with smartness empowers people and communities towards sustainable development.

Accessing and using technologies in the respective work make a person smart. Several technologies developed in recent times are already being adopted by the farmers in rural areas. In a smart village, people use technologies, do networking, use communication technologies and are innovative. The smart and hard-working farmers have a better chance to reduce their vulnerabilities in the present scenario.

With increased smartphones usage and access to cheap broadband internet connectivity, there are many possibilities for smart monitoring and management of things. The people have access to information and are also able to communicate across.

Especially in the farming sector, the factors and the associated uncertainties are more. The decision making is based on controlled and uncontrolled factors. The monitoring systems are becoming cheaper and reliable. The Big-Data processing for decision making is becoming a huge task. Where the Artificial Intelligence (AI) based on the empirical data, learning models and belief systems should be developed. Although initially, the decision support systems could be discrete, over a period there is a need to integrate the systems for aggregate decision making.

Monitoring is possible through the use of sensors like the

drinking water sources and quality; water storage levels in the reservoirs; monitoring the water usage per family. The communities should adopt the rainwater water harvesting systems, and other conservation, recycle and reuse systems.

Using sensors some of the important aspects which could be monitored are: Soil moisture; Water level in the fields; water level in the borewells, water flows in the canals and channels, water drainage; and water quality.

The farmers could adopt low-cost soil moisture sensors in their fields. The sensors installed at various depths would make the farmers understand the fluctuations in moisture levels. The farmers would manage the irrigation and drainage based on the information received from the sensors. The data could also be received on mobile phones too.

Canal automation and irrigation scheduling based on monitoring data are other aspects need to be adopted for achieving irrigation efficiency. Piped water should be supplied up to the individual fields, which should be metered to monitor the usage.

To increase the irrigation potential, the solar-powered motor pumps for the bore-wells. The remote and most deserving poorer communities could access the off-grid solar power and improve their livelihoods.

Automatic Weather Stations enabled with WiFi, give continuous information on the local weather. The farmers by understanding, especially the temperature and relative humidity could manage their crops better. The evapotranspiration rate is a very good indicator for irrigation planning. With the availability of the local weather data, they could go for the index based insurance from the Government and other agencies. Also, they could better manage their crops and do irrigation scheduling.

Understanding spatial resources help in efficient decision mak-

ing. In this context could use the imageries available from various sources. Drones could be used for monitoring and management of resources. Drones fitted with cameras enable one to access spatial and temporal information for the management of crops and water use efficiency. The local school children and teachers could be trained in flying the drones. The farmers could plan the harvesting and other management practices based on the observations made from the images. Solar powered 360 degrees IP cameras fitted to the Balloon kites (Kyttoon / Helikite), are ideal for continuous monitoring of the resources. At least 4 or 5 such balloon kites could be deployed in a village to cover an extent about 500 to 1000 acres. The people could also monitor the movement of people and animals in their fields all the time. With the infrared cameras, the wild grazing animals entering into the fields could also be identified.

Advisory services to the farmers based on the pictures/video/audio/text files could be provided over the mobile phone. The farmers could manage their agriculture. This would accelerate the facilitation services provided to the farmers by the experts. Using artificial intelligence the predictions could also be facilitated.

Smart application for the mobile phones developed would enable farmers to register their category of produce, quantity and their expected price and get the right price for their produce. The farmers can know agriculture commodities rates live through web streaming of agriculture markets or from agriculture market information network.

The villagers could interact with line department officials through video conferencing facilities at the community centres. They could also access the e-services for utility.

The local health workers could facilitate the tele-medicine services to the deserving people, especially women, children

and old people. The mobile phone based applications would help in data capture and support in providing such services. For example, the low-cost mobile phone enabled ECGs are useful for the monitoring of heart patients.

Usage of local materials in construction, creating energy efficient habitats, functional houses and creation of low-cost houses will make a village smart.

Creating energy efficient cold storage rooms, with smart internal environment control systems, smart space allocation systems for the types of goods and also establishing smart pest management systems.

Replacing the conventional power systems with decentralized power options such as solar power, wind power, micro-hydel power. Adopting energy efficient technologies.

Management of waste materials (solid/liquid), and promoting reuse and recycling concepts.

e-conferencing halls for meetings and participation to be created in each village.

The communities are enabled to do business online for their produce. The packaging and disposal networks are established. Selling the produce in the field, that is in advance and selling to the client directly through supply networks.

e-portal for jobs and services - skilled, semi-skilled, artisans, ploughing, cutting, trashing, etc. Also posting the demand for services.

Monitoring transportation facilities. Requesting transportation facility as per the demand for the selling the produce and fetching the inputs.

Digital education to the farmers and other professional communities in the villages is necessary. Learning is a continuous process, especially wherein agriculture the information is constantly

changing. The digital content developed in the local language and dialect facilitates many to learn and get updated with the technologies and practices. With access to increased internet bandwidth, the content is cheaper and easily accessible. The children and youth in the villages could enroll in the e-learning courses for learning.

The secondary schools in the villages could be used as hubs for smart technologies. The children should be trained on certain basic equipment assembling and maintenance as part of education. The science teacher supported by a full-time technician should manage the systems established. Each hub in a village should be networked with regional hubs and other hubs.



*This farmer next to a forest land, used three steel plates attached to a long thread, in the night when a wild browsing animal enters into the field, the steel plates make a loud sound, the animals move away from the field. Animals are also becoming smarter to live, with the experience they are avoiding them.*

## About Council for Green Revolution

This book is published by Council for Green Revolution (CGR). CGR is a Non-profit Environmental Organization, based at Hyderabad, India was founded on The Earth Day (April 22, 2010), to work on pressing environmental issues. The rapid erosion of greenery and degradation of ecosystems in semi-arid South India gave the impetus for a massive green movement that is positive and proactive in nature with a revolutionary intensity. This has been the basis in the genesis of CGR to strive as a committed green think tank and a catalyst for change. CGR works towards the conservation of nature and the promotion of sustainable development goals. The organizations areas of work include, loss of biodiversity, dwindling natural resources, desertification, pollution, climate change and environmental security. Through its initiatives and determination, CGR hopes to see a change in mindset and action of people towards conservation of nature and natural resources and impact the views on ecosystems, economy and equity to a considerable extent. Author has been associated with the Council for Green Revolution as an advisory member since its beginning. He is also one of the founders of Greens Alliance for Conservation of Eastern Ghats (GrACE) an offshoot of CGR.





## About the Author

Dr Sai Bhaskar Reddy Nakka is a multifaceted person with varied interests. Traveled extensively in parts of India and other countries. Based on his intricate observations and understanding tries to bring change for development. Contributed in the areas of rural development, environment, climate change, energy, agriculture and water. Has more than 100 innovations and designs to his credit, declared them as open knowledge. Has written more than 18 books on various aspects.

**You can connect with me on:**

 <http://saibhaskar.com>