

# Stories

from the ground

# 01.

## GRAVITY WATER FLOW

Village Name: Allurigadda, Andhra Pradesh

The technology works on the theory of gravity flow. A gravity fed irrigation system is a location specific, cheap and effective way to provide water for a smaller sized crop area. It requires a consistent flow of water to the reservoir by tapping water from local flowing springs and streams. The basic system consists of an elevated reservoir with a pipe coming out the bottom that feeds water into a basic drip irrigation system with a manual control.

The gravity water flow not only caters to critical irrigation for standing crops and by bringing back fallow land into the system but allows doorstep water access thereby reducing drudgery and time of water collection by the women. LAYA has been exploring local level technologies which could be owned by the people. Subsequently 2 more systems have been developed in the region.

**Gravity Flow for irrigation was first initiated in 2010 at Munagalapudi village.**



“

The women in the village had to walk approximately 1 km to collect drinking water. On average they would collect 5 pots per day per family. It was the women's job to collect the water. The whole process would take 2 to 3 hours. Now we have access to water in the village itself and this has really changed our lives.”

-Rukmini



## Outcome of the intervention

6

outlets of water to the village from the stream for irrigation

10

taps now supply clean drinking water to the village

# Social Impact

Access to water at the doorstep

Better health

Reduced drudgery

Improved access to irrigation

Developing local infrastructure

Improved local systems of water management and governance systems



# Economic Impact

Economic opportunities created due to improved water access



# Enviromental Impact

Low carbon renewable energy technology



# 02.

## HYDRAM

**Village Name:** Gangavada, Andhra Pradesh

A hydraulic ram (also called hydam) is a pump that uses energy from falling water to pump some of it to an elevation much higher than the source level. No other energy source is required and as long as there is a continuous flow of falling water, the pump will work continuously and automatically.

The hydam is an alternative pumping device that uses a relatively simple renewable energy technology. The hydam has only two moving parts and can be easily maintained. It is fed by a perennial stream and has the potential to provide critical irrigation.

**The hydam in Gangavada village uses a drop of 1.5 meters and lifts 9 litres of water per minute.**

Another key benefit from this system has been the access to water in close proximity to the households who otherwise travelled an average of 2-3 kms each day for water collection.



The hydrams together with the slow sand water filters can provide clean and safe drinking water to the households.

“

The hydram in Gangavada, where LAYA has set up one of these systems, has enabled easier and quicker access to water for us. This has especially reduced our drudgery in water collection from the distant stream. While water access to our doorstep has improved drastically our irrigation processes have also improved because of the hydram.”

- Lalita Priya

177

hydram viable sites, that are geographically remote, have been identified

4

locations have hydrams that have been piloted by LAYA

## Outcome of the intervention

The village of Gangavada now has direct water access.





# Social Impact

## Time saving

The community now has direct access to water for bathing, cleaning, cooking, cattle and plants

Even though collecting water was traditionally a woman's job, men are now seen collecting water

Enabled local skill development by using indigenous knowledge for construction



# Economic Impact

Improved agricultural income through improved irrigation

# Environmental Impact

Replaced the traditional diesel pump for irrigation

Low carbon renewable energy technology



# 03.

## TRAINING PROGRAMMES

for youth farmers on natural resource management and climate resilient sustainable agriculture

**Village Name:** Mangampadu, Andhra Pradesh

The tribal areas are resource rich with annual rainfall of more than 1100 mm/year. Unfortunately, these tribal communities remain cash poor and hence vulnerable to market deviations and climate change.

LAYA, through its Natural Resource Management Unit, enables communities to improve agriculture productivity by watershed management and value-added technologies in their lands such as:

- **System of Rice Intensification (SRI) Mixed traditional crops**
- **Agroforestry and forest regeneration of economically viable species**
- **Planting fruit bearing trees (horticulture)**
- **Vegetable cultivation on homesteads and kitchen gardens**
- **Seed Banks with traditional variety of seeds close to extinction**







“The community was using inefficient tools and practices for agriculture. The LAYA team also educated us on the impacts of climate change and its effects on our crops. To scale up our productions and to adapt to the effects of climate change we needed to improvise our farming techniques.”

-Naina Manga



## Social Impact

Created awareness among the farmers

Enabled capacity building of the farmers

Revival of traditional agricultural practices

## Economic Impact

Improved livelihoods

## Environmental Impact

Use of organic fertilizers

Low carbon agricultural farming practices

# 04.

## SLOW SAND WATER FILTER

Village Name: Gangawada, Andhra Pradesh

The system uses the technology of slow sand filtration; where a layer of sand and gravel is used to filter the water and discharged through outlets.

**The first Slow Sand Water Filter was constructed at Sariapalli in Paderu, Visakhapatnam district in 2016 benefiting 40 families.**

In 2017, another system was constructed at Gangawada, Boddagandi Panchayat benefiting 25 families.

Even though there exist borewells in the village, most of them are non-functioning. Potable water access was a problem in the village.

**The women had to walk for 2-3 kilometers to collect water and then boil it at home for drinking.**



“Me and my daughter used to collect water from the stream at least 3-4 times during the day. We no more have to do that. The water is now available ten steps away from my home. The food also tastes good using the SSWF water. ‘Good’ as the water is clean, tasty and odorless!”

- Sadala Somalamma



## Outcome of the intervention

Potable drinking water available at center of the village.





# Social Impact

Potable water available for drinking and cooking

Better health conditions as the water is now filtered and odorless

Women have more time to spend with their families



# Economic Impact

More time dedicated for other livelihood activities

More time available in the agricultural fields

Minimum maintenance

# Enviromental Impact

Low carbon renewable energy technology



# 05.

## ENERGY EFFICIENT COOK STOVES

Village Name: Chinna Addateegala, Andhra Pradesh

Collection of firewood for cooking has been a challenge in our work area. Women and children are often seen walking with heavy loads of wood piled on their heads. Besides, the traditional stoves are not only inefficient in terms of the quantity of firewood utilized for cooking but they also emit excessive smoke that is harmful for the women and young children inhaling fumes during the process of cooking.

Our studies and experience indicated the potential of the Sarala cook stove as an improved cook stove that would be accepted in large numbers by these communities. This is mainly because its basic structure and use value was not altogether different from their traditional stove. Subsequently, we saw an opportunity to provide thousands of women in the region with this improved technology through the carbon emission reduction VER process.



**The women had to walk for 2-3 kilometers to collect water then boil it for drinking.**

# Features of Sarla Stoves

- **Can burn a variety of biomass fuels**
- **Smoke - free working environment**
- **Use of mould for on- site stove construction with consistent dimensions that provide consistent performance**
- **Durable with minimal maintenance**
- **Compact, with low space requirement (Therefore, suitable even for small kitchens)**
- **Easy to install and operate, no deviation in cooking practice**
- **Conserves at least 25% - 30% of biofuels as compared to open cooking**

More than 11000 cookstoves have been built across 2 districts of East Godavari and Visakhapatnam in LAYA's working area. As many as 11000 families/women benefit from the system where social benefits relate to :

- **Kitchen relatively smoke-free**
- **Food cooks faster with less charring of the vessels and less burden of carrying wood**
- **Besides the technology also facilitates faster and more efficient cooking (less tusage of wood)**
- **Wood savings – 40% lesser fuelwood requirement**

Because the improved stove can burn smaller pieces of wood, these stoves reduce the distance women must walk to collect fuel. A study by the University of Colorado, Denver in collaboration with LAYA on the social and cultural impacts of fuel efficient stoves notes that "overall, stove users report that the improved stove has saved them a significant amount of time and fuel compared to the old stove, and they are very pleased with their improved stove.

The climate benefits by way of reduced emissions.







“4 years ago, before I received the new stove I used the traditional stove. At the time I faced several issues with the amount of smoke coming from the stove. It was especially a challenge to cook while holding my infant baby. I used to spend more time collecting firewood as the stove needed a larger amount of wood. The pieces of wood needed to be larger too and hence heavier. In those days, me and my children spent almost 2-4hrs a day collecting firewood to ensure that we had enough through the rainy season. After we received the new stove, my life has changed. There is very little smoke in the kitchen. My vessels have much less soot on them. I can get much lighter headloads from the forest. Since that kind of wood can be gotten from nearby fields I spend much less time in collection. I now spend more time with my children, family and friends. I have more time to collect Non-Timber Forest Produce. I also realize that ever since I got my improved stove I have been keeping better health, with less frequent trips to the doctor. I am very happy with my new stove. It has made my life better and healthier.”

- **Gemmali Geetha**

## Outcome of the intervention

Smoke is now released through the pipe which is placed outside the house.

Earlier they had 1 burner, now 2.

# Social Impact

Saves time

Faster cooking as the cookstoves are more efficient

Less drudgery in collecting wood

Far less smoke in their homes

Easier to wash the utensils as they have less soot now

Saves cooking time as there are two burners as well as the improved efficiency

Improved health conditions (coughs /throat infections reduced)



# Economic Impact

More time spent in the agricultural fields

More collection of non-timber forest produce



# Enviromental Impact

Low carbon technology

Reduced emissions

# 06.

## TRAINING IN HERBAL BASED AYURVEDIC MEDICINE & HEALTHCARE

Village Name: Regulapadu, Andhra Pradesh

In most of the Adivasi villages, health is a concern area. Due to the lack of nutrition and other basic medical facilities, the community suffers from various inflections. Even for common illnesses like fever, cold, cough, malaria, diarrhea, they need to travel miles for medication and treatment. Due to the remoteness of these villages, allopathic medicines are difficult to access.



### Outcome of the intervention

LAYA's Herbal Based medicine and training centre, has not only revived the ancient tradition of herbal based healthcare but also trains the youth from these villages to implement and practice this tradition.

Kopu Panama is both a THP (Traditional Health Practitioner) and a CHP (Community Health Practitioner). She makes medicines at home to cure

stomach pain, leg aches, headaches, skin diseases and basic gynecology issues while also distributing the medicines in the region.



# Social Impact

Access to basic healthcare has been brought closer to the remote villages

Enabled youth and women are also trained in this field

Revival of traditional wisdom and medicines



# Economic Impact

A monthly income of Rs 1500 per month to perform their duties

Practitioners also earn a revenue from the medicines they sell



# 07.

## CRASH LITERACY PROGRAMME FOR WOMEN

Village Name: Regulapadu, Andhra Pradesh

The program is organized mainly with potential Adivasi women leaders and farmers to promote basic literacy and numeracy skills and to create awareness on issues which are useful and relevant in their day to day life.

“I was never sent to school. Panamma (Another woman empowered through the course) came to me and informed me about the literacy programme. I wanted to learn something and maybe find a job. I really wanted to become something. Before LAYA’s Literacy programme, I knew only 3-5 letters of the alphabet now I not only know the alphabet but can also frame sentences.”

- Sadela





# Social Impact

Women have become more confident and are involved in other livelihood opportunities other than agriculture

Some women now work at the Panchayat level and fight for the rights of the people

Women, who are now literate, train others in their community to be the same



# Economic Impact

Women are able to read the currency notes and operate their own bank accounts





# 08.

## BIO SAND WATER FILTERS

Village Name: Chaamagedda, Andhra Pradesh

The Bio Sand Filter is a zero-energy water filter for point of use application, which is an adaptation of the traditional slow sand filter for intermittent use, making it suitable for household use. The filter container can be made of concrete or plastic locally and is filled with layers of specially selected and prepared sand and gravel.

The Bio-sand filter makes several innovative improvements that permits “as-needed” intermittent use, enhances effectiveness to eliminate sediments, bacteria, viruses, compounds, cysts, worms and other impurities. Pathogens and suspended solids are removed through a combination of biological and physical processes that take place in the bio-layer and within the sand layer.

**The advantage of this technology is that it also removes turbidity, the quality of water improves with time, and there are no on-going costs, and no replaceable parts.**



It is durable and robust, fabricated from local materials small enough to fit into the smallest kitchens and is easy to maintain.

“

Before we had the BSFs we spent a lot of time collecting firewood and boiling the water. One stove was required just to boil the water. Now we don't have to do that. We are also using less firewood as the need to boil the water has been eliminated.”

- Gariki Nagaraju

250

households have benefitted by these filters so far

2.3

tons of carbon dioxide reduced by each filter per year

## Outcome of the intervention

Provides safe drinking water, which otherwise is achieved in the baseline through boiling water on traditional cook stove using fuel wood, as water is sourced through streams and wells.



# Social Impact

Saves time

Reduced drudgery

Improved health conditions



# Economic Impact

More time spent in the agricultural fields

More collection of non-timber forest produce

Minimum maintenance



# Environmental Impact

Low carbon renewable technology

Reduced emissions



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