



# BIOGAS

FUELLING FUTURE | EMPOWERING WOMEN | BOLSTERING COMMUNITIES

*A photo story from Dausa, Rajasthan*



Ministry for Foreign  
Affairs of Finland

**UFF**



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PEOPLE TO PEOPLE INDIA



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# Introduction

Since the turn of this century, no other issue has dominated the human consciousness in such depth and expanse as the issue of global warming. The warming planet, the melting polar icecaps, the rising oceans and the consequent erratic weather patterns all today point towards an ominous future that threatens all aspects of the modern human life as we know it.

Rampant use of fossil fuels since the industrial age is one of the leading causes of the current state of affairs. While our dependency on these sources of energy has continued to increase over the years, it has now become amply clear that a quick, accelerated and scaled-up switch to renewable sources of energy is the only way forward to protect the planet by keeping global temperature rise under two degrees Celsius over pre-industrial levels.

While the problem is global, the solutions are clearly local.

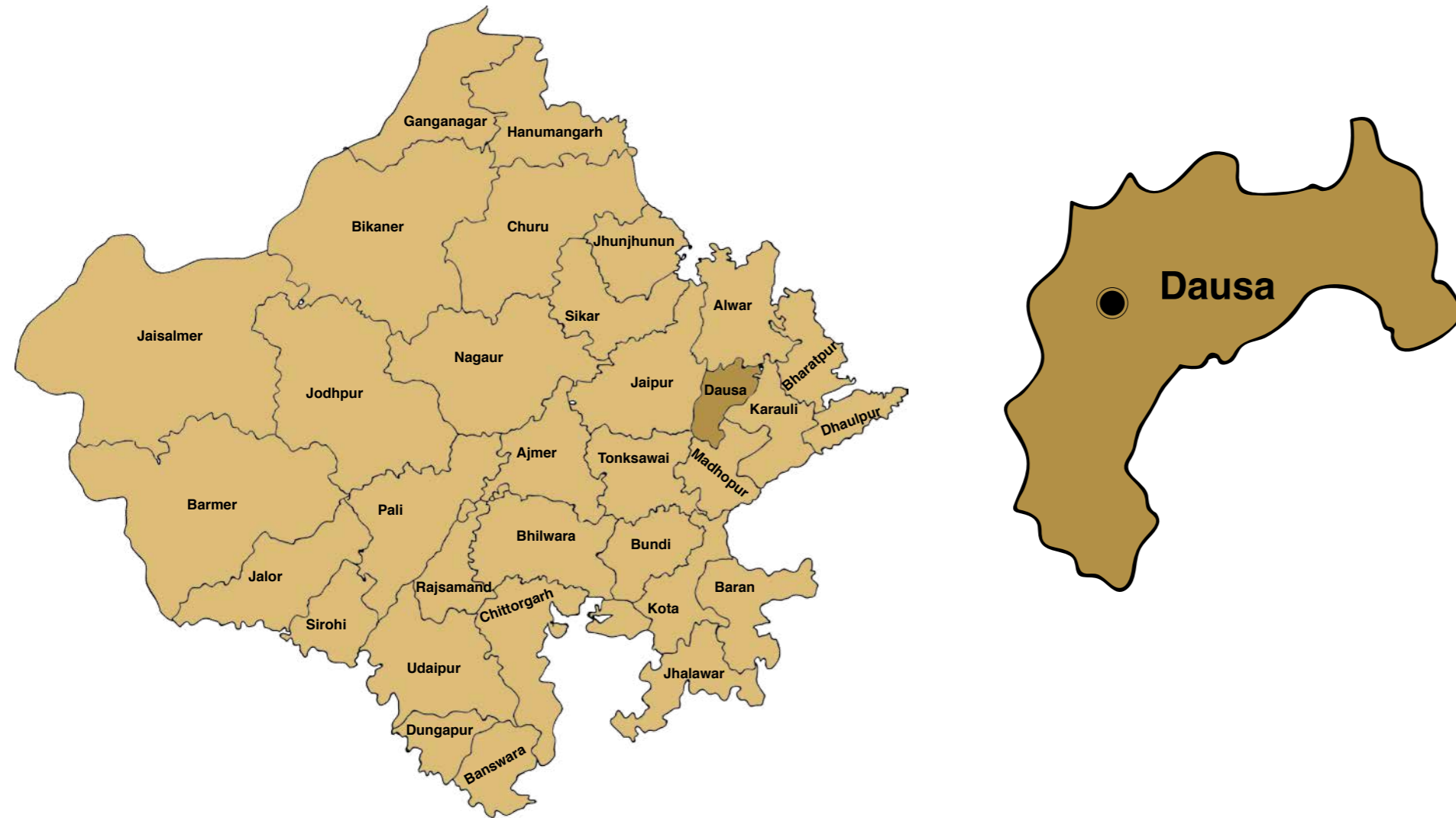
With an aim to offset the detrimental impacts of climate change and promote the use of biogas as an alternative to the conventional firewood and cattle-dung cakes for cooking, Humana People to People India, with support from UFF Finland and the Ministry of Foreign Affairs, Government of Finland, launched the 'Biogas as renewable energy source in Indian Villages' project in the Dausa district of the state of Rajasthan in India. This was the first phase of the project in 2010-12.

In its second and third phases in 2014-16 and 2017-19 respectively, the project expanded its scope from beyond constructing biogas plants to also assisting local farmers – and particularly rural women – in establishing organic farms and augmenting household income through financial literacy, establishment of micro enterprises, promotion market linkages and improving horticulture practices.

This project is aligned with the national clean energy initiative, wherein the Biofuel Authority, Government of Rajasthan provides subsidy of INR 12,000-13,000 to rural families of the state for installing the biogas plant.

Through the images curated here, this book takes the reader through a photographic journey to a small district in the heart of rural India, where since 2010 a steady change in the source of fuel has transformed the communities both economically and socially in unprecedented ways.

Map of Rajasthan with Dausa district



At 3,405 Km<sup>2</sup>, Dausa is the second smallest district of Rajasthan after Dholpur. According to the latest census report, the population of the district stands at 1,634,409 with a predominant rural population involved in agrarian activities.





Firewood and cattle-dung cakes are the most commonly used cooking fuels in most rural households of the district. Women, who almost always do all the cooking in the villages here, are most vulnerable to the toxic fumes in the kitchen and frequently suffer from bouts of respiratory and ocular ailments.





It is not uncommon to find soot-covered walls in most of the kitchens in these villages; a direct result of years of accumulated carbon and a sombre testimony to the lungs of most women of the region.







I had acute coughing issues due to the amount of smoke I would inhale while cooking. The problem is compounded in the monsoon months when it is hard to find dry firewood. Wet wood releases more smoke when burnt in the *chullah* (traditional clay stove).

**Anita Devi,**  
Unbada village,  
Dausa, Rajasthan



The drudgery of going to the forests every day to collect firewood, followed by cooking at home and looking after family members, leaves women with hardly any time for any other creative or productive pursuits.



In the year 2010 Humana People to People India, with support from UFF Finland and the Ministry of Foreign Affairs, Government of Finland, launched the biogas project in the Mahwa block of the district, covering 20 villages.



In the first phase of the project, 200 biogas plants were constructed in the 20 selected villages. HPPI hired a resource person and conducted masons' training in Nayagaon village in Mahwa block of the district.

The project contributed with a financial support of INR 12-13,000 per plant while INR 8-10,000 was contributed from the beneficiary households.



This project has helped the government expand the reach of biogas in the district exponentially. From conducting masons' training, to well-supervised construction of the plants and finally ensuring the subsidy amount is credited to the beneficiary's account, the project staff is always actively involved in all the aspects of the implementation.

**Kishan Lal, Master Mason**  
*Biogas Development and Training Centre,  
Maharana Pratap University of Agriculture and  
Technology, Udaipur, Rajasthan*





Phase two of the project continued over the two-year period from 2014-16. This phase covered 100 villages in the Mahwa, Bandikui and Sikrai blocks of the district.

416 biogas plants were constructed in these 100 villages during this phase. 200 plants were subsidised through the project while the remaining were subsidised by the Ministry of New and Renewable Energy, Government of India.

This was a result of HPPI's advocacy efforts and illustrates the commitment of the government towards climate action.



In the second phase of the project, 100 Farmers' Clubs and 100 women Self-help Groups (SHGs) were also setup in the intervention villages.

While the Farmers' Clubs members were trained in animal husbandry and organic agriculture practices, women SHG members were provided skills training in embroidery, pickle-making and financial literacy.



With the drudgery of prolonged walks to the forest and sifting through the foliage for firewood a thing of the past, the women of the households where the biogas plants were established during the first phase, now found themselves with ample time to spend with their family members and focus on ways to contribute economically to their household income.



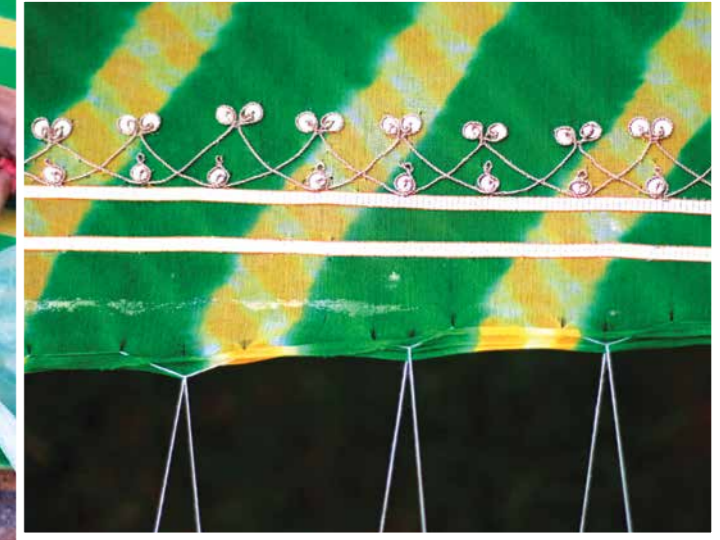
While the biogas plant requires regular filling up in the initial days after construction, once the gas starts getting produced, it requires minimal maintenance. I suddenly had so much time and decided to use it by enrolling in the sewing classes offered by the Humana staff. Today, I can stitch my own clothes while also making a small regular income by stitching clothes for other families in the village.

**Sheela Devi**

*Unbada Village, Dausa, Rajasthan*



While some women of the village have started individual livelihood-generating setup, many others work together in their SHGs by setting up microenterprises that helps them in gaining raw material at discounted price for their work while also gaining relatively easier access to the markets for their finished products.





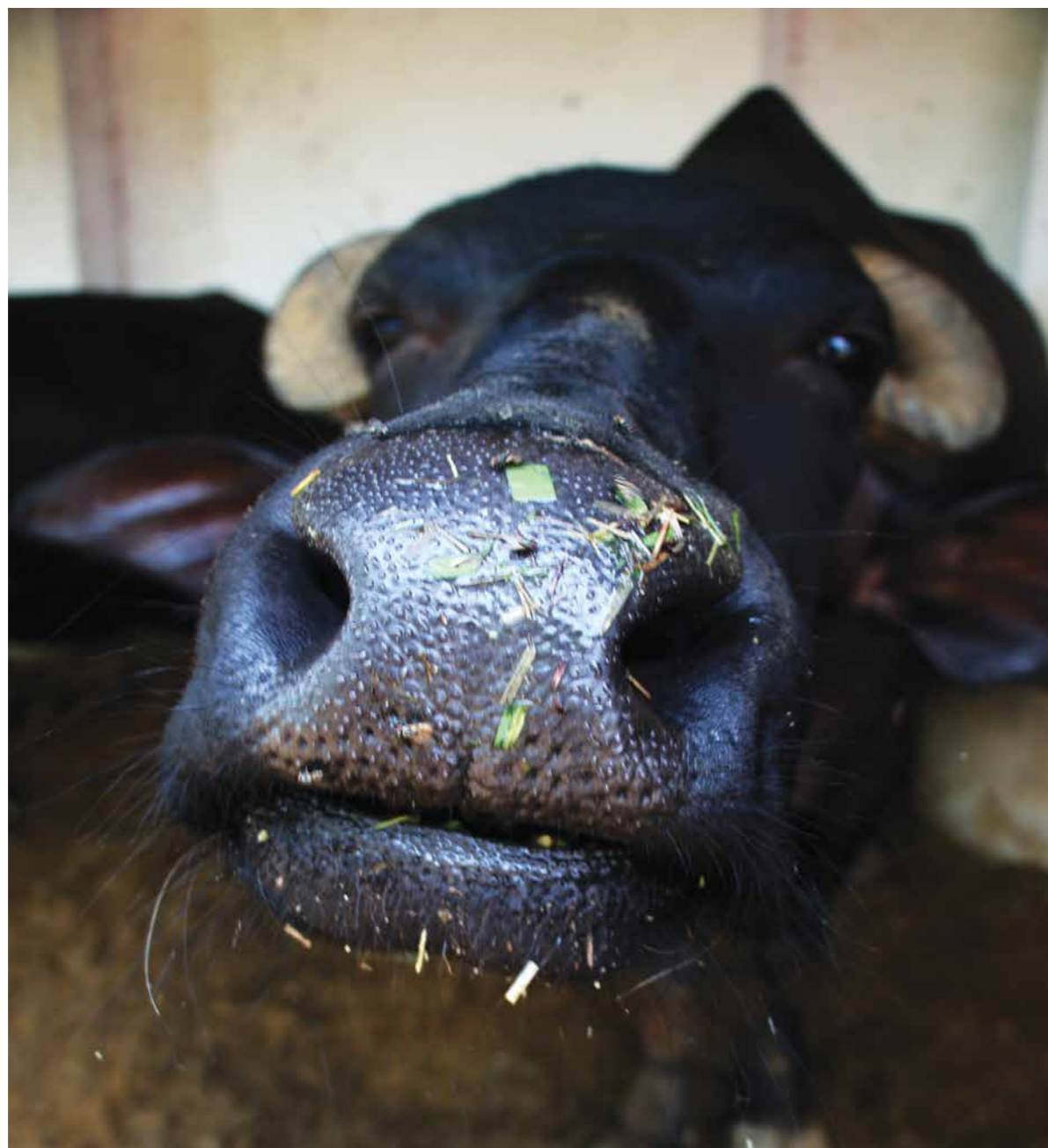


Under the project, our SHG members gained training in stitching and embroidery. Following the training, Humana India project leader assisted us gain access to the raw material for the embroidery work from the bigger market at Jaipur (the state capital). Now, our contact from the market delivers the raw material and takes the finished products right from our house. Each SHG member makes a minimum of INR 2-5,000 per month through this work, depending on the number of hours they put in. This is a welcome addition to our household income!

**Mohini Koli**  
SHG leader, Shyalwas village



Most households of the district have ample number of cattle to provide sufficient biomass for a household-size biogas plant, measuring about 2 m<sup>3</sup>. This makes biogas an ideal fuel for the communities here replacing pollution-causing firewood, and kerosene.



□ The project staff initially faced resistance from the village women due to their apprehension about operating and maintaining the biogas plant. There was a general perception that it is a laborious and tedious process. But after observing the new *Deenbandhu* biogas plant design being constructed under the project and the ease with which women in phase-1 operated the plants, they readily signed up for constructing one in their house.



“

Earlier I had to walk to the forest for two hours and rummage through the foliage for another two hours to fetch the firewood. And today, I just need to turn the knob and the tea is nearly ready. There is also no worry of the milk spilling over now as I can modulate the flame.

**Santosh Gurjar**  
Abhaneri village, Dausa, Rajasthan



Training in animal husbandry provided the community members much-needed know-how about the health and general upkeep of the cattle to help improve their yield while also provide biomass for the biogas plant.





Following a training in animal husbandry, I learnt about the Gir variety of indigenous cows that is less prone to diseases and yet yields 12-15 litres of milk per day. I soon purchased one and have been reaping the benefits since. It is indeed an excellent variety of cow.

**Ram Phool Saini,**  
*Bhandera village, Dausa, Rajasthan*



Villagers here are willing to incorporate modern farming practices. What had been missing till now was concerted effort by an organisation in informing them about the best practices and the government schemes they can benefit from. Lack of awareness was a big vacuum that the project started by Humana India has fulfilled. The results are for all to see.

**R S Dhakad,**  
*Retired Govt. Agriculture Officer,  
HPPI Resource person in the project*



Phase 3 of the project was implemented from November 2017-October 2019 in 60 villages in Bandikui and Dausa blocks of the district. More than 300 biogas plants were constructed during this phase with families benefitting from the subsidy received from the government.

Simultaneously, 60 farmers' clubs and 62 women SHGs, with 720 and 738 members respectively, were established in this phase.

In addition to training on income-generating activities and livestock management, sessions on government subsidy schemes for women, organic farming and gender issues were incorporated in this phase. In partnership with the government agriculture department, training sessions on establishing vermi-compost units and market linkages for organic produce was also incorporated in this phase of the project.





Bio-slurry – also goes with the colloquial name Brown Gold – is an essential by-product of the biogas production process. This digester effluent is a highly valued organic manure that is released from one end of the biogas digester and works as supreme fertiliser helping replenish the soil with important nutrients, without any ill-effects of its synthetic counterparts.





Along with the bio-slurry generated from the biogas plant, farmers' club trainings helped farmers establish vermi-compost units, further providing them with more organic manure that helped them exponentially increase the area under organic farming and, consequently, increase their produce.



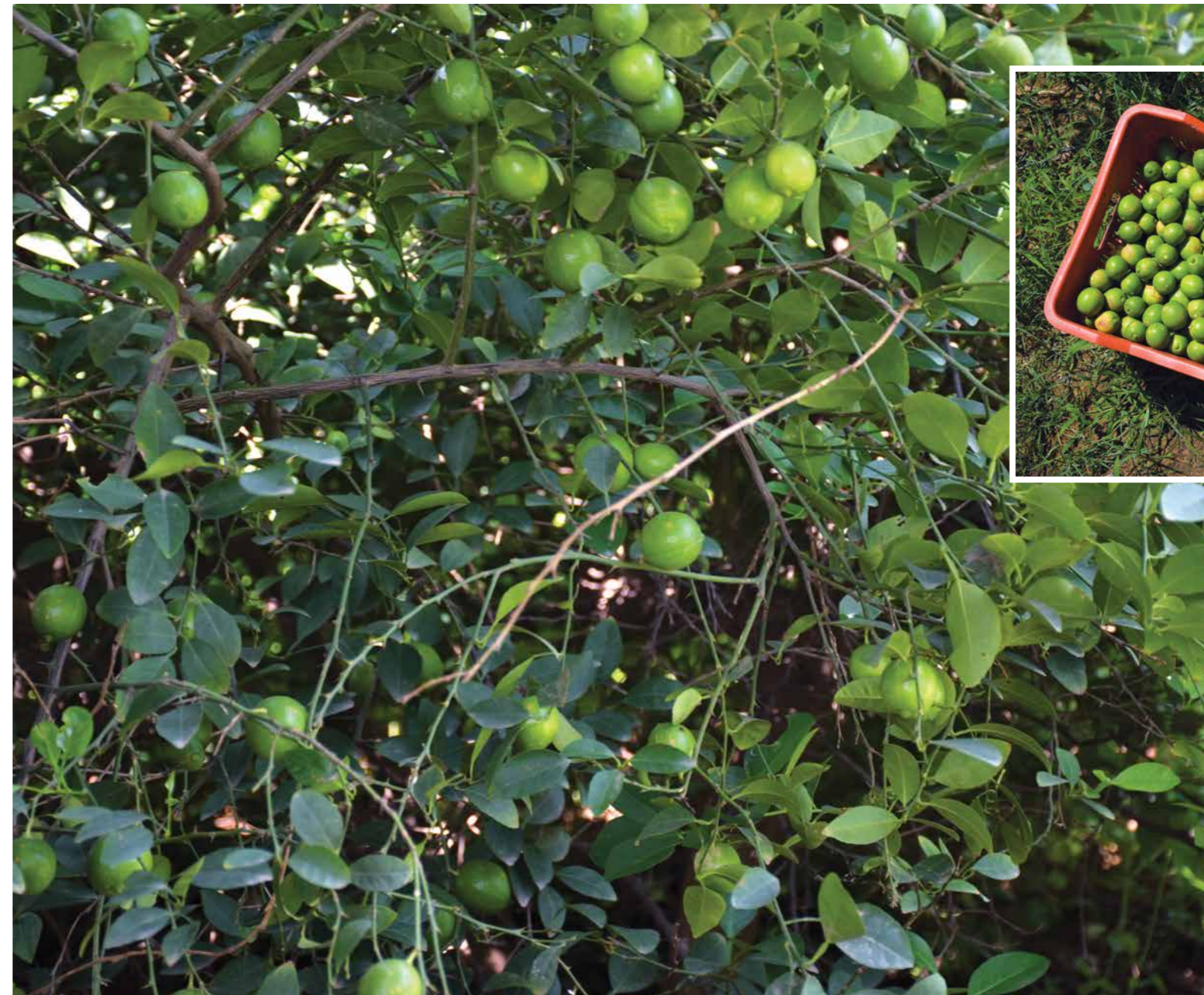


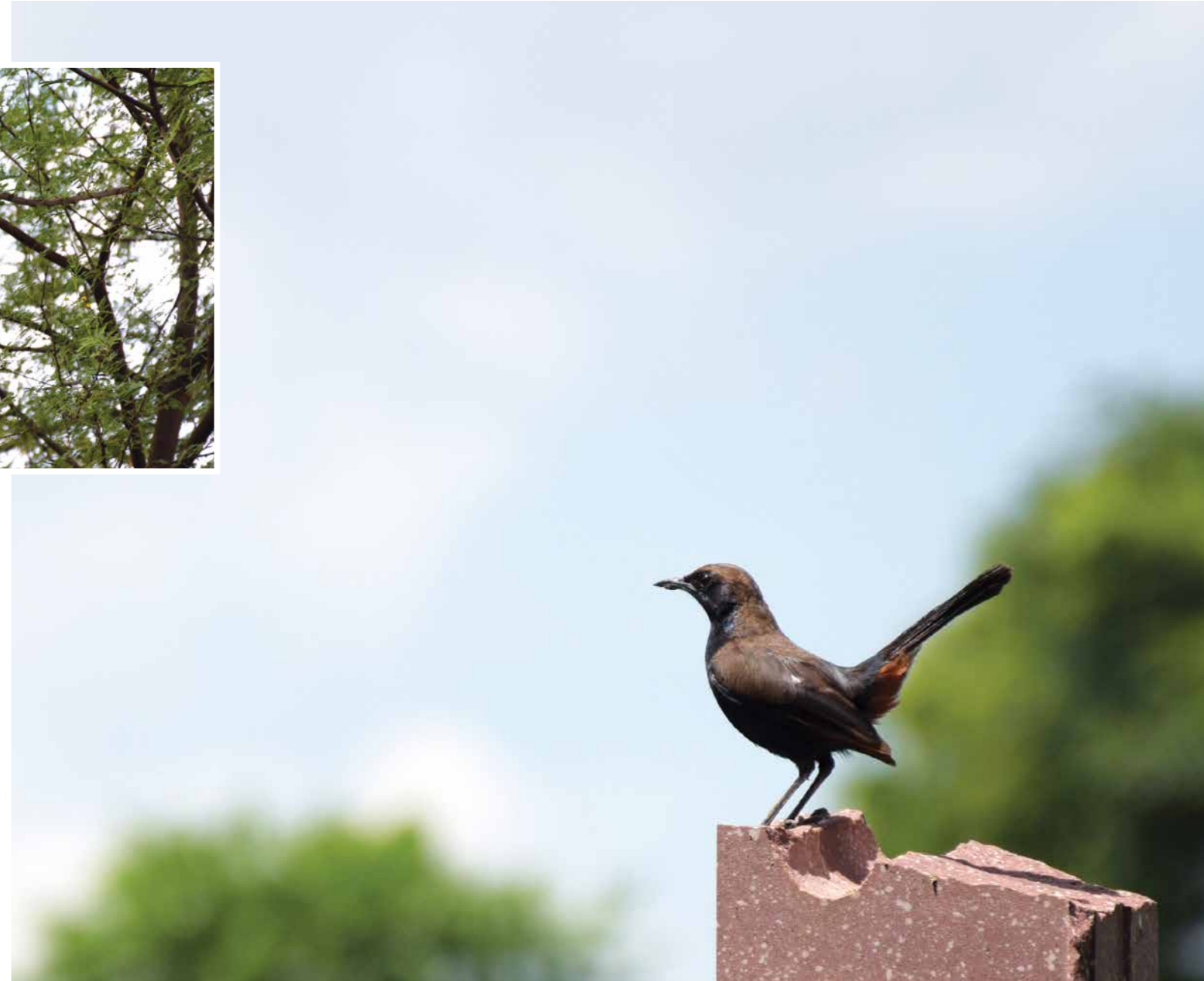


With the mixture of bio-slurry and vermi-compost, we have been able to double the area under organic farming at our farm. This is the fifth year since we started organic farming and the yield has doubled, the soil quality improved substantially, and the produce sells for four times the price of non-organic fertilised produce. We rarely get to take the produce to the local market for selling. Buyers come straight to the farm to purchase. This is unprecedented for the farms in our parts.

**Sunita Saini**

*Bhandera village, Dausa, Rajasthan*





An oft-overlooked aspect of organic farming is the bio-rejuvenation it ushers in the surrounding areas. One of the first visible impacts of sustained practice of organic farming is the enhanced biodiversity of the region and a healthy balance of flora and fauna.





□ A pest, colloquially called '*Lutt*', which was ubiquitous in the intervention villages and attacked the roots of standing crops completely vanished with sustained practice of organic farming in the region.



□ Yet another direct impact of sustained organic farming in a region is the replenishment of the ground water level. Most parts of Rajasthan – and particularly Dausa district – have suffered from perennial water crisis. Lately, however, anecdotal evidence in the intervention region suggests that there has been marked improvement in the water levels.



The success of the project has also motivated the youth of the region to actively take up the field of agriculture.

**Naresh Saini** of Kiratpura village is one such young man who has enrolled in the local agriculture university to pursue his higher studies in the discipline of modern agriculture, while his close friends chose to migrate to the state capital to pursue higher studies.

“If I have an option to stay with my family and progress in a discipline that my family has practiced for generations, I don’t think it is a bad choice. After my studies I would like to introduce modern agriculture practices in our farms and explore ways to improve the yield of the crops,” says Naresh.





With a background in basic computer operations, I used to run a small shop doing photocopying and computer printing work in the local market. Since our organic farming picked up, that work has become secondary for me and I've started selling the organic produce from our field from the same shop. I make anywhere between INR 5-6,000 per month from selling the organic vegetables. This is double the monthly income I would previously make.

*Govardhan Saini at his organic store,  
Bhandera village, Dausa, Rajasthan*



In our villages, generally boys are given more nutritious food than the girls. This is owing to the assumption that the boys do more hard work than the girls which is completely untrue. With the gender training introduced by the Humana India staff, such retrograde perceptions are now rapidly changing.

*Kesanta Saini,  
Unbada village, Dausa, Rajasthan*



As a SHG member, I participated in all the income-generation trainings held under the project. Through the training I learnt about the various government-run schemes which are especially designed to benefit women. Under one such scheme I procured a buffalo at a subsidised rate, milk from which is now contributing to my household income.

**Kesanta Saini**  
SHG Member, Unbada village,  
Dausa, Rajasthan



The embroidery training has immensely benefitted the women of our village. 7 women of my group are now regularly working for a sari manufacturer based in Jaipur who provides us the raw material and picks it up right from our house. Each one of us today makes nearly INR 4,000 per month.

**Mamta Koli,**  
SHG Member, Guda Ashiq Pura Village,  
Dausa, Rajasthan



**Gita Gurjar** of Kiratpura village lost most of the functions in both her hands after an accident. As her husband works for the railways, he is mostly away, and Gita had to raise their three young children mostly by herself.

“My physical limitation was a big hinderance in regular work. Fetching firewood from the forests was an onerous task. The biogas plant has come to me as a great respite and I can’t thank the Humana India organisation enough for bringing this initiative to our village,” she says.



Periodic information sessions are also organised in the villages under the project where officials from the state agriculture and animal husbandry departments are invited to provide information to the village residents about various government-run schemes they can benefit from.





Official inauguration of the second phase of the project in 2014 by His Excellency Mr. Aapo Pöhlö, Ambassador of Finland to India in Village Dholkhera, Mahwa Block, Dausa district, Rajasthan



Participants during the inauguration of the third phase of the project in 2018 by Her Excellency Ms. Nina Vaskunlahti, Ambassador of Finland to India, in Village Mona Ka Bass, Bandikui Block, Dausa district, Rajasthan



The project staff frequently invites me to various information sessions conducted under the project and I ensure to attend all their sessions. The Humana India staff works very diligently, and the impact of their hard work is today clearly visible in the villages of the district.

***Dharam Singh Gurjar,***  
*Agriculture officer, Dausa, heading organic farming in the district*



The initiatives by Humana People to People India in introducing biogas plants in the region are definitely commendable. The organisation's field staff is always available for any assistance needed by the villagers and in many instances have been able to mobilise the community against various misconceptions. I wish the organisation all the very best.

***Dr. B L Jaat***  
*Agronomist, Krishi Vigyan Kendra, Dausa, Rajasthan*



The project has been instrumental in promoting the use of biogas in the region, with direct impact on the health of the village residents, in particular women and children. The benefits have also come from income enhancement through the production of organic crops and vegetables from using bio-slurry generated from the plants. Women have been able to contribute to their family income through participating in skill development initiatives promoted under the project. This has primarily been possible due to reduction of drudgery involved in fetching firewood from the forest, which was a routine exercise for almost all the women of the region.

Environmentally, there has been reduced pressure on cutting trees, leading to biomass improvement in the intervention villages.

**Bharat Dayal,**  
*Biogas Expert*

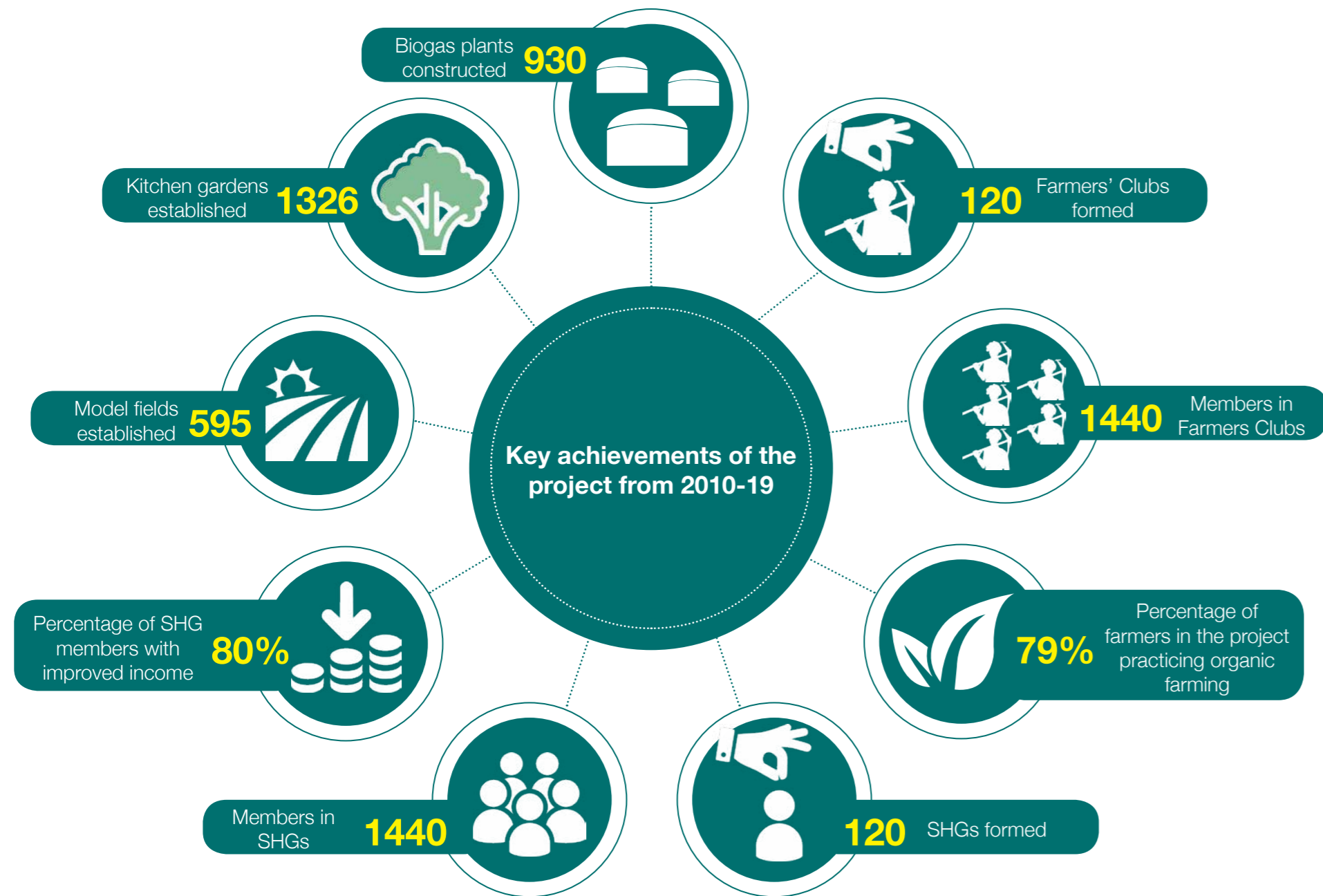


When we launched the project in the year 2010, we found some very peculiar prejudices prevalent among the residents of the local villages. While some were apprehensive of the loss of cattle dung for use as manure in their fields, others did not want to install one for the fear of the smell they imagined the gas would carry to their kitchen. Our project staff worked diligently in changing these misconceptions of the residents by informing them about the detrimental impact of firewood smoke on their health and on the health of their children. In time, with the installation of first biogas plants, the women were quick to pick up its benefits and today the entire village is keen to install a family-sized plant at their home.

**Jai Singh**  
*Project Leader*



For the people of Dausa district, a small change in a 2 square-meter area in their backyard has yielded results and ushered in a series of transformations that was unimagined as well as unprecedented.



## About Humana People to People India

Humana People to People India is a development organisation registered as a not-for-profit company under section 25 of the Companies Act, 1956 as of 21<sup>st</sup> May, 1998. It is a non-political, non-religious organisation working for the holistic development of the underprivileged and marginalised people in rural and urban India through social development and poverty alleviation interventions focusing on education, life skills, improved livelihoods, health and sanitation, empowerment of women and environment protection.

## About UFF Finland

U-landshjälp från Folk till Folk i Finland sr (UFF) is a non-profit, non-governmental humanitarian organization, founded in 1987. The aim of UFF is to provide equal opportunities to all, reduce poverty and impacts of climate change in Sub-Saharan Africa and India. UFF collects funds for development cooperation by selling second hand clothes, which are sold either through wholesale or in the shops owned by the foundation. Some of the clothes are also donated to partner organisations in Africa.

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