



SOLARISING AGRICULTURE



ANNUAL REPORT 2023

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MESSAGE FROM CO-FOUNDERS

Dear Oorja supporters,

We are pleased to present Oorja's Annual Report for 2023, reflecting on another incredible year – milestones achieved and challenges overcome, and looking ahead to the future that reinforces our commitment to sustainable and inclusive growth.

In implementing solutions at the nexus of climate and poverty, we strived to put people, equity and innovation at the centre of our work through our customer-centric model for a just transition. This year, we were particularly proud of reaching over 120 on-farm solar projects augmenting productivity, increasing incomes, and enhancing the quality of life of nearly 30,000 beneficiaries. We successfully raised \$1 million in impact investments, brought new mission-aligned investors onto our board and grew to be a sizeable team of 72 impact catalysts. Oorja won the prestigious Off-Grid Energy Top Impact Award, based on 60 Decibels' benchmarking of over 200 energy companies and the Startup Energy Transition Award for Quality Energy Access and SDG-7 – a testament to the team's competency and resolve in delivering exceptional results. To wrap up the year, we were honoured to present our pioneering and inclusive Farming-as-a-Service model at COP28 in Dubai, marking the wider recognition of this model.

The opportunities that lie ahead fuel our purpose and we are thrilled to announce several new initiatives that will drive our work at speed and scale in 2024 and beyond.

- **Farmer advisory:** We will expand and monetise our climate-smart farmer advisory services to propel greater **sustainability** in farming practices. Our expert agronomists will provide training, soil health testing, input procurement, and other services to enable our customers to adopt modern scientific farming techniques, bolster their adaptive capacity and move towards resource-efficient and profitable agriculture.
- **Technology innovation:** We will completely digitise our processes and workflows and transition to mobile billing and payment transactions to bring greater **efficiency** to our operations. We will launch "Dhoop", an IoT-enabled mobile app that will allow customers to seamlessly schedule our services, purchase climate-resilient inputs, receive weather alerts and access continuous climate-smart content for better farm management.
- **Business model innovation:** We are working on releasing new B2B business models that will enable us to go further, faster – **scale** our footprint in new geographies, reach new customer segments, and amplify the impact of building efficient, equitable, and resilient agri-food systems.

We are humbled by the trust so many have placed in our capabilities and energised by what we have achieved together. We remain inspired by the resilience and fortitude of our customers and indebted to the diligence, ingenuity and passion displayed by our remarkable team members who always exceeded our expectations. We are deeply grateful for the unwavering support of our investors and funders, and particularly our board for their valuable contributions in making key strategic decisions. We also take this opportunity to thank our partners in progress who gave us the tailwinds to keep pushing the boundaries, including the Deloitte D2i program, Climate Policy Initiative, WE4F, DOEN Foundation, IISD, IWMI and many others.

It's exhilarating to have you as co-passengers on this journey. Let's keep driving the mission forward together! We are steadfast in creating an impact that has a ripple effect that reaches the last woman standing in line and recommit ourselves to empowering her to live a dignified life.

Warmly,
Amit Saraogi and Clementine Chambon
Co-founders, Oorja Development Solutions

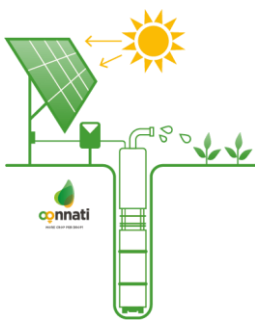


INTRODUCTION



Oorja is a Farming as a Service company working at the intersection of sustainable agriculture and renewable energy. It provides solar-powered services of irrigation, milling and cooling and climate-smart advisory to smallholder farmers who were previously reliant on diesel engines for their on-farm energy needs.

Oorja offers a climate-smart platform for smallholder farmers to become profitable and sustainable. We have pioneered the Pay-Per-Use business model in the agriculture sector. Oorja installs and maintains community-scale solar infrastructure at the farm and sells farming services that are affordable, inclusive, reliable, low-carbon and climate-smart.



IRRIGATION AS A SERVICE

A solution for farmers to increase their income by saving on diesel fuel for irrigation and growing crops year-round.



MILLING AS A SERVICE

A solution for farming households to save time and money by milling their grains and spices cost-effectively at the village level.



COOLING AS A SERVICE

A solution for traders and farmers to increase their income by keeping their produce fresh for longer and reducing food waste.

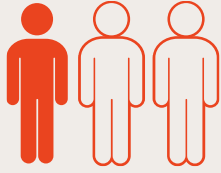


FARMER ADVISORY

A solution for farmers to increase their productivity and income and increase efficiency of input use by learning and adopting climate-smart agricultural practices.

ABOUT US

MISSION



Empower
1 million
people globally by 2030



Provide smallholders with
essential farming services



Sustainably increase their
income and quality of life

OBJECTIVES

Oorja is a purpose-driven social enterprise working at the intersection of sustainable agriculture and renewable energy. Oorja aims to:

- reduce reliance on fossil fuels and chemical inputs
- increase agricultural productivity and farmers' income
- mitigate carbon emissions and build climate resilience.

OUR CORE VALUES



AREA COVERAGE & EXPANSION MAP

Current operational areas

Uttar Pradesh

Bahraich
Shravasti
Hardoi
Lucknow
Barabanki

Bihar

Muzaffarpur
Samastipur

Jharkhand

Uttar Pradesh

Bihar

Expansion Plans

Uttar Pradesh

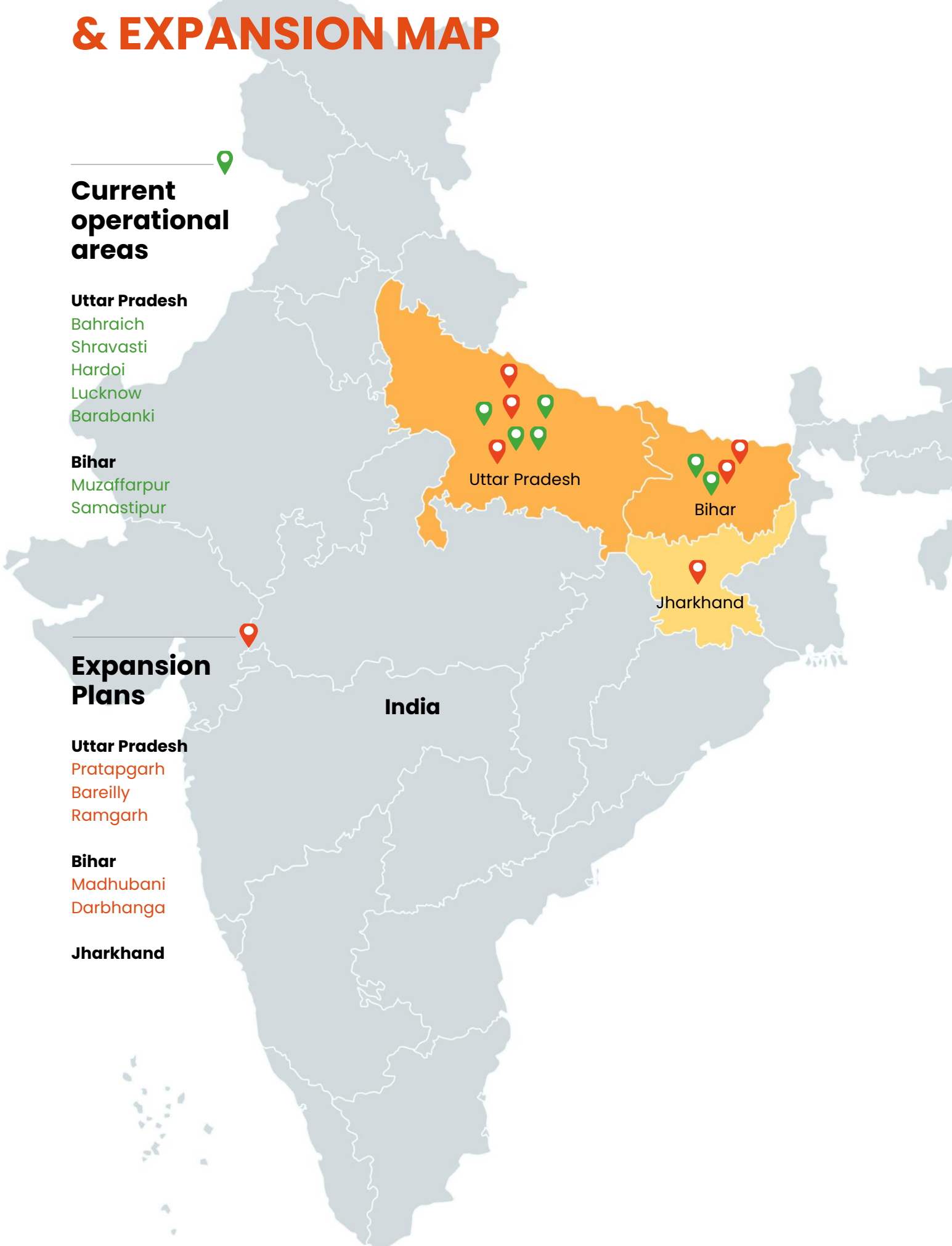
Pratapgarh
Bareilly
Ramgarh

Bihar

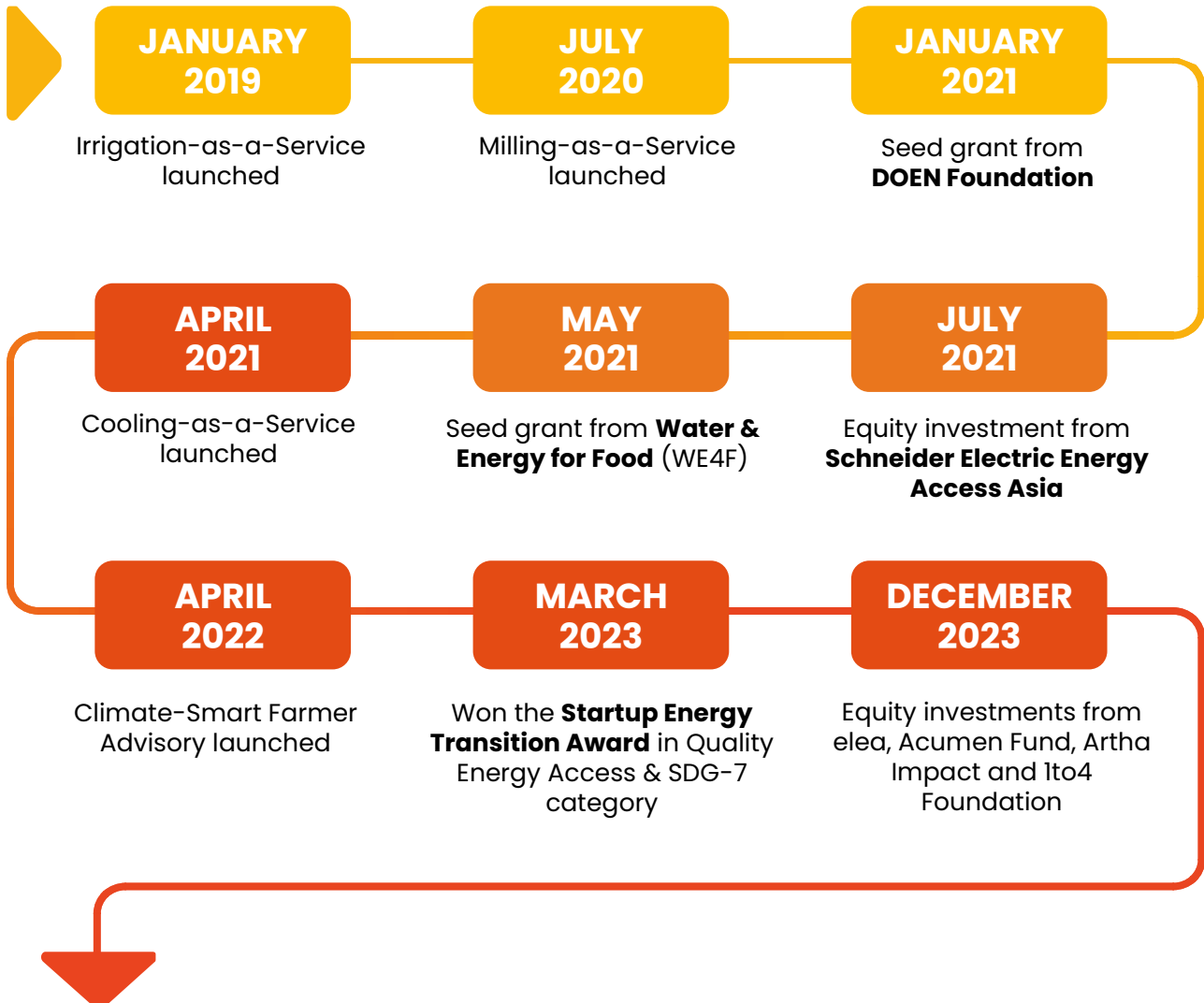
Madhubani
Darbhanga

Jharkhand

India



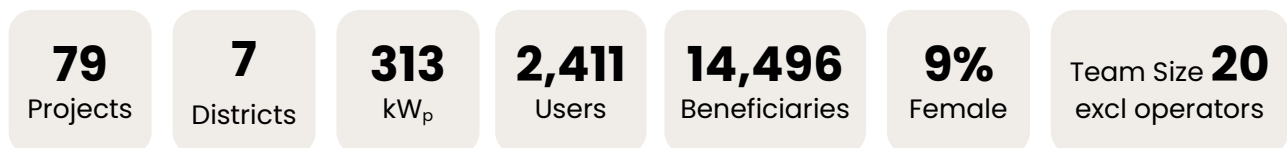
MILESTONES & ACHIEVEMENTS



2023 End



2022 End



2023 HIGHLIGHTS

Reach



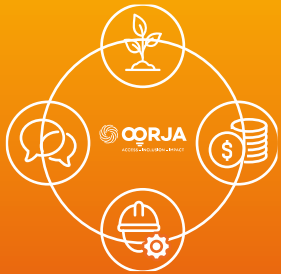
Grew customer base
to 28,000+
people cultivating
4,749 acres

Coverage



6 districts of northern India
reaching
3,498 male and
299 female customers
as direct users

Team



Brought on board experts in
**operations, impact,
innovation, business
development,
partnerships**

Partners



We partnered with
**IISD, IWMI, SPEF, HCL
Foundation and, 60 Decibels**
to scale up our services and amplify
our impact



OUR CUSTOMERS



Earn
INR 5,000-8,000
(US\$ 60-100) per month
per household



Farm 1-1.5 acres
of land per household



Average household size
7.4 people



Smallholders, women
and low-income
communities



Rely on **agriculture**
as their primary source
of livelihood



Face a
50% yield gap
due to non-optimal
farming practices

THE OPPORTUNITY

Given access to localised, timely inputs and information:



India's farmers could
obtain **>2x higher**
crop yields



reducing
GHG emissions



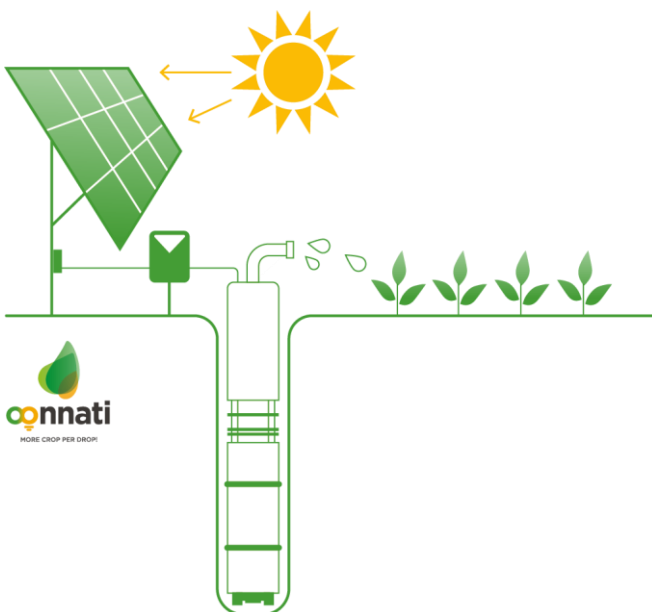
and chemical
inputs applied.

IRRIGATION AS A SERVICE



Pay per litre of water Available on-farm

A Pay-Per-Use community irrigation service that enable farmers to transition from diesel-based pumping to affordable and reliable solar irrigation.



Tariff:
INR 3.5 – 4 per m³
of water

Min. 20% cheaper
than diesel

WHY SOLARISE IRRIGATION?

In Northern and Eastern India, 30 million farmers are reliant on diesel fuel, the most expensive irrigation source. Smallholders generally practice deficit irrigation of crops. This contributes to 50% lower crop yields than potential and prevents them from growing crops year-round. Diesel pumps have an immense carbon footprint: they are responsible for 5% of India's GHG emissions.

MILESTONE REACHED IN 2023

105

solar pumps
under operation

1,487

farmers served

4,749

acres under solar
irrigation

2,234,873

m³ of
water sold

MILLING AS A SERVICE



Pay per kg of produce processed Available on-farm

A Pay-Per-Use community milling service for grinding flour, pulses, spices, and other dried produce into edible food products. The service is charged based on weight processed or milling time.



Tariff:
INR 2-10 per kg
processed

50% cheaper
than diesel

WHY SOLARISE MILLING?

Women farmers are generally responsible for the labor-intensive activities of harvesting and post-harvest processing of crops. They regularly need to travel 5-10 km to highway marketplaces to visit diesel-powered mills. They pay high rates to process wheat, pulses, rice and spices into their edible form. The travel time and distance contributes to time poverty experienced by women and girls.

MILESTONE REACHED IN 2023

14
mills
operational

2,109
customers served

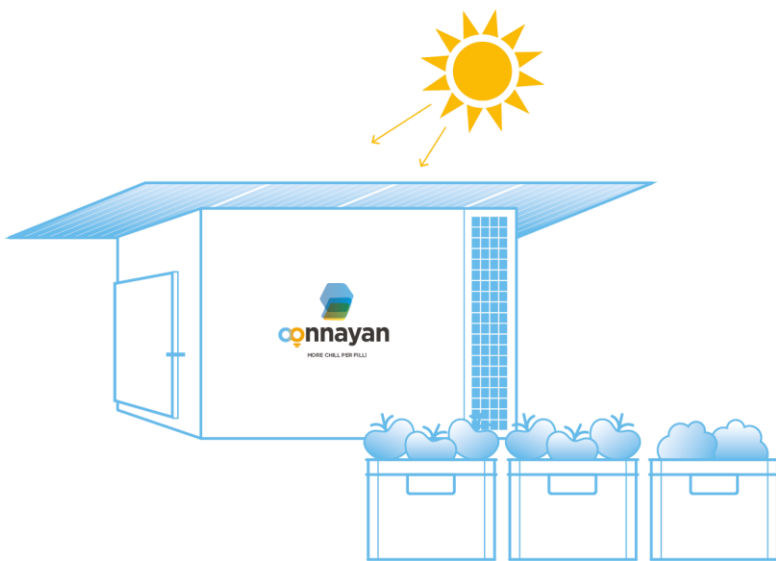
72,038
kg of produce
milled

COOLING AS A SERVICE



Pay per crate per day Available at the market gate

A Pay-Per-Use post-harvest cooling service available at the market gate that enables users to extend the quality and shelf life of their produce, reduce post-harvest losses and realise higher prices in the market. Users pay per crate per day of produce stored in the cold room.



Tariff:
INR 6-10 per crate
per day

WHY SOLARISE COOLING?

Cooling infrastructure is lacking in rural India and not accessible to most small-scale crop growers and traders. This contributes to spoilage and food waste of up to 30% of farmers' precious harvest. This often forces growers and traders to make a distress sale of fresh produce right after harvest, when prices are at their lowest. Farmers sometimes make a loss and are unable to recover their investment in cultivating the crop.

MILESTONES REACHED IN 2023

3

cold storages
operational

201

cooling
customers served

268.4

tonnes of
food stored

93.9

tonnes of
food loss avoided



FARMER ADVISORY SERVICES

We continued providing Climate-Smart Farmer Advisory services to our irrigation customers free of charge. Led by expert agronomists and farmer advisors to promote sustainable, profitable, and resource-efficient agricultural practices, smallholder farmers received training through workshops, personalised sessions and on-farm demonstrations.

There was a noticeable increase in the adoption of scientific farming techniques such as the System of Rice Intensification (SRI) and System of Wheat Intensification (SWI). These methods yielded better results than traditional rice farming, resulting in increased income and reduced input costs for adopters.

Our farmer advisory team also trained farmers on preparing and using nature-based solutions like vermicompost and bio-manures. These methods aimed to enhance soil fertility, improve crop yields, and mitigate animal and pest-related issues. Furthermore, the team provided targeted training on cultivating a third crop during the summer season to boost farmers' incomes.

To address on-the-ground challenges on real time basis and promote sustainable agriculture methods, we created district-based WhatsApp groups where our farmer advisory team stays connected with farmers. These groups provide real-time updates on weather conditions and market rates, as well as address farmers' queries on various topics including pest management.

MILESTONES REACHED IN 2023

1,200+

farmers trained to date

138

women trained to date

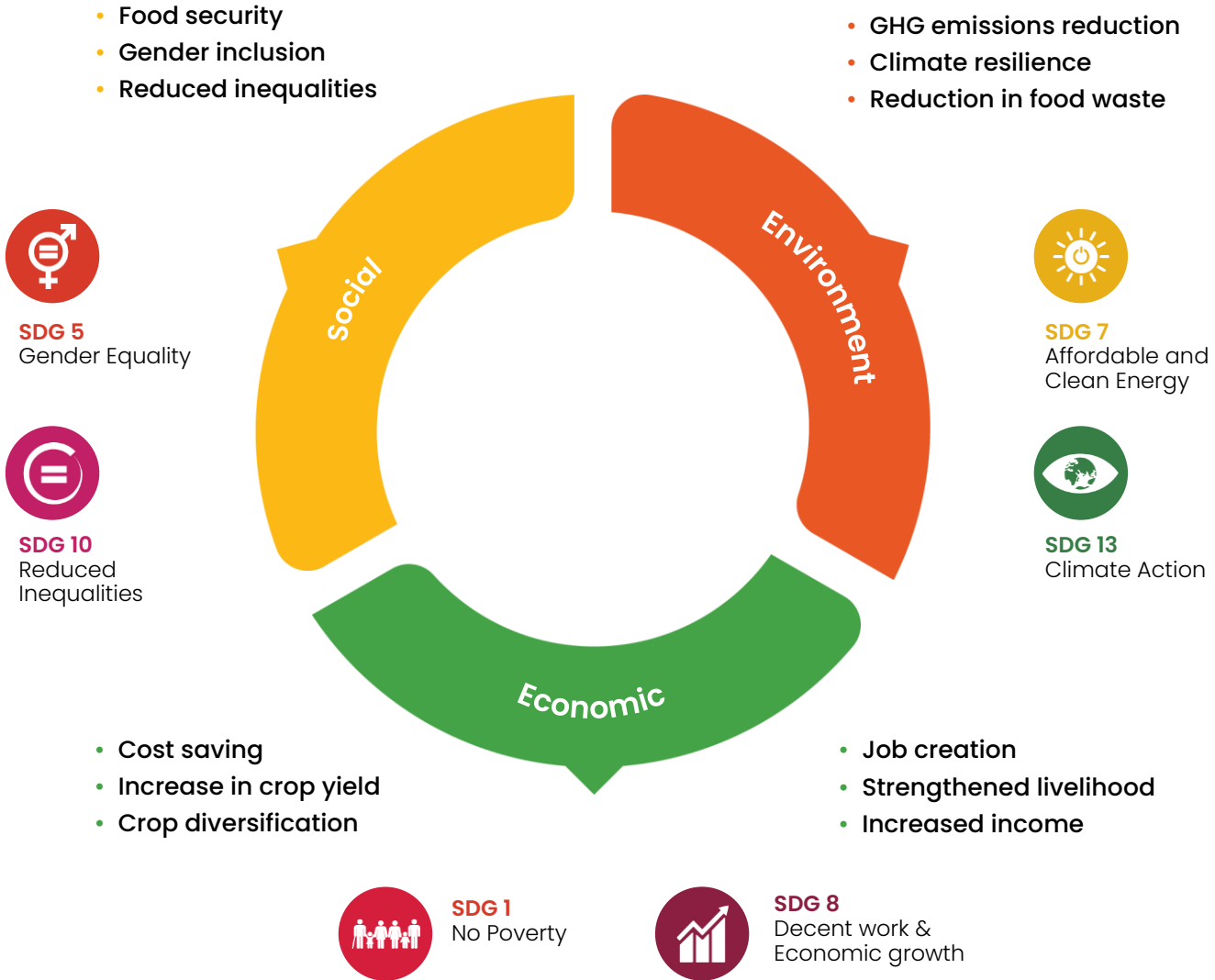
36

villages covered to date

100+

farmers connected digitally

IMPACT MODEL



KEY IMPACT INDICATORS



Number of direct and indirect beneficiaries



Crop yield



Farmer income



GHG emission saved



Jobs created

OUR IMPACT

Our methodology

This data was collected internally by Oorja’s field staff through standardized questionnaires that were conducted in person in late 2023. 102 respondents – 70 customers and 32 non-customers from Bahraich, Barabanki and Hardoi districts of Uttar Pradesh were part of the assessment.



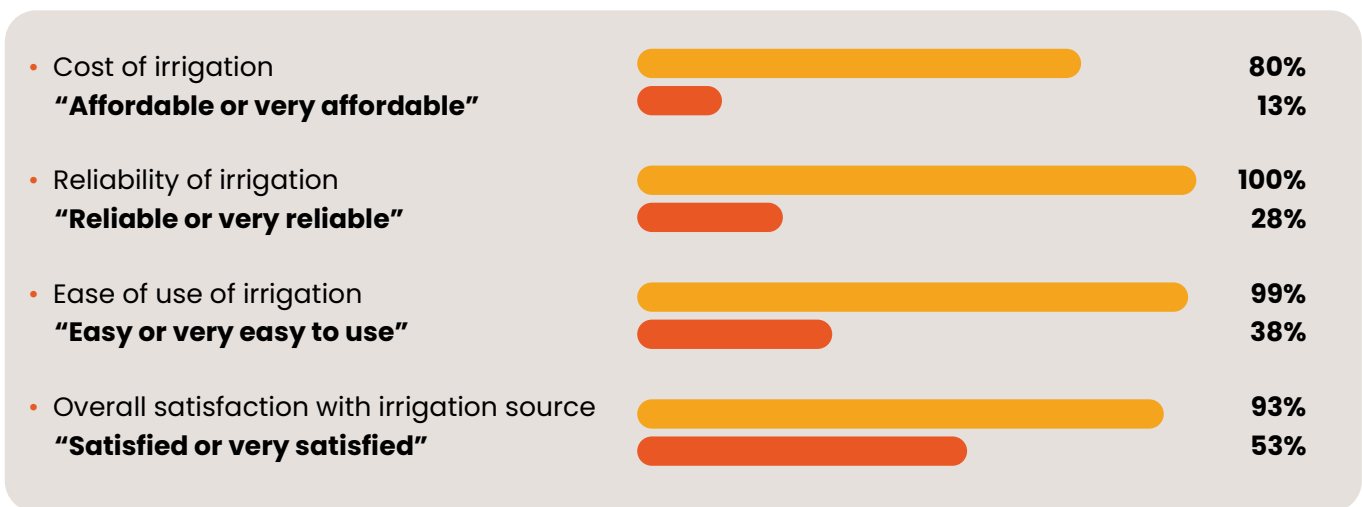
Decreased reliance on diesel pumps

Current source of irrigation for farmers	Customers (%)	Non-Customers (%)
Solar pump	97%	0%
Diesel or petrol pump	9%	78%
Electric pump	7%	31%
Rainfed	57%	34%

91% Oonnati customers have stopped using diesel pumps

Farmers’ perception of...

● Customer ● Non-Customer



OUR IMPACT

Net Promoter
Score
49%

**Net Promoter Score is a gauge of customer satisfaction and loyalty.*

Top 3 things promoters love:

1. Irrigation available on demand
2. Year-round availability of water
3. No drudgery of carrying diesel pumps

Proportion of farmers growing a third season

	2020	2023
Customers	7%	21%
Non-Customers	0%	3%

Climate-smart agriculture

8%
Reduction in
expenses on
chemical inputs

36%
Increase in usage of
natural inputs



OUR IMPACT

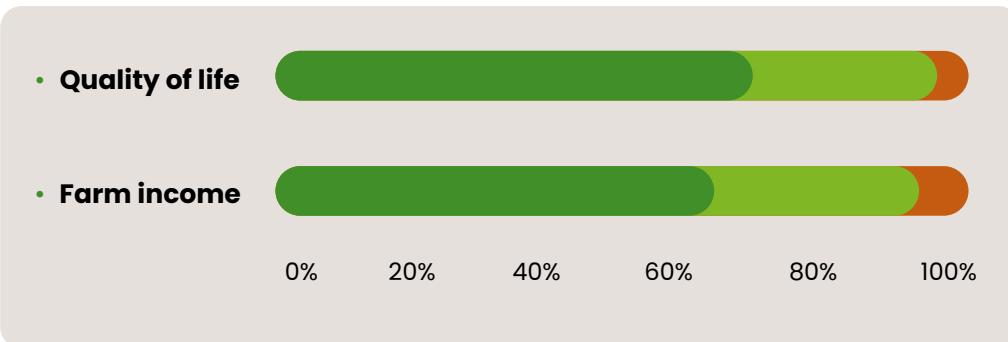
Assessed by 60 Decibels

60 _ decibels

In August 2023, 60 Decibels conducted a phone survey with 277 irrigation customers. The customers were randomly selected, and all customers have been using Oonnati irrigation for 3-24 months. 75% of the respondents live in the bottom 60% of India's national population for wealth, and 97% of them live in rural areas. 6% of the respondents were women. Read the full report [here](#).

Socio-economic impact of Oorja's irrigation service

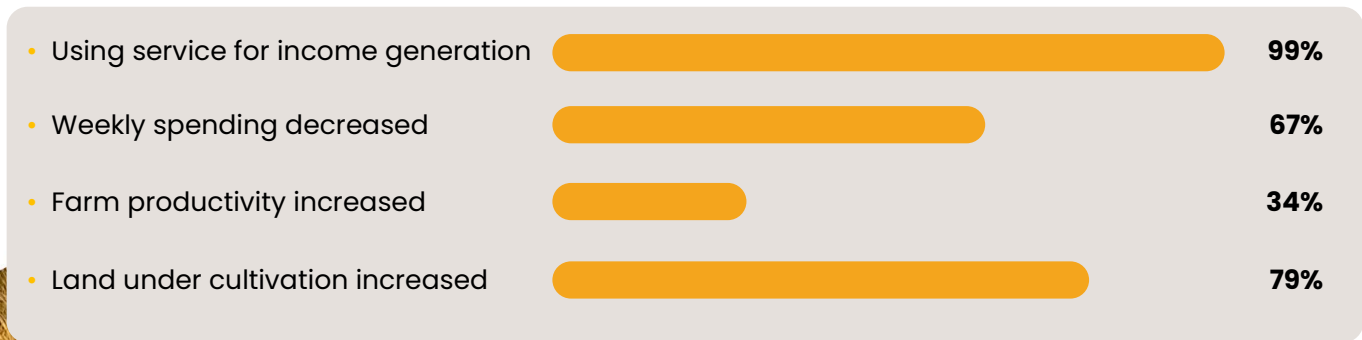
● Very much improved ● Slightly improved ● No change or Not improved



66%
customers say their lives have very much improved after using Oonnati irrigation service

Other impacts of Oorja's irrigation service

● Customer



93%
of customers using the service for income generation reported that their incomes have increased



CUSTOMER TESTIMONIALS

"Oorja's services have transformed my agricultural practices, allowing me to save valuable time and resources. Accessing water for irrigation is now just a button away. I no longer need to search for a diesel pump, install it, or purchase fuel. I also avail Oorja's milling service, and the mill is located just 500 metres from my home, reducing both cost and time."

- Rajesh Kumar Maurya (Hardoi, Uttar Pradesh)



"My husband and I have been benefiting from irrigation and milling services for over a year. With 1.6 acres of land, ensuring a consistent water supply has been crucial for our farming endeavors. Thanks to Oorja's irrigation service, we've cultivated peppermint during the Zayed season, significantly boosting our income."

- Vineeta Devi (Hardoi, Uttar Pradesh)

CUSTOMER TESTIMONIALS

“The quality of wheat flour processed from Oorja’s mill is refined and much better than that from the diesel mill. There is no comparison in terms of quality.”

- **Gayatri Devi (Bahraich, Uttar Pradesh)**



“Last year, I followed the advice of an agricultural advisor and started making vermicompost. I first used it on my potato crop. The yield was excellent and I’ve been able to reduce my use of chemical fertilisers significantly. Since then, I have made around three quintals of vermicompost, and have used it on my paddy and maize crops. I also tried transplanting paddy in one bigha using the SRI method. The results were remarkable – I harvested 4 quintals and 80 kg of paddy, compared to the 4 quintals and 8 kg I got from another bigha where I planted paddy traditionally.”

- **Dilip Kumar (Bahraich, Uttar Pradesh)**

PARTNERS

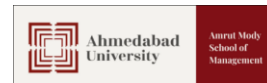
INVESTORS & DONORS



IMPLEMENTATION PARTNERS



RESEARCH & ECOSYSTEM PARTNERS



AWARDS



EVENTS & CONFERENCES



Amit Saraogi (CEO) and Clementine Chambon (CTO) presented at elea's Philanthropic Investors' circle dinner in Zurich
[Read more](#) →



Impact Manager Sejal Agarwal spoke at the International Vienna Energy and Climate Forum 2024
[Read more](#) →



Research Associate Lipsa Priyadarshini represented us at the WE4F Annual Convening
[Read more](#) →



Amit and Clementine advocated for Oorja's service-based model to scale up access to solar irrigation globally on two expert panels at COP28 in Dubai
[Read more](#) →



Senior Manager Ankur Singh presented on the role of women entrepreneurs in creating last-mile energy access in the Off-Grid Expo+Conference
[Read more](#) →



MANAGEMENT TEAM



Amit Saraogi

Co-Founder & CEO

- **26 years'** experience
- Worked at UNICEF, PwC, ABN Amro, Analysis Group
- Master's in International Development from Columbia University, New York
- VP on board of CLEAN
- Awards - Echoing Green Fellow, Opportunity Collaboration Fellow



Dr Clementine Chambon

Co-Founder & CEO

- **10 years'** experience
- Worked as renewable energy researcher and consultant
- PhD in Biofuels from Imperial College London, MEng in Chemical Engineering from University of Cambridge
- Awards - Echoing Green Fellow, Forbes 30 Under 30, MIT 35 Under



Ankur Singh

Senior Manager

- **8 years'** experience in program management in the development sector
- MBA from IRMA



Bindu Trivedi

Finance Manager

- Chartered Accountant
- DISA certified professional
- **5+ years'** experience in finance, accounting and auditing



Siddhartha Misra

Operations Manager

- Experienced in finance and operations
- MBA from Lucknow University



Sejal Agarwal

Impact Manager

- **5+ years'** experience in research and data analysis in the development sector
- Indian Institute of Forest Management alumna



Aditya Pandey

Innovation Manager

- Engineer experienced in AI and data analysis
- New York University and Plaksha University alumni

Board of Directors

- **Amit Saraogi**
- **Clementine Chambon**
- **Chris Emmott**
- **Gerald Weigl**
- **Vikram Raman**

Co-Founder & CEO

Co-Founder & CTO

Associate Director, Acumen

Executive Director, elea

Schneider Electric Energy Access Asia

MEET THE TEAM



The Oorja team is a group of extremely passionate and committed professionals in pursuit of a common mission.

We are an international team of agriculture professionals, researchers, engineers, farmers, scientists, teachers, and community mobilisers. We work together to deliver high-impact projects with business, social and environmental benefits.

Currently, our dynamic **team of 70+ individuals** is spread across the remote HQ in New Delhi, Bangalore, Pune, Bhubaneswar, Assam, and London as well as three operating hubs in Bahraich, Hardoi, and Barabanki districts.



Oorja's culture fosters a positive and collaborative environment, enhancing our work experience. What truly sets Oorja apart is the abundance of growth opportunities it offers. Not only have I excelled in my current role, but I've also been encouraged to explore and develop new skills. This platform for personal and professional growth has been invaluable to me. I feel fortunate to be part of such a dynamic and forward-thinking organisation.

- Shraddha Gupta,
Admin Assistant at Oorja



ROADMAP FOR 2024

New Project Deployments



Expand our solar deployments
>2x
to reach **50,000**
end-users

Grow Geographically



Deepen our presence in
existing districts
and pilot our services in
new states In India

Launch B2B Services



Launch new types of
B2B2C irrigation contracts to meet the
needs of SMEs, agri-
businesses, foundations,
NGOs and FPOs

Climate-Smart Focus



Monetise **climate-smart advisory** and offer complementary services such as soil health testing to strengthen climate resilience

Digitise Operations



Pilot **digital payment** records, mobile payments, IoT monitoring of assets and other technology to boost efficiency





CONTACT INFORMATION

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