

RESILIENT MOUNTAIN VILLAGE

A PILOT DEMONSTRATION PROJECT ON EARTHQUAKE RECONSTRUCTION AND
REHABILITATION IN DHUNGENTAR, NUWAKOT

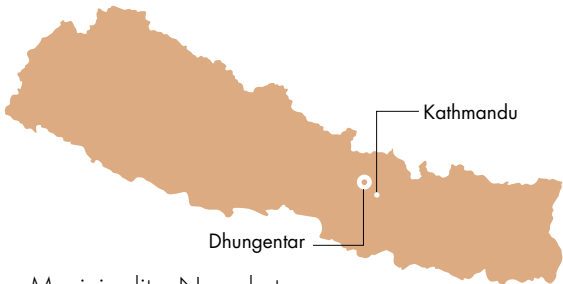
PROJECT INFOSHEET



DHUNGENTAR: A BRIEF PROFILE

Dhungentar settlement suffered considerable damage during the 2015 earthquake. Given the Dhungentar community's marginalised and disadvantaged status, the challenges to and need for assistance in reconstruction and rehabilitation efforts were apparent. However, possibilities for collaboration and local entrepreneurship were also evident. Hence, the pilot demonstration project focused on helping the 96 households within the project area rebuild, recover, and rebound.

PROJECT
FOCUSED
ON HELPING
96
HOUSEHOLDS



Bidur Municipality, Nuwakot
50 km from Kathmandu

SOCIOECONOMIC STATUS



96%

Dalit/marginalised
ethnic groups

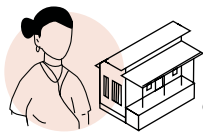


Largely dependent on
subsistence agriculture and
traditional professions



NPR
127,703
Avg. annual income
(Dhungentar).

WOMEN'S STATUS



Only
around
20%
of houses owned
by women



Only
around
38%
of women over
16 years of age
earn an income

PRE-EARTHQUAKE STATUS



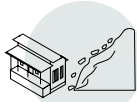
Only
2%
permanent
houses



11
households without
land ownership,
living as tenants

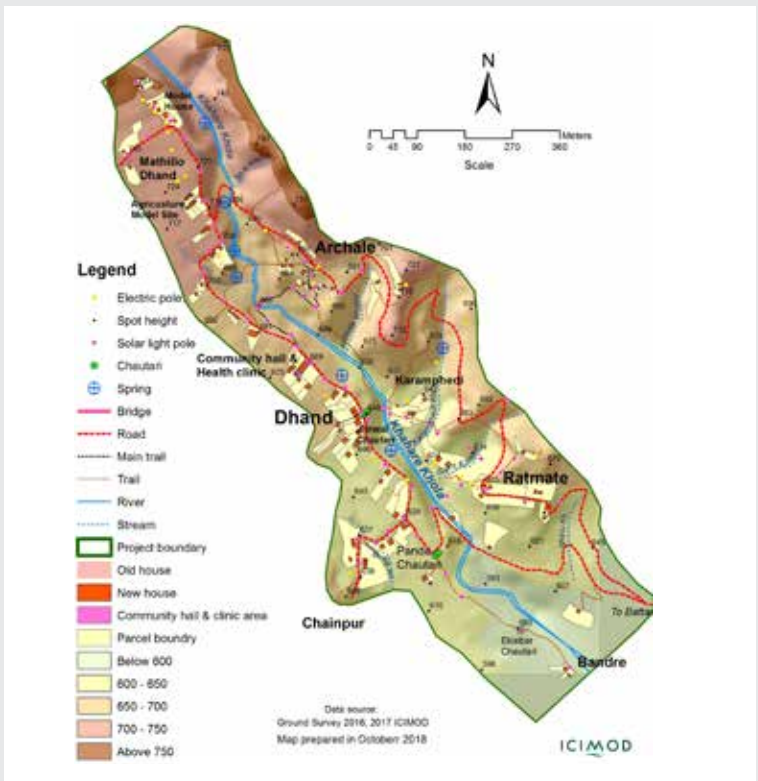


99%
houses fully
damaged



58
houses located in
landslide-prone
areas

POST-EARTHQUAKE STATUS



Population
474



Project Area
50 hectares



Distance from
Battar Town
7 km

Dhungentar comprises five cluster villages: Dhand, Mathillo Dhand, Archale, Karamfedi, and Ratamate. Ratamate, Karamfedi, and Archale are located on steep hillsides, whereas Dhand and Mathillo Dhand are situated on the same gradual hillside.

BUILDING A RESILIENT MOUNTAIN VILLAGE

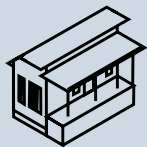
This pilot demonstration project focused on building a resilient community capable of adaptation and implementing sustainable development solutions. Considering the community's needs, strengths, and aspirations, particular emphasis was placed on addressing infrastructural frailties, reducing socioeconomic vulnerabilities, and elevating the living standards of Dhungentar locals in the long term, thereby building a resilient mountain village.

Importantly, the wide-ranging development and resilience-building activities of this pilot demonstration project will serve as a showcase for sustainable reconstruction and rehabilitation in a post-disaster situation, with the potential for up-scaling and wider knowledge dissemination.

RESILIENT MOUNTAIN COMMUNITY

The project was underpinned by four core building blocks to comprehensively address Dhungentar's vulnerabilities. These expansive building blocks focused on distinct spheres of growth and development, and the activities undertaken within each block were intended to strengthen the community and make it resilient and adaptable when faced with future shocks.

Disaster-Resilient Infrastructure



Community Mobilization and Capacity Development



Access to Services and Environment Improvement



Livelihoods and Enterprise Development



SDGs ADDRESSED

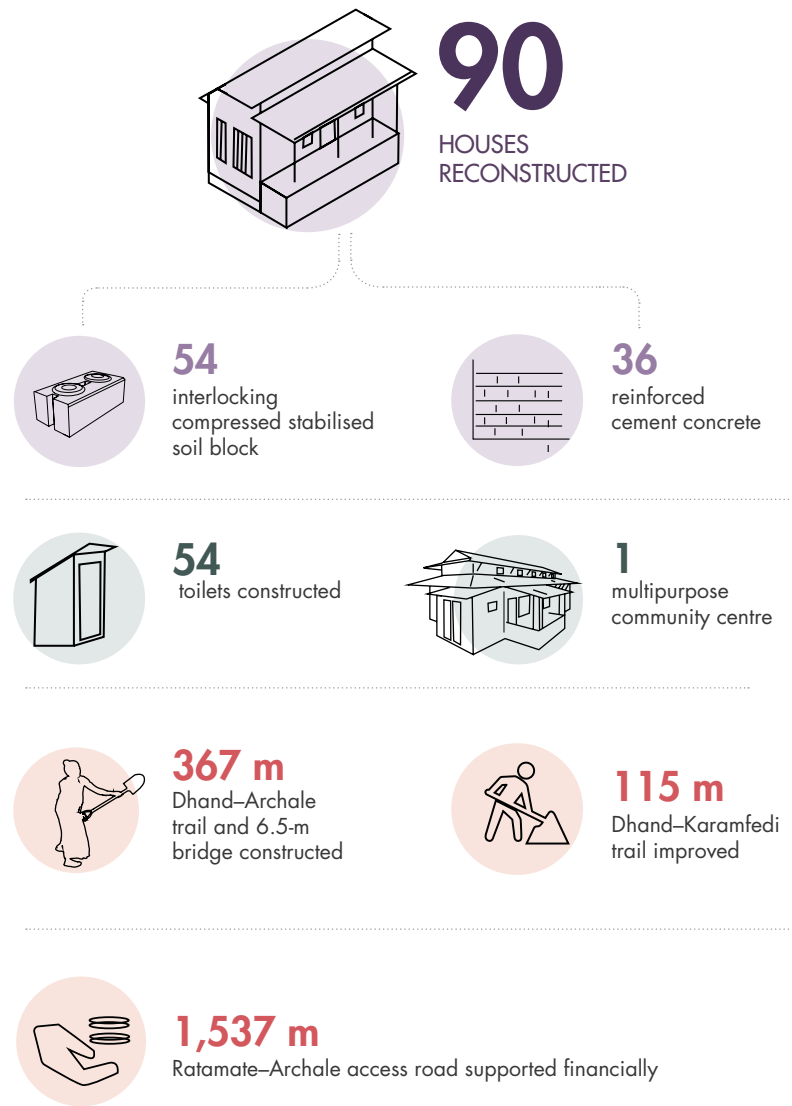
With its integrated approach to making Dhungentar a resilient and smart mountain village, the project addresses the following Sustainable Development Goals (SDGs) set by the United Nations Development Programme



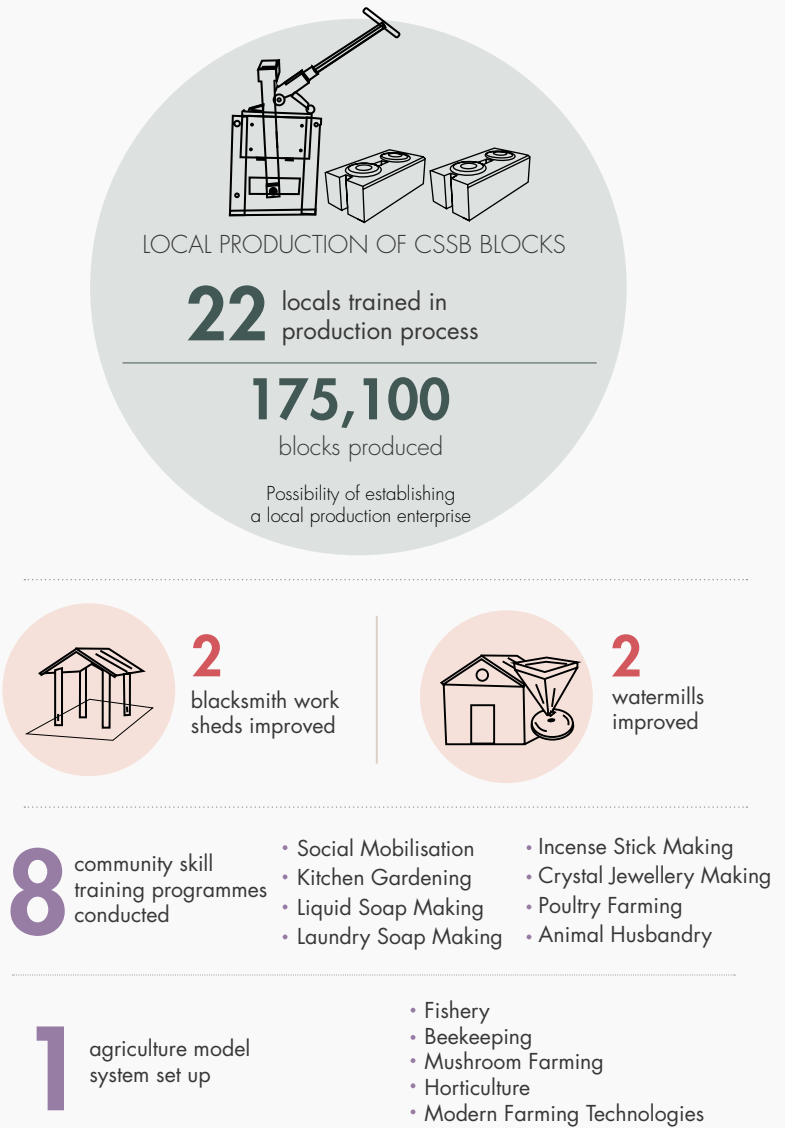
PROJECT ACCOMPLISHMENTS

The project was successful in making the entire village disaster-resilient and in strengthening the community's infrastructure in necessary areas. The economic security and social cohesion of the Dhungentar locals was also focused upon, with different programmes and initiatives implemented in the village.

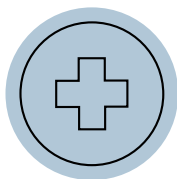
DISASTER-RESILIENT INFRASTRUCTURE



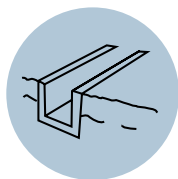
LIVELIHOODS AND ENTERPRISE DEVELOPMENT



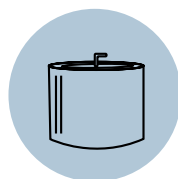
ACCESS TO SERVICES AND ENVIRONMENT IMPROVEMENT



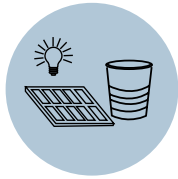
1 health clinic constructed



16 m irrigation canal constructed



17 biogas plants installed



SOLAR LAMPS and **DUSTBINS** distributed to each household



Community mobilised for frequent **PLANTATION** and **CLEAN-UP** campaigns

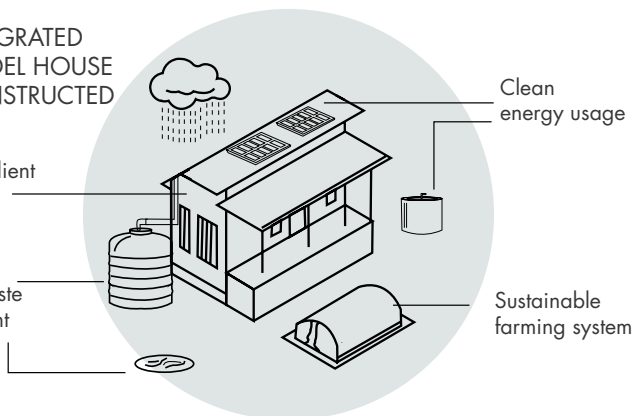


e-Sewa **MOBILE PAYMENT** facilities introduced

1 **INTEGRATED MODEL HOUSE** CONSTRUCTED

Disaster-resilient house

Efficient water & waste management



Clean energy usage

Sustainable farming system

COMMUNITY MOBILIZATION AND CAPACITY DEVELOPMENT

Formation of community-support institutions



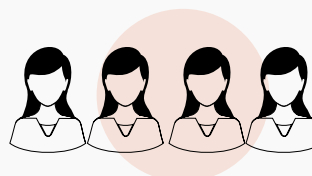
Mothers' Group of Dhungentar



Reconstruction and Development Community



Children's Group of Dhungentar



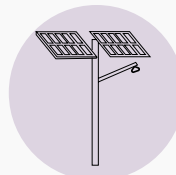
4 **SOCIAL MOBILISERS RECRUITED**
Young local women tasked with bridging the gap between project staff and the Dhungentar community

IMPROVEMENT OF COMMUNITY SPACES

Construction of multipurpose community centre



- Community Meetings
- Workshops
- Trainings
- Health Camps
- Child Care
- Cooperative Information Centre
- Emergency Operation Centre



70 community solar street lamps installed



Improvement of communal chautari space

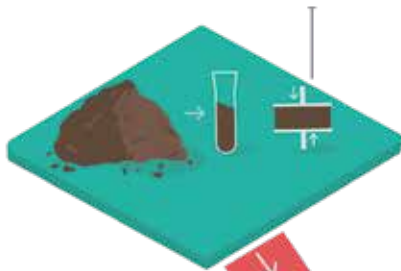
CSSB PRODUCTION ENTERPRISE

Earthquake Reconstruction and Rehabilitation Project, Dhungentar, Nuwakot

ICIMOD's pilot demonstration project mobilised Dhungentar's natural and human resources to make disaster-resilient interlocking compressed stabilised soil blocks (CSSBs). Learn about the simple production process and how a production enterprise could be established in Dhungentar.

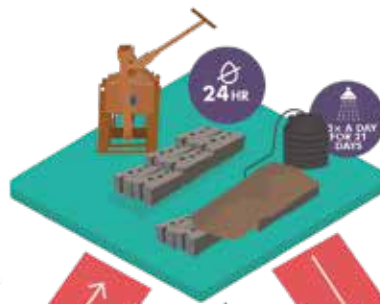
1 TESTING

- Soil from local mining areas sent to Kathmandu for tests
- Composition of clay, sand, and silt in the soil tested to determine mixture ratio



3 MIXING

- Cement: Sand: Soil = 1: 3: 5
- Water added as per need



5 USE IN RECONSTRUCTION

- CSSBs used for infrastructure construction in Dhungentar



2 COLLECTION & SIEVING

- 22 unskilled locals trained, including 19 women
- Soil collected from selected local mining areas
- Clay and sand sieved to obtain fine materials



4 COMPRESSION & CURING

- Mixture compressed using 6 manually operated machines
- 24-hour dry curing and 21-day wet curing
- Prepared CSSBs randomly selected for compressive strength tests



6 PRODUCTION ENTERPRISE POSSIBILITY

- Improved market linkage can help other micro enterprises and stimulate the economy
- Growing demand and simple production process raises local employment and enterprise possibilities
- Production of around 4,000 CSSBs/day possible with approximately 25 workers operating 6 machines
- Per unit cost = NPR. 50; estimated daily turnover = NPR. 200,000

ENTERPRISE POSSIBILITY

MARKET DEMAND

HEALTHY REVENUE

4,000 CSSBs/DAY

1 COMMUNITY CENTRE

1 HEALTH CLINIC

1 CHAIRMAN

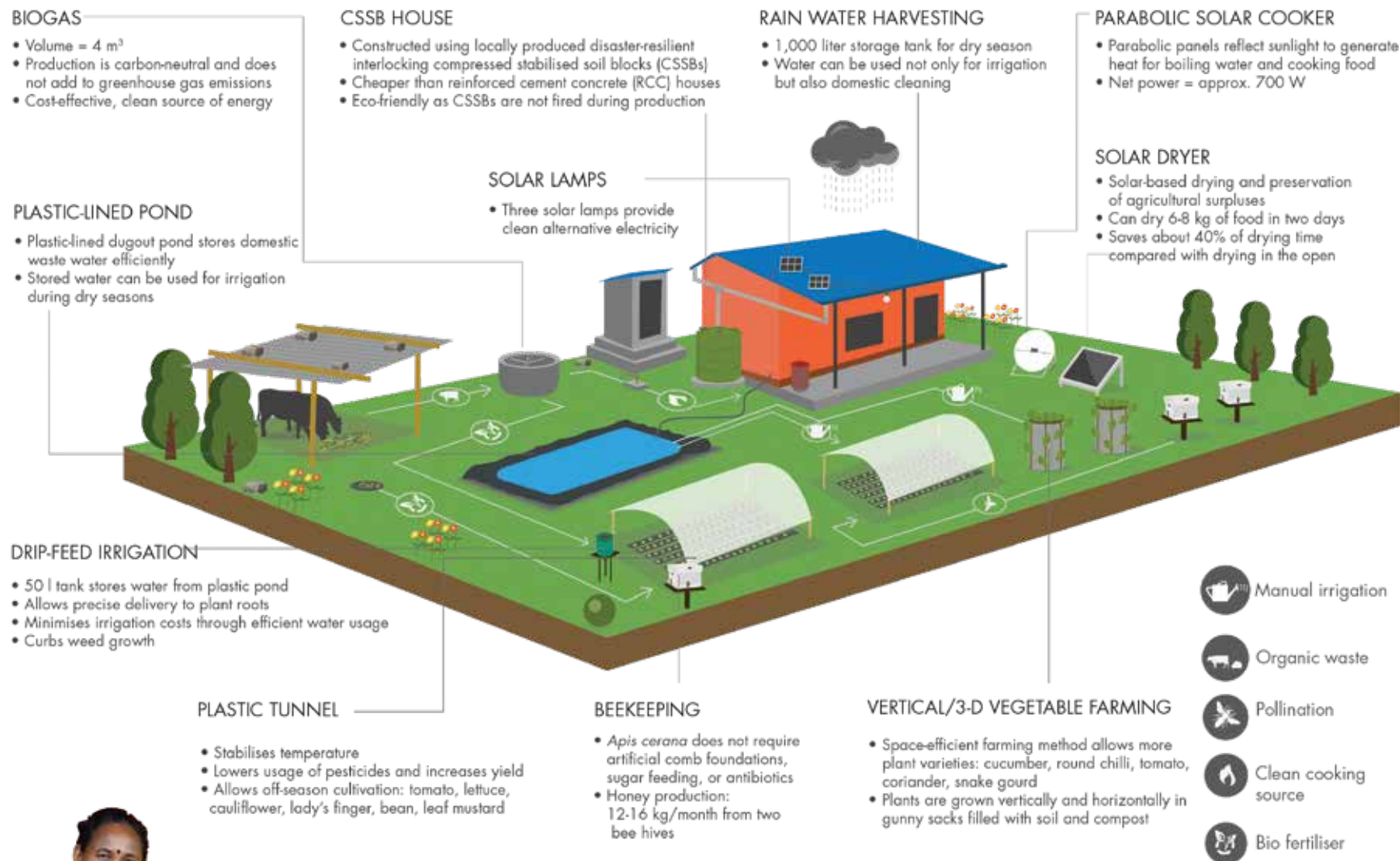
1 TRAIL CONSTRUCTED USING DAMAGED CSSBs

54 HOUSES & TOILETS

TIL KUMARI SUNAR'S MODEL HOUSE

Reconstruction and Rehabilitation Project, Dhungentar, Nuwakot

As a part of ICIMOD's reconstruction activities in Dhungentar, Til Kumari Sunar's house was reconstructed using cost-effective, disaster-resilient technology. Environment-friendly technologies and sustainable practices were introduced to further transform this house into a self-sustaining and secure model. Til Kumari has championed this integrated system of household management in her 2,738 sq. ft. land, demonstrating a replicable approach for the community.



Til Kumari was supported with the model house because she was left particularly vulnerable following the earthquake. She has long been a widow supporting her two daughters, who have now left Dhungentar after their marriage. Recovering alone in a post-disaster context is highly challenging, but Til Kumari demonstrated great resolve, knowledge in household management, and readiness to adopt and champion innovative practices and a new lifestyle.

HIRA LAL SUNAR'S AGRICULTURE MODEL

Reconstruction and Rehabilitation Project, Dhungentar, Nuwakot

ICIMOD's pilot demonstration project in Dhungentar supported Hira Lal Sunar, a beneficiary of its earthquake reconstruction and rehabilitation programmes, in transforming his 6,845 sq. ft. land into an agriculture model. By shifting traditional, subsistence agriculture to a modern, integrated farming system for agribusiness, this sustainable model offers diversified income sources and can be replicated throughout the community.

COMPOST PIT

- Domestic waste products and cattle manure decompose here, creating compost
- *Jholmal*, a homemade bio-fertiliser and bio-pesticide, can be prepared

PLASTIC-LINED POND

- Stores household waste water
- Useful for irrigation during dry season



Common carp

- Tolerates low oxygen levels, pollutants, turbidity, and stagnant waters
- Grows to 2.5–3.5 kg in 10–14 months
NPR. 250–350/kg

PLASTIC TUNNEL

- Stabilises temperature
- Lowers usage of pesticides and increases yield
- Allows off-season cultivation

HARVESTED RAINWATER

- Rainwater is diverted to the fish pond as this allows water circulation, which benefits the fish



FISH POND

- Fish polyculture increases production per unit area and offers higher economic benefits
- Fish excretion provides nutrients to plants



Grass carp
Grows to 0.5–1.5 kg in 8–10 months
NPR. 250–350/kg



Silver carp
Grows to 5 kg in 3–4 years
NPR. 250–350/kg

BEEKEEPING

- *Apis cerana* does not require artificial comb foundations, sugar feeding, or antibiotics
- Honey can be extracted for six months in a year



Estimated honey production
• 6–8 kg/month from each of 5 bee hives
NPR. 700–800/kg

HORTICULTURE

- Over 24 varieties of fruits and vegetables using multiple cropping



Capsicum
NPR. 100–200/kg



Round chilli
NPR. 200–300/kg



Lime
NPR. 200–300/kg



Macadamia nut
NPR. 1,000–1,500/kg

- Over 7 species of flowers



Marigold
NPR. 50–200/garland

MUSHROOM FARMING

- The mushroom tunnel's roof is covered with straw and watered to control temperature



Oyster mushroom

- Germinates in 2 weeks in plastic bags stuffed with straw
- Each bag yields up to 3 kg in 2 months
NPR. 200–300/kg

DRIP-FEED IRRIGATION

- 50 litre tank stores water from plastic-lined pond
- Allows precise delivery to plant roots
- Minimises irrigation costs through efficient water usage
- Curbs weed growth



Manual irrigation



Water for cooling roof



Pollination



Water circulation



Bio pesticide



Hira Lal Sunar used to work in construction but returned to Dhungentar permanently after the 2015 earthquake struck and his daughter was diagnosed with a heart condition. He views his modernised farm to be a viable income source to support his wife and two children, who also assist him in certain agricultural activities.

PROJECT PARTNERS

CORE PARTNERS



COLLABORATING PARTNERS

The following organisations were involved in the implementation of the project’s core activities at the local level:



GOVERNMENT PARTNERS

ICIMOD acknowledges the guidance and cooperation of the following government bodies during the implementation of the project:



- District Coordination Committee (DCC)
- Bidur Municipality
- Department of Urban Development and Building Construction (DUDBC)
- District Administrative Office
- District Agriculture Development Office (DADO)
- District Horticulture Office
- District Disaster Risk-Reduction Committee (DDRC)
- District Emergency Operating Centre (DEOC)
- District Forest Office (DFO)
- District Soil Conservation Office (DSCO)
- Nepal Electricity Authority

CO-FINANCING PARTNERS

ICIMOD expresses its appreciation of the following co-financing partners for their financial contribution towards different project activities:



Co-financed the reconstruction of houses



Co-financed the construction of biogas plants; contributed 96 sets of solar lamps for all households; two 1,200 W solar panels for community solar street lamps



Supported the construction of the multipurpose community centre



Donated 100 units of Aquabox - water filter to each household

PRIVATE SECTOR PARTNERS

The involvement of the following private sector partners was integral to the project's livelihood improvement and capacity-building activities:



SAROSH PRADHAN AND ASSOCIATES
ARCHITECTURE . INTERIORS . GRAPHICS

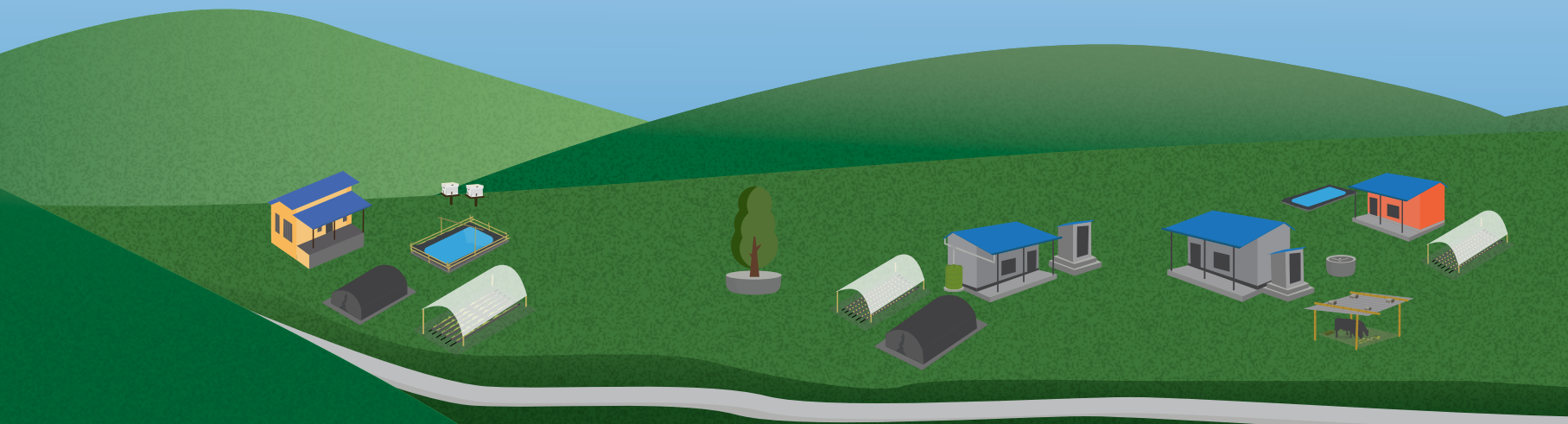


KNOWLEDGE PARTNERS

The following organisations were instrumental in creating and disseminating knowledge related to reconstruction and rehabilitation in Dhungentar:







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