Outcome Document

SDG Innovation Participatory Action Research Initiative 1.0

Overview of the Initiative:

As part of the global Agenda 2030 towards making our planet more sustainable and equitable, Nagaland also has the shared responsibility to make the SDGs a reality for the state, the country, and the world as a whole. In this regard, the 'SDG Innovation Participatory Action Research Initiative' was initiated in the year 2021. It has been conceived with the idea of implementing innovative solutions to perennial problems in targeting the priority SDGs. The initiative mobilized individuals, institutions, and organisations to take action for the achievement of the SDG targets whilst building coalitions across communities and societies promoting 'minimum cost, maximum impact'.

Details of the Initiative:

- Under this initiative, project proposals were invited for sustainable result-driven innovations from the communities.
- More than 15+ applications were received, and a Selection Committee was constituted for selecting the innovative three initiatives and projects.
- The implementation of these innovative solutions was carried out by the selected individuals/organisations under the guidance and supervision of SDGCC.
- For each Research Initiative, the seed capital amount of INR 2,00,000 was disbursed in two instalments.

Disbursement amount	**Timeline**
INR 1,00,000 – First Instalment	Within 15 days of selection
INR 1,00,000 – Second Instalment	Disbursement of the second instalment only upon submission of UC and Progress Report of the first instalment.

The Winning Projects:

1. Pilot Operation of **'Waste to Protein Facility'** by Mr. Jongpong Chiten and Dr. Akumtoshi Lkr at Bank Colony, Dimapur District.

2. **'SUSDesi'** project by implementing partner Living for Environment on **waste segregation and management** at Lake View area, Dimapur District.

3. **'Inculcating Sustainable Consciousness'** in New Creation School, Sekruzu village, Phek District by implementing partner- Medemer Fund on **promoting vocational skills and inspiring sustainable behavior change**.

PROJECT 1: PILOT OPERATION OF A WASTE-TO-PROTEIN TREATMENT FACILITY

About the project:

Under this pilot project, a breeding facility for rearing the Black Soldier Fly (BSF) is set up at Bank Colony, Dimapur, to test the Black Soldier Fly Larvae (BSFL) process on various organic waste streams and thus determine the feasibility of BSF farming in Nagaland as a means for sustainable organic waste treatment i.e., waste reduction and waste transformation into valuable products (animal feed protein, and bio-fertilizer)

Objective:

- To develop a nature-based solution to waste management, and feedstock and fertilizer production
- To introduce a solution that is completely circular and carbon negative, diverting waste away from landfills and sequestering carbon in soils through eco-friendly fertilizer.

Target Area:

Bank Colony, Dimapur, Nagaland

BSFL Bio Waste Conversion Process/Methods:

Pre-processing

Pre-processing techniques	Rough sorting, waste particle size reduction through shredding, weighting, and, if required, dewatering via a passive dewatering system consisting of a bucket in which a cloth bag filled with the waste is placed.

Waste treatment

Configuration	Individual trays can be handled manually. To save space, they are stacked upon bamboo racks with spaces in between for ventilation to allow airflow.
Feeding regime	Incremental: 3 feedings of equal amounts on the 1st, 5th, and 8th day of treatment.
Larvae feeding period	15 days

Harvesting and post-treatment

Harvesting	Manual harvesting using flat screens, collection buckets, and strainer spoons.
Sanitization	The harvested larvae are placed in a cocopeat for one night to make them empty their guts.
Post-processing	● Larvae harvested are dried and processed using conventional equipment. ● Frass is dried and processed into organic fertilizer.

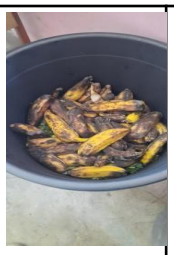
Rearing

Egg production	• The first batch of BSF eggs was collected outdoors on the project site in Bank Colony, Dimapur. Fermented jackfruit peels were the attractant for BSF to attract and cut pieces of corrugated cardboard were placed on top for laying eggs. BSFL rearing started with eggs collected from 5 female BSF. • Mating and oviposition occur in netted cages. Eggs laid by females on corrugated cardboard or wood media are harvested manually and placed above a container filled with a mixture of wheat bran and water to hatch.
Young larvae production	• Neonate larvae are kept for 5 days in the nursery. • Larvae reared in small batches in trays of food waste.
Colony perpetuation	Young larvae are kept in the rearing unit to maintain continuous production. A self-harvesting system is used to collect pre-pupae which are placed in dark cages to pupate using artificial light.

Outcome:

Conducted research on the BSF life cycle in the local environment of Nagaland, effective breeding methods, and possibilities of waste management with BSF. The feasibility of an efficient food waste solution is tested in a small-scale production facility in Dimapur.

The project has successfully demonstrated the benefits of using BSF to reduce food waste and has determined the feasibility of BSF farming in Nagaland as a means for sustainable food waste treatment i.e. waste transformation into valuable products (animal feed protein, and bio-fertilizers).

				
202kg organic waste processed with BSFL	1.5kg BSFL harvested	19.37kg of compost	87gm BSF eggs harvested	500kg kitchen waste processed in 20 HHs.

A glimpse of the project activities:

BSF feeding on the organic waste

Breeding facility for rearing the BSF

PROJECT 2: SUSTAINABLE DESIGN (SuSDesi)

About the project:

SusDesi project was devised to create sustainable ways of tackling the waste disposal dilemma and to pave the way for other innovative solutions catered to the needs of the community to address waste management by directly involving the community. The project aims at building a sustainable community for a better future with community participation on the principles of *'learn, unlearn, and relearn'.*

Objectives:

- To set up a sustainable waste management system in conformity with the existing rules.
- To build a sustainable community that is well-informed and responsible.

Target Area:

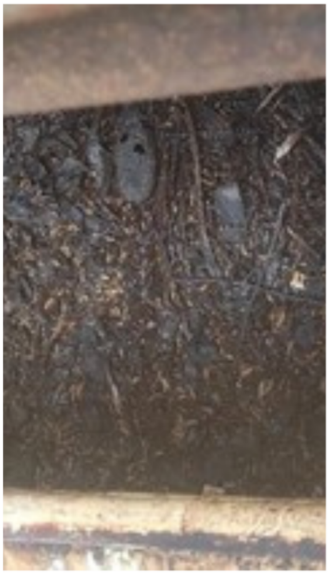
Lake View Colony (also known as Naga Cemetery), one of the 96 colonies within the Dimapur Municipal area was selected as the project area.

Outcome:

- Visibly Cleaner Environment
- Two of the three community receptacles have been closed.
- Accurate data on population, households, commercial establishments, educational institutions, etc., along with maps have been collected
- Sensitized 393 HHs and 25 CEs in the Community through Door-to-Door Campaign on waste management practices.
- For the door-to-door waste collection system and composting, the residents are provided with a systematic door-to-door waste collection system.
- Waste Generation Data & HH practicing segregation: Target areas' waste generation data: 713. 3 Kgs per day; Wet waste: 172.7 Kgs; Dry Waste: 148.4 Kgs; Mixed Waste: 392.2 Kgs; Amount of waste salvaged: 19.5 Kgs.; Per capita waste generation data: approx. 0.407 Kg per person.; HHs practising segregation: 124 HH; CEs practicing segregation: 6 CEs
- MRF has been set up to store recyclables.
- Number of Households composting wet waste: 8 Households
- Provided employment avenues to three unemployed youths from the target area.
- The target area, viz Lake View Colony was awarded the "Cleanest Colony" in Dimapur City under the small colony category in the "Cleanest Colony Competition 2021" organized by Dimapur Municipal Council, on December 17, 2021.

A glimpse of the project activities:

A material recovery facility for recyclable and non-recyclable waste has also been set up in the community under the SusDesi project. As a result, two community waste dumping sites have been closed in the area



Organic waste is segregated at the household level and collected door-to-door by the SusDesi team. Later converted to compost through the vermicomposting method.

PROJECT 3: INCULCATE SUSTAINABLE CONSCIOUSNESS

'Inculcate Sustainable Consciousness' was devised to train both teachers and students to optimally utilize locally available resources and also to become knowledge partners to tutor the teacher's modern method of teaching at New Creation School located at Sekruzu village of Phek district.

This project is implemented as an innovative solution for addressing the on-ground specific challenges which will contribute to the achievement of the SDGs.

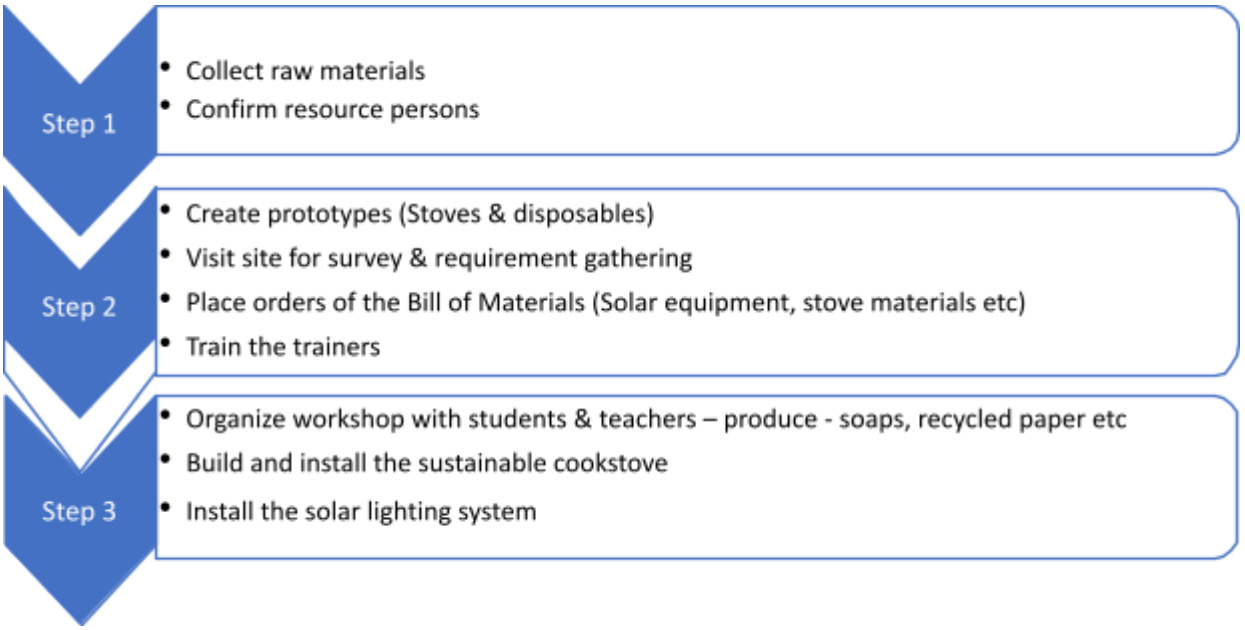
Objectives

- Address SDG 6: The group will train students to make soap using natural ingredients. The soap produced by the students can be used in the school toilets and by the students in their homes.
- Address SDG 7: Use sustainable energy by harnessing solar energy to provide electricity for the students in their hostels, library, and toilets.
- Address SDG 12: Responsible Consumption and Production using sustainable cookstoves. In addition, train the students to make bamboo toothbrushes, and recyclable seed paper thereby developing a conscience towards ensuring sustainable consumption and production patterns.

Target Area

New Creation School located in Sekrezu village, Phek district was started in 2013, in one of the educationally underdeveloped and lesser progressive regions of the state. The school has 250 students and focuses on practical education with a special emphasis on learning indigenous traditional artistry. Students from neighbouring villages come to study in this school wherein many students live in the school hostel. The school and hostel premises lack basic facilities including electricity.

Implementation Mode:



Outcome

Activity	Outcome
Soap making	Replacing commercial soap with organic soap on the school campus. The soaps are being used by the students and teachers in the toilets and for washing clothes. The recycled seed paper is being used as bookmarks and writing pads.
Recycled Seed Paper	Make use of old books to make recycled seed paper and reuse it as bookmarks, wrapping papers, charts, etc
Solar Electricity	Off-grid generation harnessing solar electricity locally within the school. The students in the hostels can study under solar lighting. During exams, the printing of question papers is no longer a problem. The chapel can now use a sound system.
Bamboo Toothbrush	Replacing commercial plastic-based toothbrushes.
Sustainable cookstove	More efficient, less smoke, and reduced firewood consumption.

The school now has access to electricity which has helped improve the quality of life and impart education to the children. The students can now study and eat dinner under solar light in the hostels and going to the toilets at night is no longer a problem. During exams, the school would face problems printing out question papers due to the non-availability of electricity but now with solar power being installed, the school reported that this problem is eliminated.

The training on soaps has proved beneficial as the students and teachers now use the soaps they made themselves in the toilets and hostels to wash clothes and keep themselves clean. The recycled seed papers made from used books have also been put to use as they made bookmarks with them. Replacing the rural fireplace with a sustainable cookstove in the hostel kitchen, the amount of cooking time has been reduced, and firewood consumption is also less.

A glimpse of the project activities:

Recyclable seed paper making

Making of Bamboo Toothbrush

Off-grid solar energy system

MEDIA COVERAGE LINKS:

1. SDGCC Planning & Coordination Department 'SDG Innovation Participatory Action Research Initiative' | DIPR Nagaland-Department of Information & Public Relations, Nagaland
2. Results of the 'SDG Innovation Participatory Action Research Initiative' | DIPR Nagaland-Department of Information & Public Relations, Nagaland
3. Nagaland | Sustainable Development Goal (SDG) Innovation Participatory Action Research Initiative – KRC TIMES
4. SDGCC Invites Innovative Project Proposals - Nagaland Page
5. SDGCC inspects 'SusDesi' project | Nagaland Post