Climate Resilient Agricultural Innovation in Cox's Bazar

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Initiative Details

Working area: Jalia Palong Union, Camp 16 and 20 Ext in Ukhiya, Cox's Bazar

Funded by: **DANIDA** (During June 2022-May 2025)

JAC Trust (During January 2024-December 2025)

In association with "CARE Denmark" and "CARE Bangladesh"

Target group: Youth, women, men and livelihood group

Key interventions:

1. Facilitating community lead innovation for climate risk mitigation and adaptation in livelihood practices;
2. Community lead Climate Vulnerability and Capacity Analysis and Climate Adaptation Action Plan development;
3. Youth engagement in climate change awareness and innovative idea generation and Implementation;
4. Livelihood group formation and providing backstopping support for implementing climate adaptive livelihood practices.

Innovation Context

1. Livelihood is being impacted by erratic pattern of rainfall and seasonal shifting;
2. Impacted water-shed resulted non-functional flow of water in streams and canals;
3. Host community & Refugee competition over the forest resources;
4. Upland deforestation resulted siltation of streams and canals-loss of crops due to flash flood in monsoon;
5. Loss of vegetation cover in hill is causing landslides and loss of life and livelihood
6. Siltation over agricultural land resulted reduced rate of agricultural production;
7. The un-planned installation of shallow and deep tube wells also gratified the underground water table of the locality;
8. Water scarcity has increased the cost for irrigation-increased cost for agricultural production.

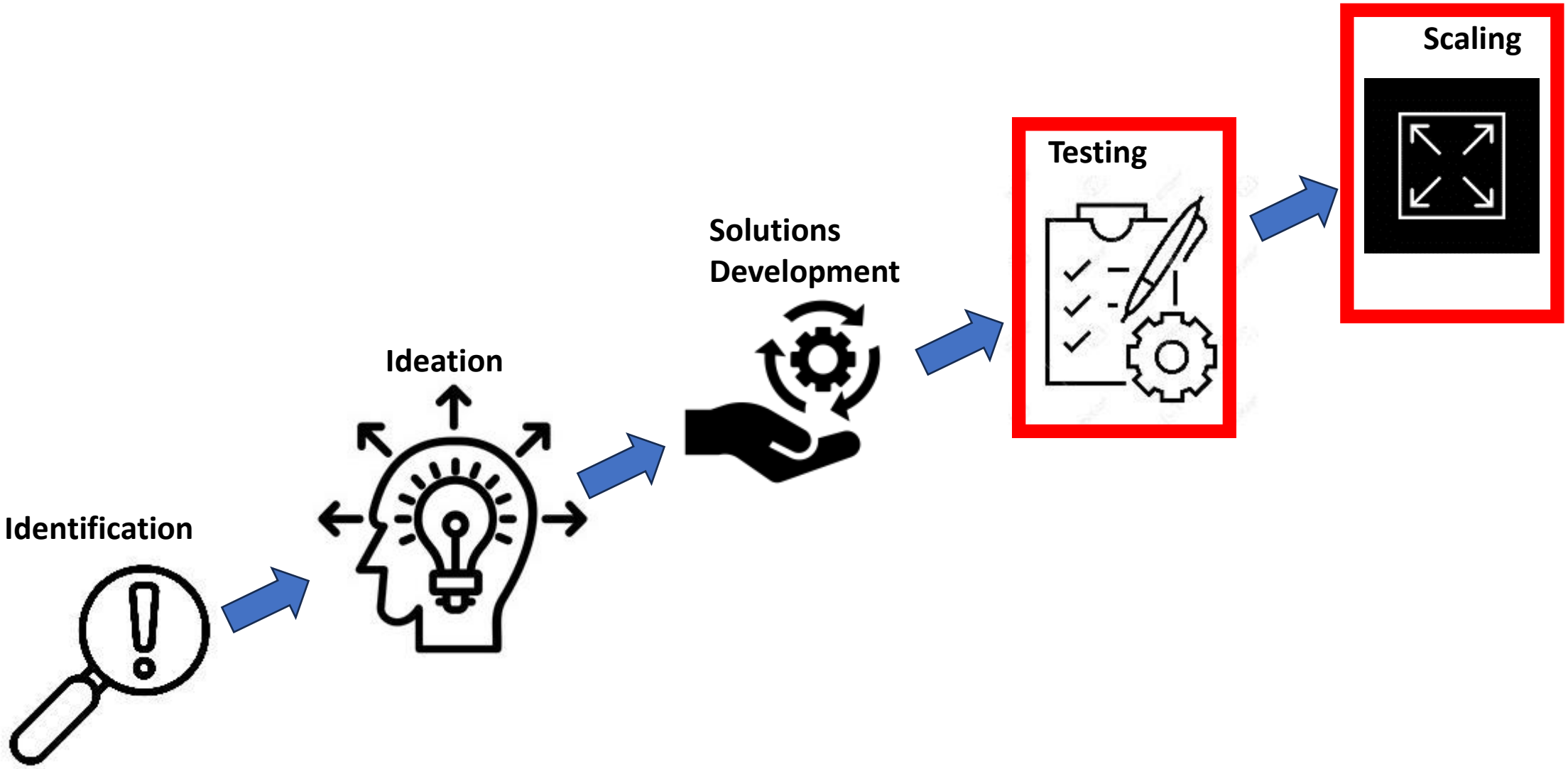
Relevance to FSS Objectives

COX'S BAZAR FOOD SECURITY SECTOR

SO2: Support the food security resilience of Rohingya refugees/FDMNs through **climate-sensitive food production** in a stressed environment with early warning and early actions.

SO3: Strengthen household food security and nutrition of the host communities through **climate smart agricultural production**, agro-processing, market linkages, resilient income opportunities, and disaster response preparedness with early actions.

Innovation Development Process



Local Innovation: Space Intensive Agriculture

Hydroponics

A technique of Vertical gardening with minimal land and water use

A technique of growing plants/crop cultivation using a water-based nutrient solution rather than soil, and can include an aggregate substrate, or growing media, such as verme compost, coco peat.

Structure: 16 ft X 14 bamboo shed with 2 rack in 6+6 formation Total 24 bamboos 12 ft long
Water supply: 250 L drum with 12V DC motor use with 40W solar panel.
Nutrient supply: Solution A and B mix with normal water (1L A + 1L B mix with 200 L water)

Local Innovation: Space intensive agriculture

Hydroponic 2 (PVC structure): Investment: BDT 35960, Return 2 times crop: BDT 2575.

Cup/plot preparation for seedling: Coco peat : Verme compost = 1:1
Structure: 16 ft X 13 bamboo shed with 1 rack in 6+6 formation. Total 12 uPVC pipe 10 ft long.
Water supply: 250 L drum with 12V DC motor use with 40W solar panel.
Nutrient supply: Solution A and B mix with normal water (1L A + 1L B mix with 200 L water).
Every 40 plant need 1L A & 1L B solution to complete full cycle.

Innovation for Water Scarcity: Drip irrigation

Place: Chakma Para, Jalia Palong; Total 10 bed along with 376 drip points

2nd Drip irrigation Testing Cost for 8 decimal lands with 600 seedlings:

BDT 18,995

(Including stationery, setup & labour cost)

Profit: 1st Crop cultivation BDT 7520

2nd Crop- Ongoing

Innovation for Water Scarcity: Drip irrigation

Place: Madarbonia, Jalia Palong; Total 9 bed along with 311 drip points

1st Drip irrigation Testing Cost for 10 decimal lands with 400 seedlings:

BDT 28970

(Including stationery, setup & labour cost)

Profit: 1st Crop cultivation BDT 15051

2nd Crop Cultivation BDT 810

3rd Crop Cultivation BDT 5010

Innovation: Organic Sack cultivation at Homestead level

Organic Sack cultivation: *Total reached 338 HHs in host community*






Innovation: Organic Sack cultivation at Homestead level

Sack bag Ginger cultivation: *Total reached 105 HHs in host*

Investment per decimal land using jute bag: BDT6200
Expected return: BDT 10500

Innovation: Organic Sack cultivation at Homestead level

Sack gardening using kitchen residual:

Total reached 205 HHs in host

Investment per HH using Jute bag: BDT 920

Return from 1st cropping: BDT 2350

Innovation: Homestead Adaptive Cultivation in Camp 16

Homestead adaptive cultivation:

Total reached 108 HHs in Camp 16

Vertical cultivation:

Total reached 90 HHs

Hanging cultivation:

Total reached 45 HHs

Investment per HH GEO bag: BDT 1020,

Return from 1st cropping: BDT 2350

Further Enhancement of Innovation through youth engagement

Rain Water Harvesting for the drip irrigation of field and homestead crops

Total 42 households in 25 RWH tanks were involved in rainwater harvesting for irrigation system

Further Enhancement of Innovation through youth engagement

Vermicompost plant for organic cultivation

Further Enhancement of Innovation through youth engagement

Mushroom cultivation in the homestead

Lessons and Challenges

- Drip and PVC hydroponic initial set-up cost is high but one time installation use 5-7 years long;
- Hydroponic bamboos were drying up and cracking in the field due to excessive heat;
- Maintain regular solution water flow to the bamboos in racks and pH & EC check is a challenging task for the community;
- PVC pipe hydroponic low cost and easily maintain than bamboos and need half of solution for full cycle;
- Scarcity of water sources near the drip fields; a rainwater reservoir could be a possible solution.
- Drip irrigation is not cost effective for small scale cultivation;

Lessons and Challenges

- Sack cultivation in homestead fallow land is a popular and effective cultivation method and easy to maintain by the farmers;
- Bottle drip irrigation through recycled plastic bottle – A cost effective irrigation method at HHs level;
- Aid dependency mind-set up exhibit active community participation;
- Youth group are very much interested and punctual in participation in session, training and social awareness building.


Now It’s YOUR TURN…….
Thanks
Any Questions,
Queries,……
Any Comments,
Suggestions,……