

Innovation Facility Installation of Demonstration Ram Pump

Background and objectives

Project period : September 2020 – July 2023

Project Location:

1. Prek Leap National Institute of Agriculture.
2. 6th Village Treang Trayuerng Commune Phnum Sruch district Kampong Sepur province.

Fund by: Cambodia Climate Change Alliance 3 (CCCA 3)

Implementation by: Prek Leap National Institute of Agriculture (NIA)

Project Partner Contribution: K-Box Solution

Overall Objective

1. Replace diesel pumps with low-carbon hydraulic pumps over 2 sites in Cambodia.
2. Increase the knowledge of students on hydraulic ram pumps as an alternative irrigation technique.

Outcome 1

To build a hydraulic pump system for farming purposes.

Outcome 2

To build hydraulic pump demonstration system for educational purpose at NIA.

Approaches and technology used

- Calculation the CO2 emission based on the consumption of a typical Honda WB30XT diesel pump’s factory provider data (One litre of diesel creates 2.68kg of CO2).
- The training methodology was interactive as the trainers ensured that knowledge was not only disseminated but accurately perceived and understood by the participants.

Results

During the project:

- 404 students (target 400 students) and 10 teachers have been trained. The students who joined the training passed the test 81.76% (the target is 80%).
- The large system has supplied water for irrigation 17 hectares and 20 households.
- This system also contributes greenhouse gas emission and since the system work well, it can reduce 1.22 tons of CO2 per months base on the capacity of the available ram pump. We can calculate that CO2 14.64 tons will be reduced every year.



Scaling up

If used across Cambodia				
Water demand				
Number of hectares	Number of trees	m3 per tree per week	Total m3 per week	Total m3 per year
977,380.00	97,738,000.00	1.40	136,833,200.00	7,115,326,400.00

Consumption using fossil fuel					
Height to lift the water in lm	m3 of water lifted	Liters of diesel	kWh	Diesel cost	Electrical cost
30.00	7,115,326,400.00	108,864,493.92	698,013,519.84	\$ 103,421,269.22	\$ 129,132,501.17

CO2 emission				
Kg of CO2 per litre of diesel	Kg of CO2 per liter of gasoline	Kg of CO2 per liter of LPG	Diesel consumption	Tons of CO2
2.68	2.31	1.51	108,864,493.92	291,756.84

After the successful completion of Phases 1 and 2 of these pilot projects, we aim to put in place measures to increase our ability to scale-up our project and implement across Cambodia. Apart from scaling up the system to other parts of the country, NIA will integrate what to be learned from the project into its training of students.

