White Paper

Mitigation

Adaptation

SUMMARY FOR POLICY MAKERS

WHITE PAPER
Climate Mitigation and Adaptation with Eco-Village Development (EVD) Solutions in South Asia

1. edition, May 2018

IDEA Grameen Shakti inseda wafd INFORSE-South ASIA International Network for Sustainable Energy CANSA South Asia dib

White Paper on Climate Mitigation and Adaption with Eco-Village Development (EVD) Solutions in South Asia

SUMMARY FOR POLICY MAKERS

May 2018

Author:
Gunnar Boye Olesen, International Network for Sustainable Energy (INFORSE)

Main contributors:

- Grameen Shakti, Bangladesh, att. M. Mahmodul Hasan
- Integrated Sustainable Energy and Ecological Development Association (INSEDA), India, att. Jeebanjyoti Mohanty
- Centre for Rural Technologies, Nepal (CRT/N), att. Shovana Maharjan
- IDEA, Sri Lanka, att. Dumindu Herath
- Climate Action Network South Asia (CANSA), Santosh Patnaik
- International Network for Sustainable Energy (INFORSE and INFORSE South Asia)

This publication was developed as part of the project ”Advocating for upscaling local climate solutions as Eco-Village Development as a mean to strengthen pro-poor climate Agenda in South Asia”, coordinated by DIB, Denmark and supported by the Climate and Environment Fund of Civil Society in Development (CISU), Denmark. Main partners are those listed above.

The author would also like to thank contributions to the work, including to identify relevant literature and make calculations, from *Kavita Myles, INSEDA / INFORSE South Asia, Jessica Brugmans, INFORSE, and Max Vittrup Jensen, Hel-Max Miljøkonsult.*

Read more on the project and download the full report and other publications from http://inforse.org/asia/EVD.htm

Summary for Policy Makers

This report analyses climate change mitigation effects of Eco-Village Development (EVD) solutions that are being implemented and promoted by a number of grassroots organisations to help villagers in South Asia achieve climate resilient, sustainable development. Of the solutions promoted within the EVD concept and projects, this report presents analysis of six that are estimated to be of the most importance on a regional scale for climate mitigation and adaptation. Other solutions can be more important locally, depending in the specific local conditions.

The six selected solutions are: improved cookstoves, household biogas plants, solar home systems, solar mini and micro grids, solar drying, and organic farming including composting.
This report analyses the greenhouse emission reductions (climate change mitigation) that can be achieved on household and village level.

The analysis covers all substantial greenhouse emission that contributors to the report have been able to identify and quantify. Also adaptation benefits are identified, but generally not quantified.

The following table gives an overview of analysis and indication of results, technology by technology.

Solution	Mitigation type	Mitigation importance*	Adaptation type	Analysed in this report
Improved Cookstove (ICS)	Reduces emissions of cooking, CO_2 and other emissions 1-3 tons CO_2e pr. family pr. year	High	Not assessed (n.a.)	Mitigation
Large ICS for Rural Household Industries	Reduces emissions of household industries, CO_2 and other emissions	Medium	n.a.	Mitigation mentioned under ICS
Household biogas	Reduces emission of cooking and in agriculture 1 - 4 tons CO_2e pr. family pr. year	High	Soil improvement	Mitigation
Solar light in homes	Reduces emissions of CO_2 from kerosene and others, typical 0.34 tons pr. family pr, yea	High	Provides light during cyclones	Mitigation Adaptation
Solar and hydro micro and mini grids	Reduces emissions of CO_2 from electricity and diesel engines, typical 0.7 tons pr. family pr. year	Medium	n.a.	Mitigation
Solar dryer	Replaces electric and fossil fuel drying, reducing emissions of CO_2, typically 1.1 tons pr. year,	Medium	Preservation of food in changing weather	Mitigation Adaptation

Organic farming & gardening Composting	Replace N-fertiliser that has greenhouse emission in production Increases soil carbon and reduces CO_2 emissions from agriculture	Medium - Small	Improve soil for moisture retention- crop rotation for more stable yield	Mitigation Adaptation

On village level the results of the analysis are:

- For an example village of 100 households taking up the selected EVD solutions, emissions can be reduced by 400 - 500 tons of CO_2 compared with a baseline with continued traditional cooking and light, electricity from kerosene, diesel or Indian central power grid.
- In two examples, based on real villages, but smaller (50 and 70 families), the reductions with EVD solutions are calculated to respectively 520 and 113 ton CO_2e/year for the entire village.

The most important mitigation benefits and co-benefits come from improvements of cooking solutions. Of these, biogas shows the highest reductions. Second in importance for mitigation is household and village scale power with renewable energy.

Some of the emission reductions in the examples are recognised internationally today and are eligible for support for emission reductions with Clean Development Mechanism (CDM), Gold Standard and other such emissions reductions projects. This is particularly true of CO_2 emission reductions from improved cooking and introduction of solar home systems. The recognised reductions represent about half the reductions that we have identified in two examples. The main reason for the higher emission reductions identified in our analysis than in CDM methodology is because we include reductions of all greenhouse emissions, including black carbon emissions. This makes a considerable difference for reductions of emissions with improved cooking solutions. Another difference is because we include solutions that are normally not covered by CDM projects, in particular solar dryers.

Importantly, the report shows that there are significant verifiable and cumulative climate benefits when combining the solutions used in the EVD Model. This includes mitigation as well as adaptation benefits.