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IMPROVED COOK STOVE PROGRAMME LAO PDR

Improving the health of households in Lao PDR through low GHG-emission cook stoves

The project facilitated the adoption of 130 000 improved cook stoves (ICS), cutting greenhouse gas (GHG) emissions by 150 000 tonnes

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The Challenge

Lao PDR is a landlocked country in South East Asia with a population of 6.5 million people. 67% of its population live in rural areas. The majority of the population derive their livelihood from agriculture which accounts for more than half of the country's gross domestic product (GDP). Most of Lao low-income population, both in the rural and urban areas, depend primarily on wood and charcoal for their cooking and heating needs. According to a 2011 report, cooking fuel accounts for 70% of the nation's overall energy consumption. This high dependence on biomass resources degrades the local environment, requires considerable time for fuel collection, is costly, and creates indoor air pollution that harms people's health. In addition, the burning of coal and wood contributes considerably to the greenhouse gas (GHG) emission problem. The project Improved Cook Stove (ICS) Programme Lao PDR identified the main bottleneck in the ICS supply side while the demand side showed a progressive trend. The project assisted ICS producers to meet quality standards and ensure a stable supply.

Objective

The project *Improved Cook Stove (ICS) Programme Lao PDR* sought to contribute towards poverty alleviation through the development of a sustainable supply chain of cleaner and fuel efficient cook stoves. It aimed at making ICS dominate 50% of the cook stove market share, and targeted consumers in five provinces for better awareness and access to purchase ICS, as an affordable and high quality alternative to the traditional cook stoves. The project aimed at the following results:

- For 15 small- and medium-sized stove producers to produce 100 000 ICS sustainably;
- 150 SME retailers to promote ICS;
- Lao Women's Union to assume its role as an effective promotional partner;
- Improved access to the clean and fuel efficient cook stove;
- Five testing agencies operational;
- A national standard for stoves endorsed;
- A multi-stakeholder partnership established.

TARGET GROUPS

- High-quality cook stove producers (15 producers with large market shares)
- Cook stove retailers (around 150 in five target provinces)
- Testing Agency / Provincial Department of Science and Technology
- Lao Women's Union with 600 000 members

Activities / Strategy

Ensuring Quality of Products

Through capacity building workshops, ICS producers were trained to meet certain quality standards in producing improved cook stoves. Not only was the efficiency improved, but the producers had a better product design to increase competitiveness against other less efficient cook stoves. Over the course of four years, 21 producers were trained and enabled to produce high quality ICS that meets the standards. In ensuring quality, the project worked with Lao Department of Science and Technology (DST) to develop ICS quality standards and labelling. DST staff received hands-on training to assume a long-term role as the ICS testing agency, ensuring proper testing of the stoves for quality control and assurance, and to certify producers that are allowed labelling of the ICS for end-users/consumers recognition. Producers receive certification only after ICS meet the physical design parameters and pass the efficiency tests (above 35% efficiency) conducted at the laboratory under the Ministry of Science and Technology.

Creating Market Demand

The project also worked with retailers to deepen knowledge of the labelled ICS with a particular focus on improving their knowledge of the full range of benefits (cost, time savings, environmental) that accrue to consumers. For instance, cooks can save 30 minutes of cooking time per day when using ICS compared to traditional stoves. The knowledge was integrated in the training and coaching to enhance marketing skills and in the promotional materials and equipment to help retailers meet sales quotas.

Consumer Promotion Campaign

Based on Customer Surveys conducted, it is established that 90% of cooks are women. End-user data was collected from purchasers of the cook stoves via coupons for an annual lucky draw. Based on the coupons collected, approximately 80% of the ICS were purchased by women and 20% by men. To ensure that ICS promotions reached the majority of its target market, the project engaged the Lao Women's Union, a mass organisation with presence in all Lao villages, to support in the awareness campaign. The ICS's economic as well as the social advantages were explained during ICS demonstrations at markets and festivals. There was a triple focus of the campaign: to promote purchases of labelled ICS by highlighting its economic merits; explaining the benefits that arose from time savings when cooking (a key point according to the women interviewed); and to get retailers interested to sell ICS.

Scaling-up Strategy

Establishing Public/Private/Civic Partnership

The project brought together private, public and civic actors into a partnership:

1. governmental agencies provided support in social promotion and consumer outreach as well as in the implementation of national quality standards; the Lao Women's Union organised 173 demonstrations throughout the project, and executed three promotional events without any monetary support from the project, which illustrates the commitment LWU have towards ensuring ICS are still promoted beyond the life of the programme;
2. civil society organisations provided technical and managerial support to stimulate the market; ICS are now sold without subsidy. Technical support, follow up services and access to finance and profitability made the cook stove producers shift to ICS.
3. private sector (producers and retailers) served as key drivers in ICS production and supply chain. Producers have access to a revolving fund set up by SNV and managed by the Association for Rural Mobilisation and Improvement (ARMI). ARMI will continue to manage it after the project as producers have communicated the benefits of the fund to other producers. For example, the ability to increase access of ICS to end users by allowing retailers to sell stoves on consignment thus increasing the quantity of ICS sold at a shop. Producers have informed the project that they are willing to pay the Testing Centres to have their stoves tested for quality and ICS labels.

Engaging with Policymakers

Partnering with the Lao Women's Union (LWU), a mass organisation under broad government auspices, with a nationwide presence, provided the opportunity to promote and enhance gender equality issues since the social benefits (time and labour savings) were accrued disproportionately to women. Engaging with the Ministry of Science and Technology at both national and provincial levels helped develop and ensure the enforcement of ICS quality assurance.

ICS production in Savannakhet

Improving Access to Finance

The project established links with financial institutions to provide credit for producers to increase ICS production. Based on interactions with ACLEDA, the largest retail bank in Cambodia that also operates in Laos and has a significant loan portfolio to SMEs, the project strengthened producers' capacity to develop medium to long-term business plans that could improve their credit eligibility. Six loans have been approved, each with a value of EUR 900, but did not continue due to lack of interest from producers. The project also worked with other banks and financial institutions to stimulate loan packages for small- and medium-sized producers, however based on the bank's limited knowledge of the industry, a majority of loan applications from smaller producers (with fewer than five employees) were rejected. Due to these barriers, SNV allocated EUR 8 500 to establish a revolving fund allowing producers an access to finance. To date, 12 producers have accessed this finance and EUR 6 300 has been borrowed, interest free and started to be paid back. Criteria to access the fund were compiled in consultation with all producers which include: an SME must produce at least 500 stoves per month, must have the ability to pay the funds back within 45 days, and must have a bank account.

> ***We considered the Improved Cook Stoves project to be very challenging, not only due to our ambitious goal of producing 100 000 stoves within four years, but also to raising awareness and encouraging people to care about climate change. Since the beginning we involved the Lao Women's Union and the Department of Science and Technology and have since been rewarded by their ownership of the project. Producers and retailers have shown similar commitment in promoting this simple, but effective method to reduce GHG emissions. Users have quickly become more confident in the efficiency of the stove and, through word of mouth, are flocking to the retailers that can't keep up with the demand! After one year, we feel we have the expertise and experience to improve even more. We believe that Improved Cook Stoves will be recognised and accepted in the society and become part of every Lao household.***
>
> *Amphone Souvannalath*
> *Project manager, NORMAI*

Results

Established the Optimal Model of Cook Stove

Detailed testing of selected design models, including production processes and dimension checking, thermal shock tests, and strength tests, were undertaken to optimise the product quality and determine the ideal dimensions for an improved cook stove. Testing results of the baseline and Improved Cook Stove (ICS) show significant differences (see illustration below). The savings on fuel range from 18% when compared to the best available stove to 39% compared to households using a cement stove. Corrective measures were taken for any quality control (QC) or quality assurance (QA) issues that arise as a result of monitoring. After the optimal model had been determined, specific protocols were prepared to define parameters for production monitoring such as schedule of monitoring visits, number of ICS to be controlled, etc. NORMAI has signed a memorandum of understanding (MoU) with each of 21 producers confirming adherence to QC and QA protocols.

An overview of the most common stoves sold in Lao PDR

Name	*Tao Payat*	*Tao Dam*	*Tao Cement*	***Improved Cook Stove***
Efficiency	*32%*	*28%*	*24%*	***39%***

Improved the Livelihood of Lao Households

Not only is the fuel saving beneficial, but also the durability of the ICS is much longer and goes up from 6 months for a regular stove to over 24 months for the ICS. Baseline stoves retail for approximately EUR 3, while the ICS price is about EUR 4 – 5, depending on the size and location. Many people are however willing to make an additional investment, as the savings in charcoal are already EUR 2 per month. This contributes to improving the households' livelihood since they can now save on cooking fuels and do not have to buy a cook stove every 6 – 12 months.

Strengthened SMEs' Capacity

A standardised training curriculum that draws on lessons learnt and materials used in the successful scale up of another EU-funded project titled 'Fuel-Wood Saving with Improved Cook Stoves in Cambodia' (2013), but adapted to the Lao context, was established. The materials focused on both the practical and theoretical aspects of cook stove production so that producers could better understand the implications of choosing and preparing raw materials and the impacts of varying production techniques and tools. The training focused on stove production and was provided to small groups of producers on an ongoing basis with the initial training having duration of two weeks. After a production start-up, the project focused on QC/QA aspects of production. Production constraints were regularly assessed and refresher training on production skills was systematically conducted or corrective measures recommended if producers did not pass QA/QC. QA/QC activities were completed on a monthly basis by the project staff and once a quarter by the Department of Science and Technology.

Promotion of cook stoves with ICS label

Established ICS Supply Chain

The main bottleneck of the cook stoves value chain was on the supply side, while the demand-side showed a progressive trend. Production-time related labour and low quality of the product were identified as main limiting factors. In response to this challenge, the project promoted faster production methods that could increase manufacture quantities by 50% and improve the quality of the cook stove production. Through a concerted technical capacity development provided by NORMAI to 21 SME stove producers, 15 have collectively produced at least 130 000 ICS by the end of the project period that comply to the specified quality standards, such as meeting the standard design parameters and have efficiency rate above 35%. Out of the 15, 12 SMEs created credible business plans and six have obtained credit totalling EUR 6 300. More than the target of 150 retailers, 1 012 retailers have participated in the ICS distribution.

Obtained Support from the Government

Three cook stove testing labs are now operational and ICS standards have been formally endorsed by the Department of Standardisation. Ministry of Energy and Mines was actively involved in the annual multi-stakeholder consultation meetings. These will contribute to the project's sustainability and further take up of improved cook stoves.

Impact in Numbers

Economic Impact

- Lao households achieved money savings of EUR 2/month. For 130 000 ICS sold during project implementation, a total saving of EUR 3 120 000 was created as households could use their ICS for 24 months.
- With a price of EUR 4.5 / ICS for 130 000 ICS, the project facilitated a total turnover at retail level of EUR 585 000.
- 12 stove producers have obtained access to the project's revolving fund to ensure business continuity beyond the project's lifetime.
- The project increased the stove production speed and productivity by introducing new moulds and better kiln management.

Environmental Impact

- Improved efficiency of cook stoves for domestic cooking reduced pressures on the environment for biomass sources.
- On average, households used at least 1.14 kg charcoal per day. Post ICS introduction, they could reduce it to 0.81 kg per day with net savings of 29% equivalent to EUR 0.07 per day per household.
- Improved kiln management lessens the environmental impact of ICS production.

Social Impacts

- Contributed to the livelihood of Lao households. Cooking with ICS reduces the duration of meal preparation, so women have more time to engage in other livelihood activities, as well as reducing family spending on fuel wood and charcoal.

Climate Benefits

- Each stove contributes to a reduction of GHG emissions approximately 0.55 tonne of CO_2-eq per year.
- Reduction of fuels that relate to GHG emissions is estimated to be 150 000 tonnes CO_2-eq for the period of 2013-2016.

Green Finance

- 12 stove producers have benefitted from increased access to green finance, six loans have been approved each with a value of about EUR 900.
- Revolving fund of EUR 8 500 was established by SNV. The 12 producers are making use of this facility with EUR 6 300 borrowed thus far.

Target Group Engagement

- SMEs engaged in project activities includes 21 producers and 1 012 retailers through capacity building which includes on-the-spot coaching, group training, multi-stakeholder meetings, exchange visits to Cambodia and peer exchanges.
- 10 additional stakeholders involved including government bodies, such as Lao Women's Union, Ministry of Energy and Mines, Ministry of Science and Technology, Inter-ministerial Taskforce on Cook Stoves.
- A producer association was established to agree on price, quality and promotion of ICS.
- Five articles in *Vientiane Times* and Lao newspaper were published; 14 stove demonstrations were held at festivals and markets.

Women's Empowerment

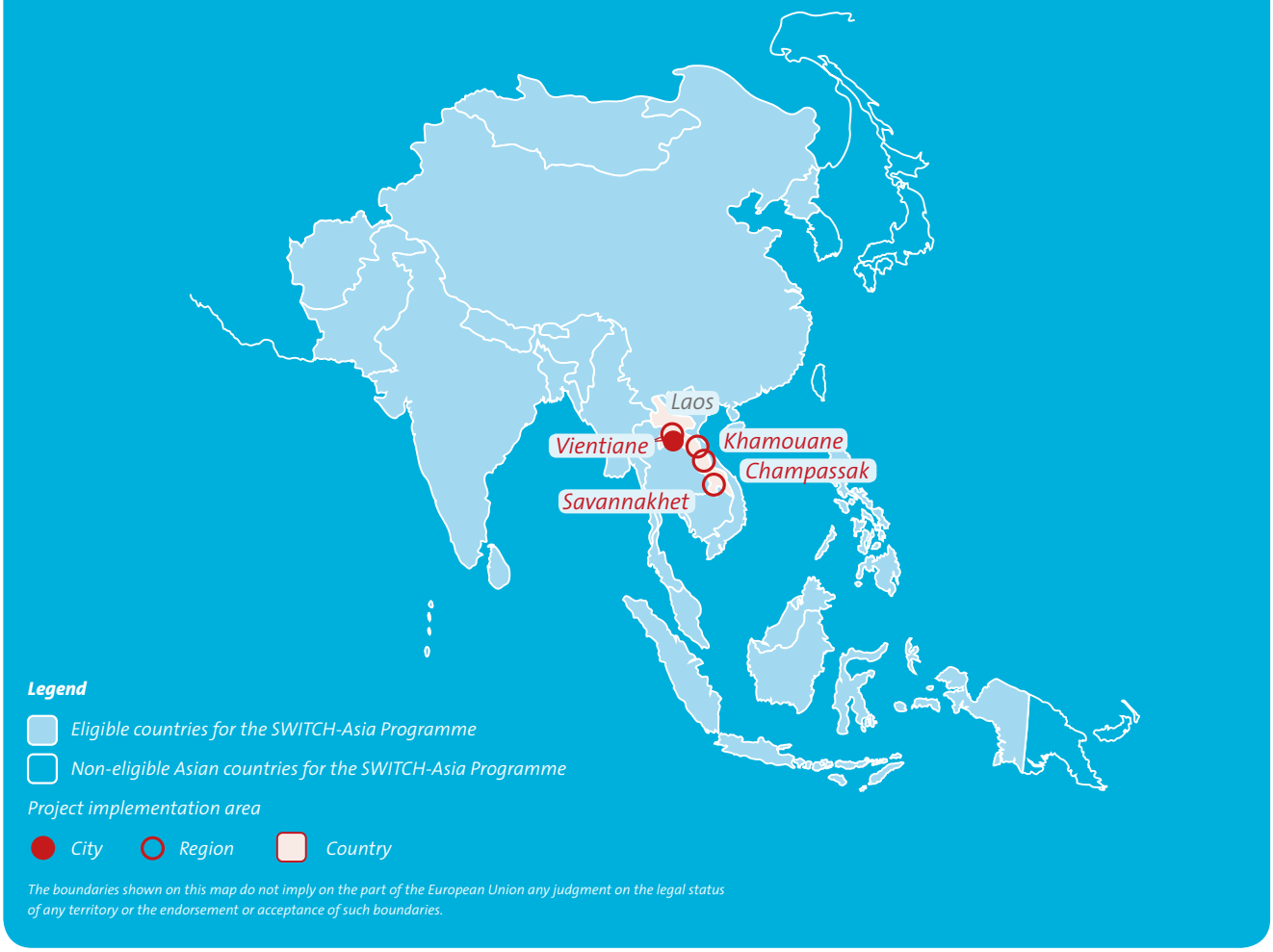
- Lao Women's Union was involved as promotional partner, conducting 173 promotional activities at festivals and markets addressing women.

Policy Development

- Actively participated in the inter-ministerial taskforce for cook stoves and advocated the development of cook stove sector.
- ICS design standards have been endorsed under the Ministry of Science and Technology, the ICS label registered under the Ministry of Industry and Commerce.
- The ICS' Mr Superman logo endorsed by the Ministry of Industry and Commerce as a legal registered trademark.

Europe-Asia Cooperation

- Organised one European-Asian event and one EU-Asia study tour in 2013.
- During 2013, the project participated in the Nexus member meeting in Singapore, the ADB bioenergy project meeting in Hanoi, the World Bank inter-ministerial taskforce meetings in Vientiane, SNV Asia internal meeting on renewable energy in Bangkok, SNV/ADB/Endev biogas workshop in Hanoi, and the Global Alliance for Clean Cookstoves (GACC) regional testing and knowledge development project (an exchange with GERES Cambodia).
- SCP knowledge transferred included an exchange of progress reports with GACC, and peer review stove testing reports from Aprovecho, Nexus and GERES.



OBJECTIVES

The overall objective was to contribute towards poverty alleviation in Lao PDR through the development of a sustainable consumption and production chain of fuel-efficient Improved Cook Stoves (ICS) which reduced the use of wood and charcoal and contributed to lowering greenhouse gas emissions.

DURATION

02/2013 – 01/2017

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

PROJECT TOTAL BUDGET

EUR 2 057 791.90
(EU contribution: 89.79%)

PROJECT CONTACT

OXFAM
Oxfam
98/8 Sithong Rd, Vientiane Capital, Lao PDR
Project Manager
Mr. Antonino Faibene
Telephone: +856 21 264 224
Email: Antonino.Faibene@oxfamnovib.nl

www.switch-asia.eu/projects/cook-stoves-programme-laos

PARTNERS

OXFAM
Oxfam Novib, Netherlands

SNV
SNV-Netherlands Development Organisation, Netherlands

NORMAI, Lao PDR

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