Good Practice *Improved Cookstoves* (GERES-Cambodia)

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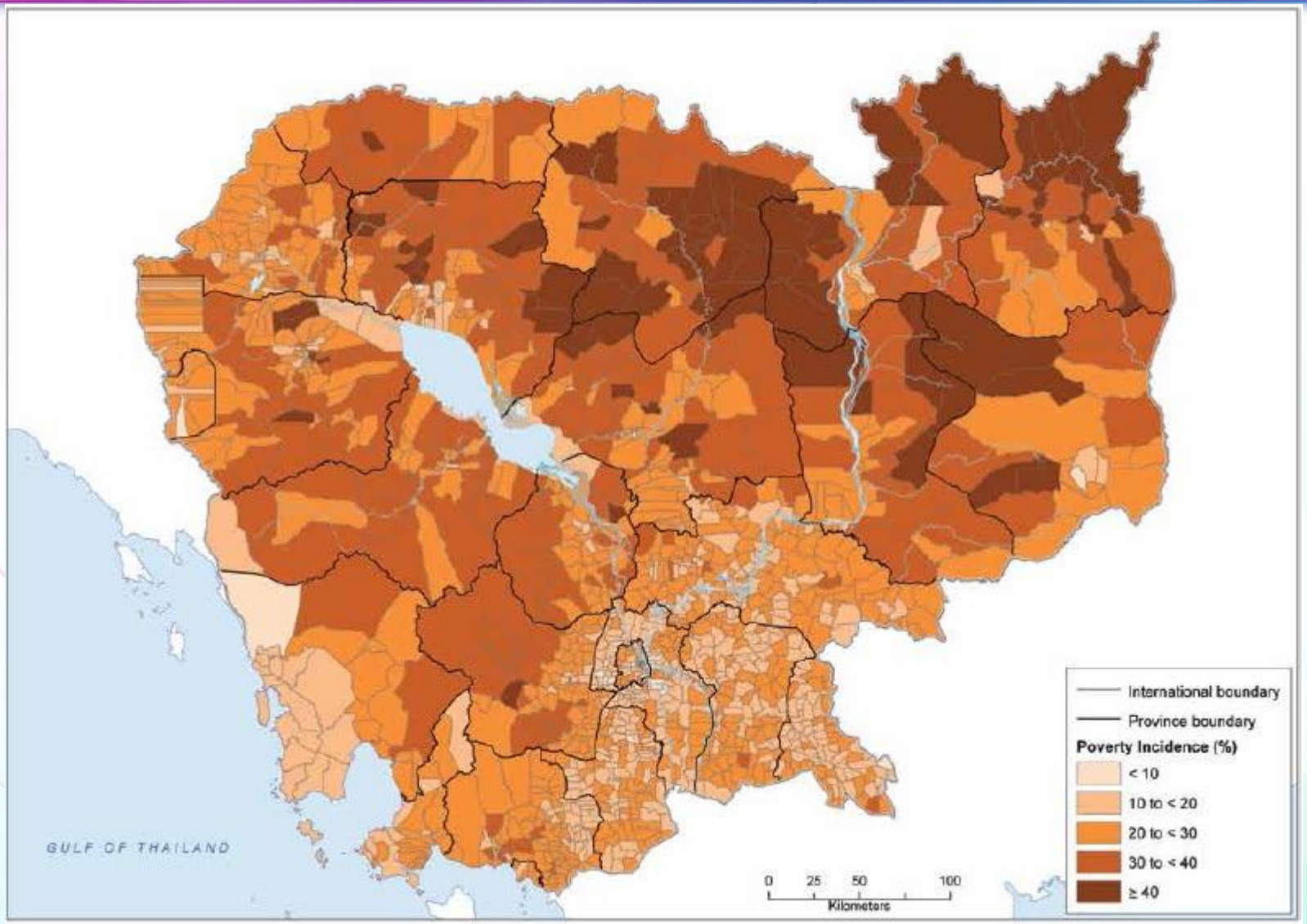
Overview of Cambodian Poverty Incidence [1]



Note: The term poverty incidence (also called the poverty headcount ratio) is used in this report to describe the percentage of poor people in a given administrative area in the reference date

NEW LAO STOVE (NLS)
AN IMPROVED COOKSTOVE FOR IMPROVED LIVES

History of Project

1996
- GERES started Cambodian Fuelwood Saving Project CFSP-1.
- First phase (1996-2001), MOE hosted in Kampong Chhnang.

2002
- CFSP-2 Large scale national dissemination of New Lao Stove (2002-2006) established in partnership with MIME.

2004
- Establishment of improved Cookstove Producers and Distributors Association of Cambodia (ICOPRODAC)

2006
- NLS project access to the voluntary carbon market
- GERES Cambodia was the first project developer to bring a stove project to voluntary carbon market.

2010
- More than 1 million stoves sold since 2002 in Cambodia.

2011
- GERES Cambodia received Global Leadership Award from PCIA in Lima, Peru for the NLS project.
- This stove project remains one of the most successful in the world, developing sustainable local entrepreneurship and local jobs.

2012
- GERES Cambodia receives the 2012 Energy Globe- National Award

Objective & Project Beneficiaries

Objective:

- *Reduce household fuel consumption and expenses*
- *Protect forest ecosystems and biodiversity*
- *Mitigate global warming by limiting greenhouse gas emissions*
- *Reduce health hazards related to indoor air quality*

Beneficiaries:

- *Cookstove producers and distributors*
- *Families that use charcoal and wood for cooking*
- *Commercial food producers and restaurants*
- *Micro and small-scale food service entrepreneurs*

Project Phases

Phase I

- **Phase I was primarily a set-up phase which elaborated stove design, trained producers and developed distribution networks.**

Phase II

- **Phase II focused on developing the commercialized distribution of the stove design.**

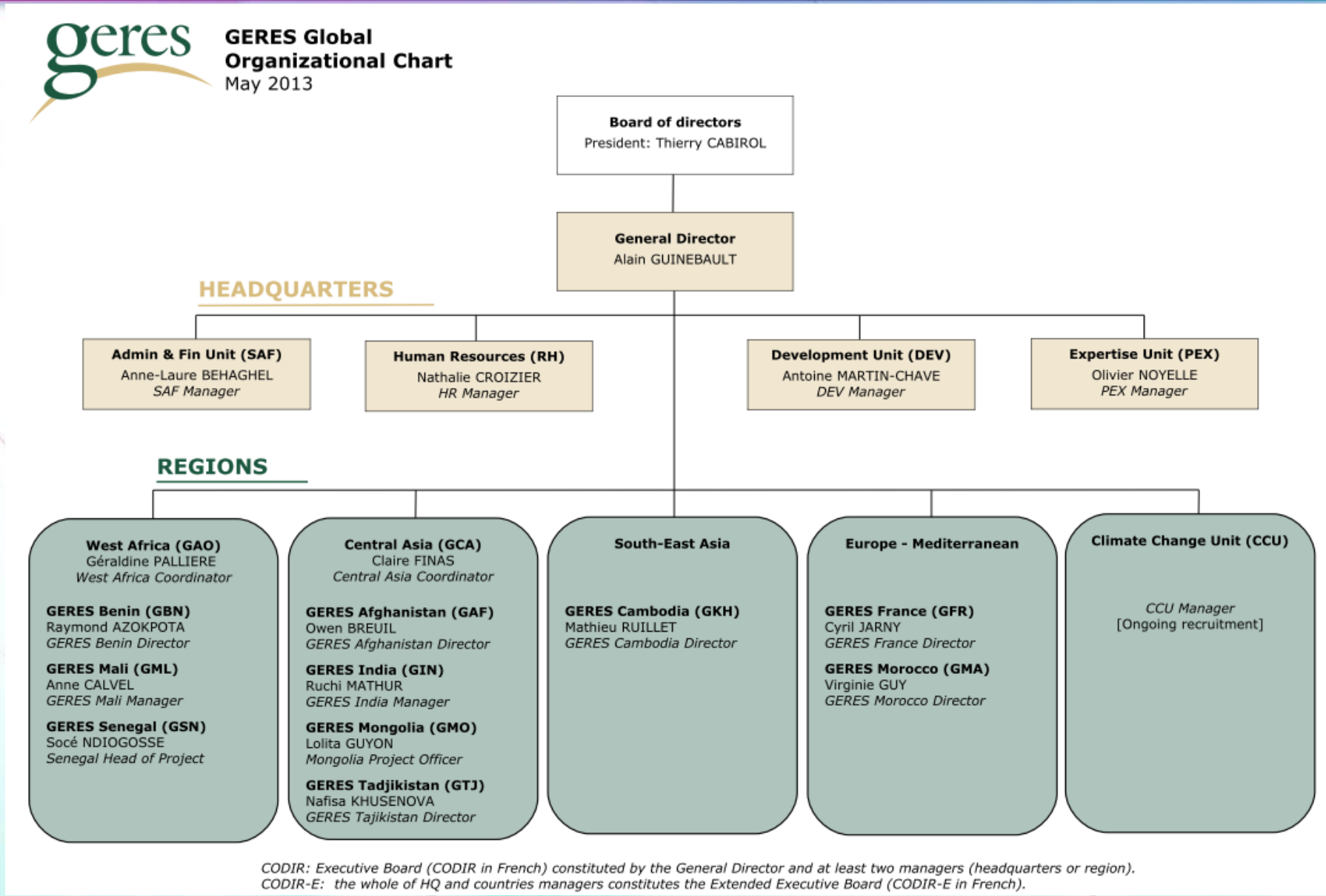
Phase III

- **Phase III involves scaling-up of the project to achieve large-scale dissemination, carbon financing, and to increase market penetration.**

Program Area of New Lao Stove

Battambang	3 producers
Siem Reap	1 producer
Kampong Cham	2 producers
Phnom Penh	4 producers
Prey Veng	1 producer
Kandal	1 producer
Takeo	1 producer
Kampot	2 producers
Kampong Chhnang	15 producers

Structure of GERES



NLS Production Steps

NLS Specification

Material:	Metal covered baked clay
Production:	Manual
Size:	25.4 cm in height, 30 cm in diameter
Pot size:	18-28 cm pot diameter
Weight:	approx. 12 Kg
Fuel type:	Charcoal
Efficiency:	29%

NLS Advantages over Traditional Lao Stove

- Low pot rests to prevent heat loss characterize the NLS. In addition, the pot rests are slanted at an incline to accommodate many sizes of pots.
- NLS grating has 37 air holes, which are good for air circulation and induce more efficient fuel-burn. The grate thickness has also been improved for more durability.
- NLS has an improved combustion chamber, which is higher than traditional cook-stove and consumes less fuel wood.
- NLS has improved insulation and a refractory liner to prevent heat loss.
- NLS has a metal sheet body cover for durability.

Sustainability of Project

- The most recent National User Survey, conducted in 2009, found that **41.7%** of of the urban/ peri-urban population use NLS (compared to **31.3%** in the 2007 National User Survey).
- The percentage of people using TLS decreased from **68.8%** in 2007 to **67.9%** in 2009. This indicates that users are not switching back to inefficient stove technologies.

Table 1. National user survey data on number/proportion of respondents using NLS [2]

	Frequency	Percent
Yes	697	41.7
No	973	58.2
Total	1670	99.9

Sustainability of Project

- NLS is accounting for an increasing proportion of total stoves produced, with a corresponding decrease in the proportion of TLS.
- This reflects increasing demand for NLS among consumers and provides further proof of the sustainability of the NLS project.

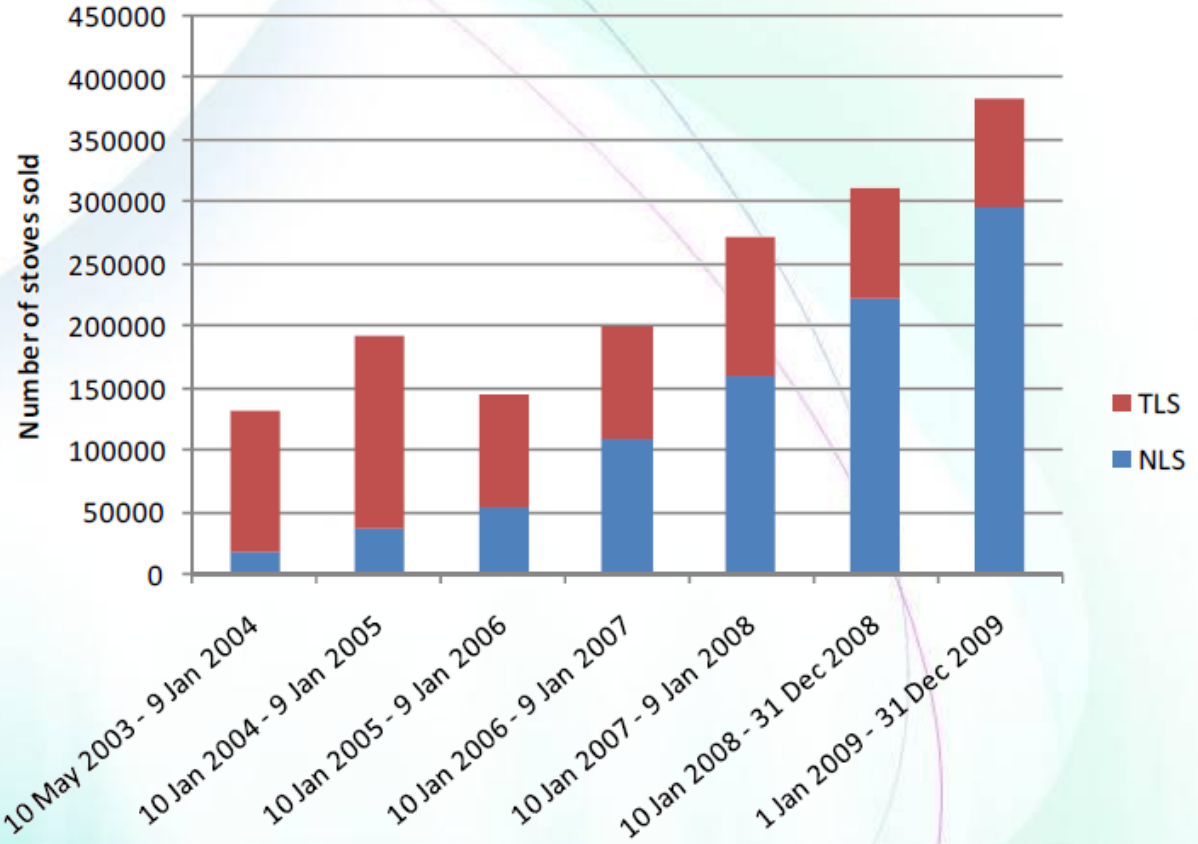


Figure 1. Number of NLS and TLS sold by producers, 2003-2009 [2]

Environmental Impacts

- NLS directly contributes to efforts to reduce unsustainable fuel wood consumption.
- NLS dissemination plays a major role in saving Fuel-wood and Charcoal.
- Over the project's lifetime, the equivalent of 3,756 ha of forest have been saved from using as Fuel-wood and charcoal production.

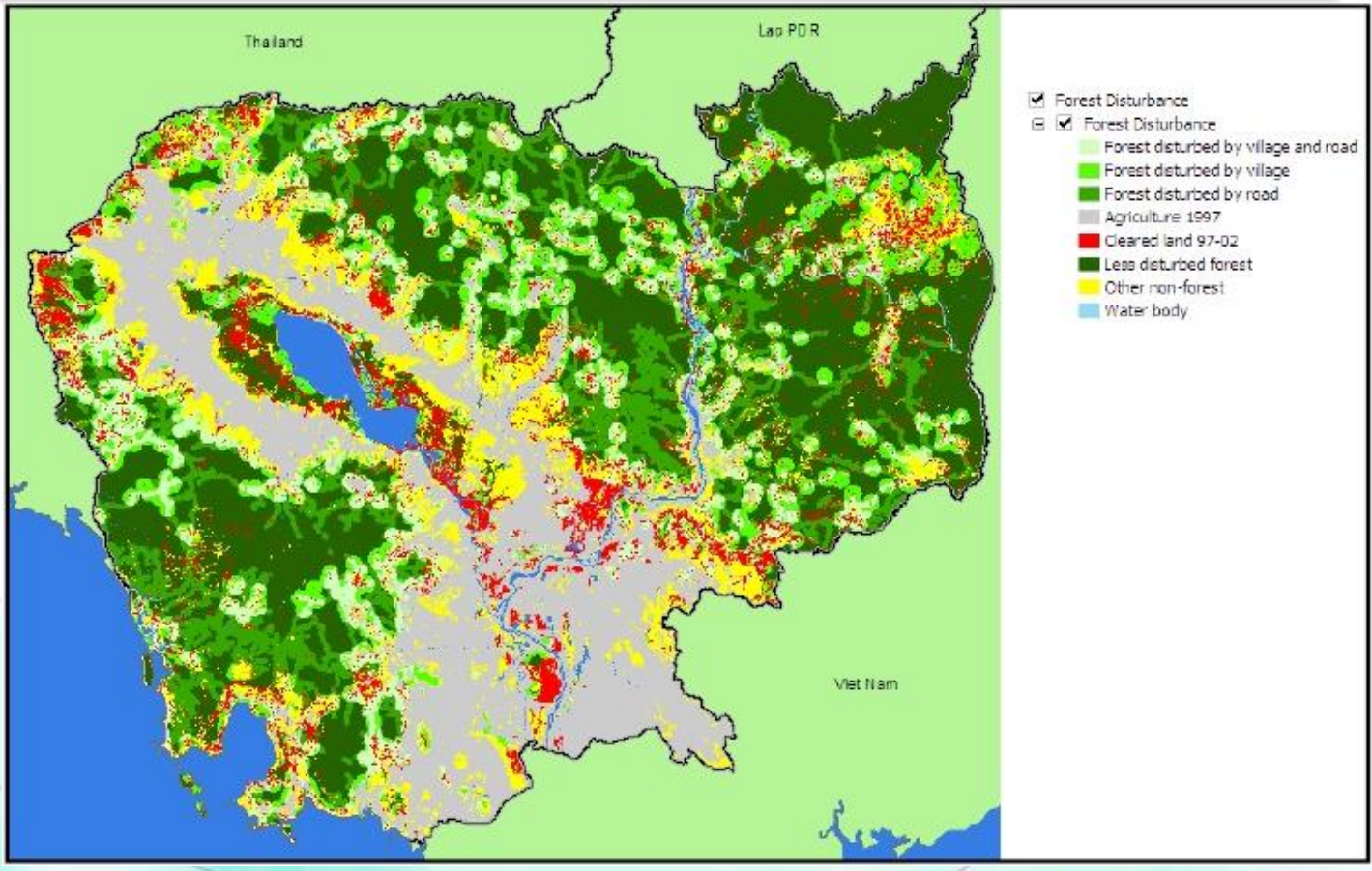


Figure 2. Forest disturbance 1997-2002 [2]

Environmental Impacts

- With over 1,800,000 cookstoves distributed since 2003, the reduction in household fuel consumption has **eased pressure on Cambodia's forests and reduced greenhouse gas emissions** [3].

- From 2003 to 2011, over 1,464,625 tCO_2eq of greenhouse gas emissions have been saved [3].

Economic Impacts

- The commercialized dissemination of the NLS is to offer economic benefits throughout the stove distribution network of producers, retailers and end users.

-Stove producers and retailers make a profit of US$ 0.50 from each NLS.

-During the lifetime of the project, producers have made an additional $342,467.02 through the sale of NLS.

-End users benefit from the reduction of the use of charcoal and fuel-wood, and the durability of NLS (around 2.5 years).

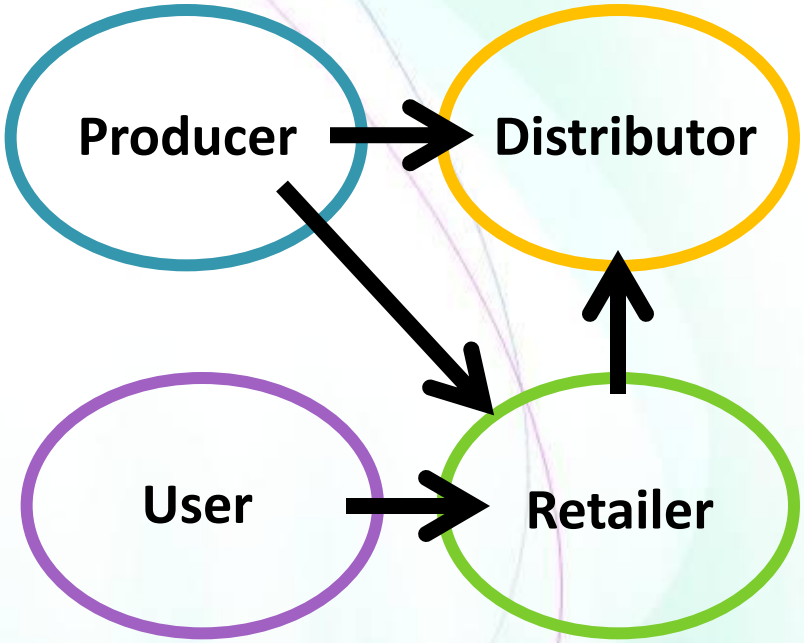


Figure 3. NLS distribution network [2]

Economic Impacts

Table 2. Average Firewood plus Charcoal Expenditure and Savings per Household (US$) [4]

Main fuel used for cooking	NLS Owner expenses (US$)		TLS Owners expenses (US$)		NLS average saving per year
	Rainy season	Dry season	Rainy season	Dry season	(US$)
Firewood	64.7	66.8	71.0	67.4	6.9
Charcoal	78.0	77.4	86.3	81.6	12.5

Traditional Lao Stove (TLS)

New Lao Stove (NLS)

Social Impacts

Health & Lifestyle

- Greater combustion efficiency and reduction of exposure time contribute to the mitigation of the health impacts of cooking with charcoal.

- 2009 National User Survey found that around **45%** of NLS users report a "high" level of satisfaction concerning smoke produced during cooking. This is particularly noteworthy because nearly three quarters (**73.9%**) of people in urban areas cook inside their house.

- Around **60%** of NLS users reported a "high" level of satisfaction the NLS' performance in terms of cooking time.

Social Impacts

Energy Access & Food Security

- Dissemination of NLS reduces the gap between rising fuel wood demands and diminishing forest resources.

- Dissemination of NLS reduces competition for the same resources; this results in the improvement of energy access and food security, especially for the less wealthy in Cambodian society.

- Adoption of the NLS has been shown to reduce the cost of meeting energy requirements and allow the savings to be spent elsewhere.

Social Impacts

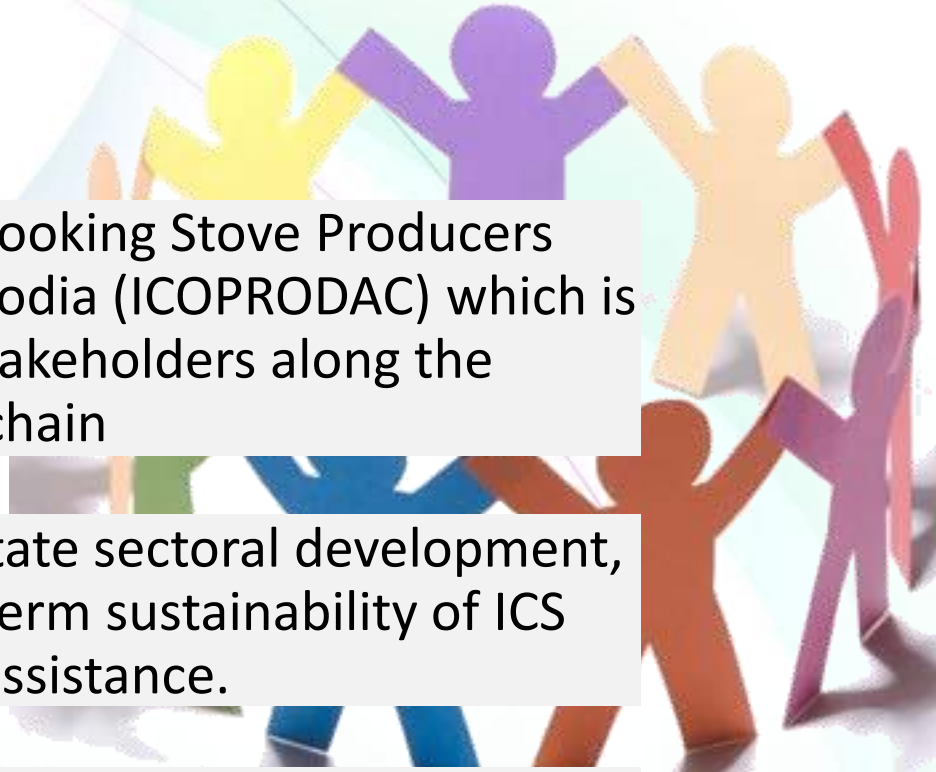
Gender Implications

- Almost all (around 98%) stove users are female, thus the adoption and use of the NLS has strong gender implications.

- With the use of NLS, female could save time for other vital life activities.

- NLS production process involves numbers of women participated in the stove business and in fact, nearly one quarter of NLS producers are women.

Social Impacts



Civil Society

- Establishment of the Improved Cooking Stove Producers Distributors Association of Cambodia (ICOPRODAC) which is the professional association of stakeholders along the Improved Cooking Stove supply chain

- ICOPRODAC was formed to facilitate sectoral development, quality assurance, and the long-term sustainability of ICS dissemination without external assistance.

- The association supports the producers with new data, coordinates dissemination, allows the stakeholders to assert ownership of the project process and provides a forum to raise issues.

Problems and Challenges [5]

Achievements

- ✓ Increasing unit numbers sold every year
- ✓ Producers making successful business
- ✓ Promotional campaign success
- ✓ Regular quality control
- ✓ Creation of ICOPRODAC (Improved Cookstove Producers and Distributors Association of Cambodia)

Challenges

- ○ Scaling up production while guarantying quality
- ○ Convincing producers to only produce NLS
- ○ Establishing national industrial standards

Lesson Learned-Improved Cookstove in Lao PDR

- In Lao PDR, capabilities for disseminating improved cook-stoves are very limited. This could be attributed to [6]:

Upstream segments

- Regulation – Testing and Standards
- Awareness Raising
- Monitoring & Evaluation
- Fostering Cooperation

Demand and supply

- Design
- Materials and Fuels Selection
- Production & Training
- Sales & Distribution

Lesson Learned-Improved Cookstove in Lao PDR

- **Regulation-Testing and Standards [6]:**
  - There are no established standards for stoves in Lao PDR, nor is there a testing center.
  - No Continuous Testing of Biomass Stoves
  - Very few testing facilities in Lao PDR, and no real coordination between them

Lesson Learned-Improved Cookstove in Lao PDR

- **Awareness Raising [6]:**
  - SNV's program (the most advanced ICS program in Lao PDR so far) did not feature health issues as part of its communication campaign
  - Only durability and fuel efficiency were advertised; however, firewood is basically free.

Lesson Learned-Improved Cookstove in Lao PDR

- **Design of Improved Cook-stoves [6]:**

  - There is a limited supply of quality improved cook-stoves in Lao PDR
  - Further R&D is required to come up with a stove design that satisfies both quality requirements and local ethnic habits. E.g., user in Northern Lao wants to get warm while cooking.

Most Commonly Used Cookstoves

Discussing Topics

1. Why Improved Cook-stoves is important in Cambodia?

2. Why Improved Cook-stoves in Cambodia is a good practice?

3. What is the common challenge of Improved Cook-stoves in Cambodia and Lao?

References

[1] National Institute of Statistics (NIS). 2013. Small-area estimation of poverty and malnutrition in Cambodia. Ministry of Planning: Phnom Penh.

[2] Geres Cambodia. 2010. Fuel-wood saving with improved cook-stoves in Cambodia: Monitoring report 1st Jan-31st Dec 2009. Geres Cambodia: Phnom Penh.

[3] Geres Cambodia. 2012. The new lao stove (NLS): Project sheet. Geres Cambodia: Phnom Penh.

[4] Geres Cambodia. 2009. Dissemination of domestic efficient cookstoves in Cambodia. Geres Cambodia: Phnom Penh.

[5] Domrei Research and Consulting Ltd. 2013. Cambodia market assessment: Sector mapping. Phnom Penh.

[6] Lao Institute for Renewable Energies (LIRE). 2013. Lao PDR Market Assessment. Lao.