



**Japan International Cooperation Agency (JICA)**  
**Sustainable Natural Resource Management Project (SNRM)**

**SNRM REDD+ Pilot: Success Story**  
**Participatory Dissemination of Improved Cooking Stoves**  
**in Muong Gion Commune, Quynh Nhai District,**  
**Son La Province, Vietnam**

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May 2020

This report was prepared as a part of the Sustainable Natural Resource Management Project (SNRM) funded by the Japan International Cooperation Agency (JICA) and executed by the Ministry of Agriculture and Rural Development of Viet Nam from 2015 to 2020.

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## List of Abbreviations

CPC	Commune People's Committee
FPD	Forest Protection Department
ICS	Improved Cooking Stove
KAP	Knowledge Attitude Practice
JICA	Japan International Cooperation Agency
PRAP	Provincial REDD+ Action Plan
SNRM	Sustainable Natural Resource Management Project
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
VMBFMLD	Village Management Boards for Forest Management and Livelihood Development
VFPT	Village Forest Patrolling Team
VF	Village Fund
VND	Vietnamese Dong

## **1. Introduction**

In order to reduce fuelwood consumption as well as to reduce burden for women and children to collect firewood in the forest, Sustainable Natural Resource Management Project (SNRM) funded by JICA supported to disseminate Improved Cooking Stoves (ICS) in a pilot commune. It is expected that ICS supports reducing a pressure on forest degradation and to support health of women and create more time for children's education. Dissemination of ICS is a REDD+ activity proposed in the PRAP.

## **2. Background and development of ICS**

In Muong Gion Commune, Quynh Nhai district, Son La province, cooking stoves are used for several purpose: rice, vegetable, animal feed and alcohol distillation. Traditional cooking in the village is to burn firewood and heat pans on a metal frame for cooking in the house (Photo 1). It is economical and easy to use with different size of fuelwoods and pans. It also heats rooms in winter and dry some materials in the room. No special technique is needed and easy to repair when broken. Cooking larger amount and alcohol distillation are done outside the house (Photo 2&3).

Many types of improved cooking stoves are available in the market. For example, the model made in Vinh Phuc province saves fuelwood, portable but rather small and expensive for villagers in Muong Gion commune. It has two models: smaller one with metal cover and larger one with two pans without metal cover (Photo 4&5). Other available ICS in the market including Lao stoves are rather small but fuelwood is placed on the top of the stove (Photo 6&7).

After studying available ICSs in the market and villager's cooking habits with villagers' consultation, SNRM incorporated a design with two pans from different fuelwood sources, dividable, placing fuelwood on upper part separated from air entry, made from cement (Photo 8, 9, 10, 11). It was considered to be durable for larger pans and economical. The project contracted a producer to make a mold for the ICS and trained villagers to make them by themselves in the village using the mold.

Traditional cooking stove, available ICS in market (made in Vinh Phuc) and one made by SNRM are compared in Table below.

**Table 1: Comparison of Traditional cooking stove, ICS in market and SNRM Cooking Stoves**

Item	Traditional cooking stove	Improved Cooking Stove: Vinh Phuc model	SNRM Improved cooking Stove
Fuelwood consumption	High	Low	Low
Type of pan to cook	Any	Small and light pan with limited space	Larger pan possible (space available and durable)
Fuelwood size	Adjustable any size	Fit for small size	Adjustable with larger size
Winter heating in room	Good	Limited	Limited
Mobility	No	High	Medium
Weight	Very light	Light	Heavy (divided into two)
Techniques required	No	No (Purchased in market)	Yes (making and repair by villagers themselves)
Cost	Low	High App. 350,000 VND/unit	Medium (project support and labor required) 160,000 VND/unit (50% contribution to Village fund required )
Durability	Low (Only metal frame)	High (clay with metal cover)	Medium (built with concrete, clay not used for fire touching part).
Maintenance	Easy	Difficult	Relatively easy



Photo 1: Traditional open cooking with metal frame in a kitchen inside house. Adjustable with larger fuelwood



Photo 2: Traditional cooking outside the house for bamboo dish



Photo 3: Traditional open cooking for alcohol distillation



Photo 4: Portable ICS made in Vinh Phuc province. For small cooking with smaller fuelwood. Provided to a boarding school.



Photo 5: ICS (two pan model) made in Vinh Phuc Province. Portable and small. Provided to a boarding school.



Photo 6: Traditional Lao stove  
Fuelwood are placed on the top.



Photo 7: ICS in the market of Son La. It is rather small and placing fuelwood on the top.

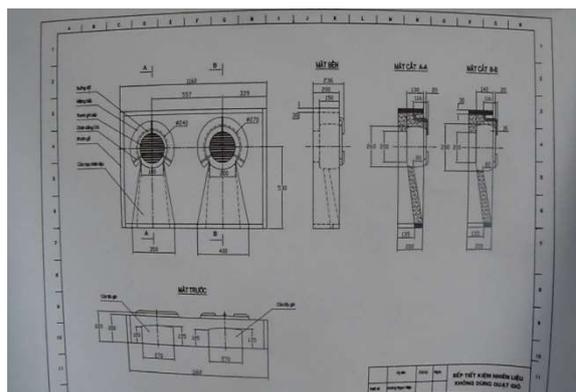


Photo 8: ICS designed for SNRM



Photo 9: Training for making ICS with mold



Photo 10: ICS provided by SNRM with molds. Dividable into two parts. Larger two holes for air entry and fuelwood on the top. No additional air hole in the middle. Sustaining iron crutch is rather low because of the open space in front.



Photo 11: ICS provided by SNRM being used for larger pan (animal feed making). The stove is placed on the ground.



Photo 12: ICS available in Muong Gion commune (made in Quynh Nhai center). It is made of cement and has a large hole in the middle for an electric fan to provide air to two pans. There are two drawers under the hole.



Photo 13: Traditional improved cooking stove in Hmong village. Suitable for a large fry pan. Air and fuelwood supply are from the same hole.



Photo 14: ICS made by a handy villager inspired by SNRM ICS. Similar design. Left is for a smaller pan and the right is for a larger pan with straight design.

### 3. SNRM Implementation Process

Dissemination of ICS was undertaken by the following steps.

#### ***Step 1: Village meeting for project planning***

SNRM project organized a village meeting for ICS beneficiaries to sensitize them regarding the role of forests in people's lives, use of ICS for health and environment, and relation with forest protection and development.

#### ***Step 2: Knowledge Attitude Practice (KAP) survey***

SNRM staff made interview survey regarding existing improved stoves, evaluation by villagers regarding capacity to save firewood, suitability and acceptability by villagers for cooking habits and culture of ethnic groups.

#### ***Step 3: Study available ICS***

SNRM team studied available ICS in the market and found that one ICS producer in Quynh Nhai center was producing ICS with three holes made from concrete (Photo 12).

#### ***Step 4: Participatory assessment and finalization of ICS design (March 2017)***

SNRM organized a design workshop to assess existing ICS (six models) with three ethnic groups (Thai, Khang, and Hmong) and obtain feedbacks to design proper models. The design was finalized (Photo 8).

***Step 5: Agreement with participants (May 2017)***

Participating households signed an agreement to undertake the responsibility.

***Step 6: Technical training (June 2017)***

The project organized 13 technical training workshops for 618 villagers (of which women account for 30%) of the 12 target villages of the project and 1 resettlement village.

After each training session in the villages; an action plan was discussed and agreed on subsequent activities, timeline of implementation, the responsibilities of the project (providing ICS molds, materials and training) and the villagers (labor input, contribution to village fund and use of the ICS in the household). The project committed to support necessary inputs and villagers contributes 50% value of the ICS cost.

***Step 7: Provision of materials***

Based on registration and agreement, the project supports necessary input materials to villagers. SNRM provided 21,850 kg of cement, 579 iron kit and 16 stove molds.

***Step 8: Villagers' Contribution to Village Fund***

Based on the agreement signed with the project, households contributed 50% of the value of ISC cost (80,000 VND/unit) to the village fund managed by Village Management Boards of Forest Management and Livelihood Development; a total fund collected was VND 46,320,000. This fund was used for forest management and livelihood development of the villages.

***Step 9: Redesigning of ICS design for larger cooking stove for alcohol distilling:***

ICS not only enhances the traditional cooking with acceptable cost, but also considers total cultural elements of ethnic groups. Most of the households use a larger stove to cook cattle feed or alcohol distillation (Photo 2). Villagers were traditionally using ICS for larger pans (H'mong village Photo 13). Some villagers also initiated making larger ICS incorporating an idea of ICS provided by SNRM (Photo 14). Responding to the village needs, in August 2018, the project organized a training to introduce a large size improved cooking stove with a fire-clay core (brought from Vinh Phuc) and delivered 13 samples to the target villages (villager contribution of 46.32 million VND to village funds. (Photo 15 & 16).



Photo 15: Larger ICS making with fire clay brought from Vinh Phuc Province. Fuelwood supply is from upper part. Second pan is set behind.



Photo 16: Larger ICS made with fire clay by H'Mong villagers. Fuelwood supply from upper part. Smaller hole in the bottom for air. A large pan is placed on stone.

#### 4. Project Output and Outcome

Currently (As of March 2020), 774 households is using ICS for daily cooking (579 households SNRM beneficiaries, 161 households self-purchase without support and 34 HHs outside the target villages: Na Mat, Loong Muong, Loong Muc, Bang Khoang, and Phieng Mut).

##### Dissemination of ICS design to other provinces and another project

In March 2018, SNRM team in Lai Chau province visited and studied in Muong Gion commune, got 2 sets of ICS molds, inheriting training materials and lessons learned to make 43 ICS for villagers of Phuc Khoa pilot commune. Pa Khoang pilot commune in Dien Bien province also visited Muong Gion to use the same ICS molds to make 181 ICSs. The molds from Lai Chau was transferred to Dien Bien.

In addition, a number of relatives of Cha Co village in Tan Uyen and Than Uyen district, Lai Chau province also visited Muong Gion and borrowed the mold to make the ICS samples.

In addition, PPMU and beneficiaries from Hoa Binh, Lai Chau, and Dien Bien provinces and KFW10 project have been visited and paid strong interests in this type of ICSs.

##### Communication through multimedia channel, and visits of other stakeholders

According to Muong Gion Commune People Committee, TV channel of the National Assembly of Permanent Resident in the Northwest made a shooting on the ICS of the project in the Cut village. The interviewed households had good assessments of both types (smaller one for daily cooking and larger one for animal feeds).

##### Dissemination of ICS to students of ethnic minority of boarding school

Combined with the Grassroots Grant Project (GGP) to support cooking buildings to a boarding school funded by Embassy of Japan in Vietnam, the project also supported 50 ICS (2 large and 48 small ones) for students of ethnic minority (Photo 4&5). An extra-curriculum training on natural resource management, and awareness on hygiene and environment was conducted to the students.

### Result of Beneficiary interviews in the third round monitoring

The interview of 60 HHs (about 10% of total participants) undertaken as the in September 2019 showed the following results.

- ICS saves about 45% of firewood on average using 35 kg/day/household. It means that in one day 740 households save 11,655 kg of firewood (equivalent to 12 m<sup>3</sup>/day, 4,380 m<sup>3</sup>/year of firewood).
- Interval of firewood collection in each household was become longer (from 7 days to 10 days interval).
- All the households provided the ICS materials by SNRM are using ICS for daily cooking.
- 98.2% of households are satisfied with the current ICS
- 36% of households want to make more ICS for second house in the field.
- 92.5% of households are aware that ICS saves firewood, reduces the time for women and children to collect firewood, and reduces fire risk during the dry season.
- Five households (3 in Xa and 2 in Khop villages) made a new larger size ICS with their design for alcohol distillation and cooking cattle feed based on the principle of ICS provided by SNRM.

## **5. Lesson Learned**

SNRM REDD+ pilot activities to disseminate ICS was successfully implemented. 774 households is using the ICS, 25% of which are not beneficiaries suggesting the value of the ICS was well accepted by villagers in the target commune. The ICS was designed with villagers and made by villagers; participatory approach of SNRM through the workshops and trainings was acceptable for the culinary culture of different ethnic groups.

One reason that the ICS was well accepted by villagers is it is quite low cost (160,000 VND) and 50% supported by the project. It was possible because it is only material costs and the ICS was made by villagers. In Muong Gion commune, most villagers are accustomed to masonry.

Regarding the design of SNRM ICS, fuelwood is placed on upper part separated from wind hole. This design is common in small ICS and was based on the consultation with villagers who use ICS in their daily life. It is quite different from other permanent-setting ICS as seen in Nepal with one hole for both fuelwood and air entrance at the bottom<sup>1</sup>. Regarding energy efficiency

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<sup>1</sup> National ICS Program in Nepal disseminated about 125,000 ICS from 1999 to 2005.

[http://www.inforse.org/asia/pdf/Nepal\\_ICS.pdf](http://www.inforse.org/asia/pdf/Nepal_ICS.pdf)

this design may not be as efficient as other permanent setting ones since fire is close to open space. However, it is similar to traditional open cooking to use, easier for villagers to control fire since burning firewood is visible. It is also easy to burn the bottom of firewood since air is coming from another hole in the bottom. Also since two stoves are dividable, it is possible to move to other places. ICS should be used by villagers and this is their preference. In fact, villagers use many different size and shape of pans and stoves for cooking.

Villagers are accustomed to use cement but quality are varied. Cement is used as low cost material but durability is not as good as fire clay. After three years of operation, deterioration of cement is visible. In order to ensure the quality of the ICSs, it was possible to set up ICS interest groups with some members who have good skill, and make them support other members in the group by the labor exchange.

The weight of SNRM's ICS is too heavy for stilt houses with bamboo floor of Thai and Khang people. To overcome the problem, the ICS is often used as a single stove (SNRM ICS is dividable) or the kitchen floor was strengthened by additional woods or used in the ground floor. Utilization of ICS saves fuelwood, but villagers do not care much since fuelwood is still available in Muong Gion Commune. In order to disseminate ICS in such areas, ICS should be easy to use and inexpensive. Capacity building to encourage villagers to use the ICS is more important. In this sense, the SNRM approach, designed and made with villagers, brought their interests in ICS and gave them opportunity to make it by themselves. Some villagers showed interests to make it by themselves with their own idea.

Cements were delivered to each household to make ICS by themselves. Since one ICS mold was provided to each village, villagers had to wait for a while to make the stove. As a result, cement was not properly used for making ICS at some houses, which deteriorated the ICS quality. It was better that villagers purchase cement with their own money and the project reimburses it later.

Benefit and responsibility should be clearly understood by villagers with signed agreement in order to ensure their participation and contribution.

Using effective training materials (e.g. short video clips made by Vietnam Agriculture Extension clips and large A0 sheets with visual samples) in local languages are important. It is also important to have a practice immediately after the training in order to keep villagers' interests and enhance their participation and effectiveness of operations.

The project facilitator team plays an important role in supporting and promoting activities as well as building capacity for local partners to ensure the success and sustainability.

Through integrating with GGP project, SNRM provided a training to a school to enhance awareness on natural resource management, hygiene and environment for many students.

## **6. Conclusions**

Participatory dissemination of ICS carried out by SNRM was successfully implemented in Muong Gion Commune in Son La province through the approach designed and produced by villagers. Although it may not as durable as defined commercial products, SNRM ICS was low

cost and convenient for village custom. It is being used at many households showing expansion to other villages.

The dissemination of ICS is one of the activities planned in the PRAP. Local authorities can consider replicating the model to other villages in the commune, other districts, and other projects.