CLIMATE RESILIENT AGRICULTURE AND RENEWABLE ENERGY FOR SUSTAINABLE LIVELIHOOD IMPROVEMENT PROJECT




Stories of project impacts in community

ADRA

Project is funded by ADRA Austria and ADRA Netherlands; implemented by ADRA Vietnam.

Local implementing partner is the Women's Union of Cao Bang province.

PROJECT BRIEF

The Climate Resilient Agriculture and Renewable Energy for Sustainable Livelihood Improvement project (abbreviated as CARE) takes place in 18-month-period, starting from 1 July 2015 to 31 December 2016. Selected site for implementing activities spans in 7 villages of Bao Lac district, namely Na Tong village (Hung Dao commune), Ban Rung and Ban Lung village (Bao Toan commune), Na Ngam B, Na Ten, Na Vieng and Na Dan (Thuong Ha commune).

Achieved results demonstrate that project interventions contributed to the local livelihood development and improvements at household and community level. Additionally, project established shared responsibility with members of community development club, shedding light for its sustainability.

Execution models of CARE project are classified into 4 categories as follows:

1. Natural resources management and sustainable livelihood development to respond to climate change

+ Clean and safe water model serving the community

2. Disaster risk reduction

+ Deforestation and afforestation model

+ Sloping Agricultural Land Technology (SALT) model

3. Climate change mitigation

+ Pico-hydro power model

+ Solar energy model

+ Biogas model

+ Improved cook stove

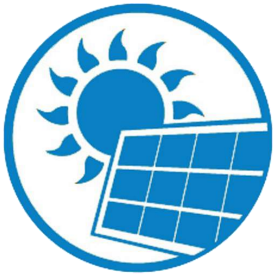
+ Animal waste management and Bio-fertilizer making

4. Capacity building and behavior changing to respond to climate change

+ Building capacity on responding to climate change for core officers (through ToT methodology)

ACHIEVED RESULTS

16 hydropower generators



45 solar power systems

10 biogas systems

240 fuel-efficient cooking stoves

210 water filtration systems

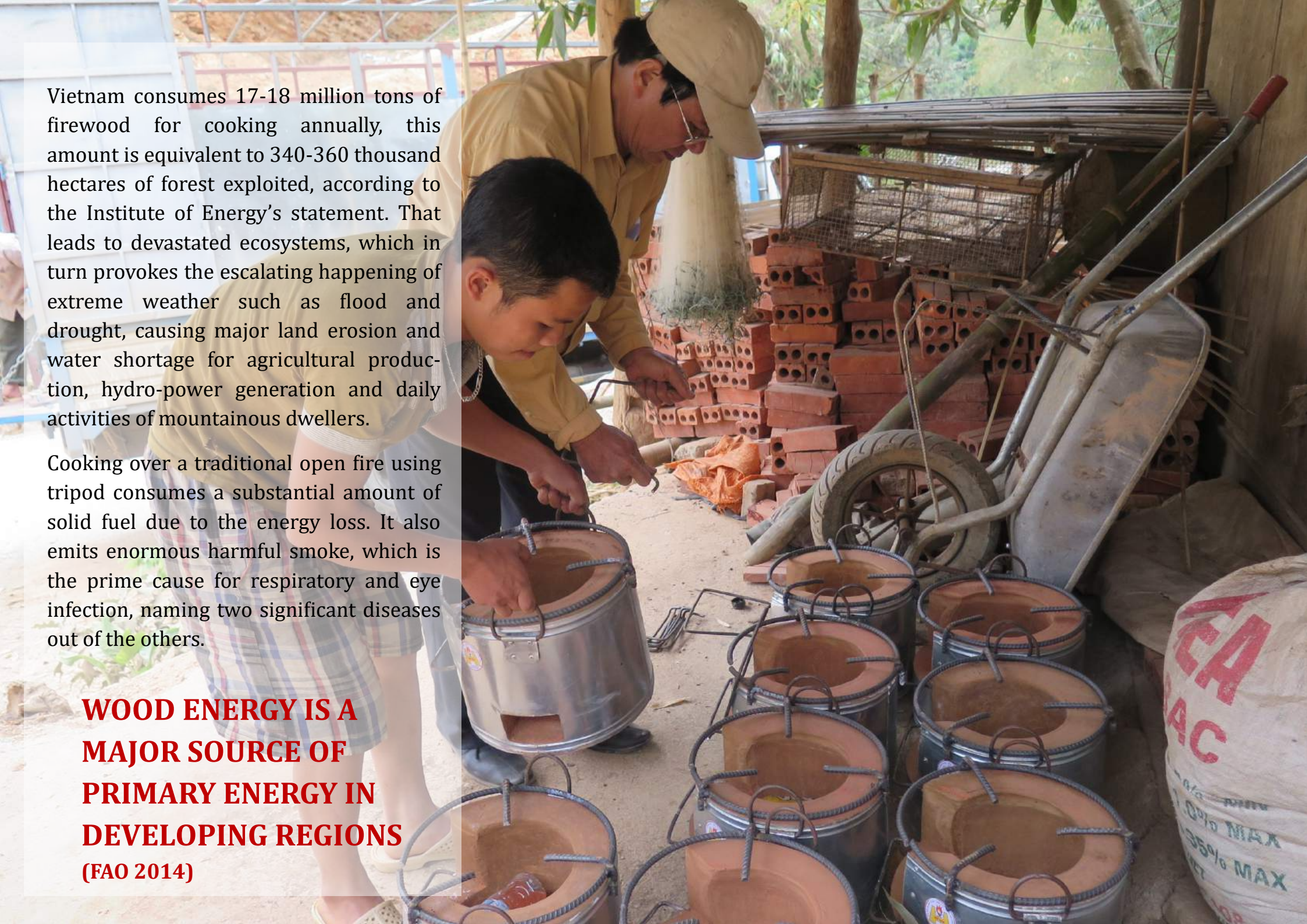
189.100 cunninghamia seedlings

6 Sloping Agriculture Land Technology models

1.133 beneficiaries

Vietnam consumes 17-18 million tons of firewood for cooking annually, this amount is equivalent to 340-360 thousand hectares of forest exploited, according to the Institute of Energy's statement. That leads to devastated ecosystems, which in turn provokes the escalating happening of extreme weather such as flood and drought, causing major land erosion and water shortage for agricultural production, hydro-power generation and daily activities of mountainous dwellers.

Cooking over a traditional open fire using tripod consumes a substantial amount of solid fuel due to the energy loss. It also emits enormous harmful smoke, which is the prime cause for respiratory and eye infection, naming two significant diseases out of the others.



WOOD ENERGY IS A MAJOR SOURCE OF PRIMARY ENERGY IN DEVELOPING REGIONS
(FAO 2014)

FUEL-EFFICIENT COOK STOVE

"I saw great benefits of using the improved stove for cooking, the most obvious ones are fuel saving and smoke reduction. Of 5 fire-wood kilograms, we used to burn in a day using the traditional tripod; however utilizing the improved stove, this amount can last for 3 days, the amount of smoke generated therefore is restricted."

"My name is Nong Van Chai. I am 55 and married to Nong Thi Thinh (56). Together we live in Na Ten village of Cao Bang province. Our children started their own families few years ago and all live far away."

"We hold subsistence farming. Additional income springs from cattle husbandry and vegetation; that is pretty sufficient to cover all expenses of daily life. To improve the housing condition and furniture, my children now can support their parents apart from our own spending. We have no bigger dream of getting richer, but staying healthy to experience more joy with the children."

Similar to almost all of the rural families, Chai and his wife used the cooking tripod in the kitchen, which consumes tons of fire-wood while emitting 100% of the indoor smoke. "We know that this is harmful to the health, my wife coughed every time she cooked. We however followed the tradition for many years until we substituted to the improved cooking stove, which is encouraged and financially supported of purchase by ADRA Vietnam. I gained great benefit from attending communication events that introduce the how-to-use of the improved stove. Along with the other neighbors, we discussed issues such as the disadvantages of using firewood and its negative impact on the environment and forests and how it leads to food insecurity."

"We now have only 2 elderly in the house, collecting less wood reduces the heavy labor on our shoulders, helping protect our health. I will suggest families of my children to change to this im-

Another family in Na Ten village benefited by the CARE project activity is of Mr. Nong Van Cao and Mrs. Hoang Thi Len. They are both at senior age (over 60 years old).

Being less fortunate than the others, Mr. Cao and Mrs. Len both have disabilities. Burdened by the additional disadvantage of age, they still have to collect firewood on their own. An additional finance of 600,000 dong coming from governmental subsidy every month mainly covers the rest of food supplemented to each meal. The agricultural production on their land is not sufficient for any surplus to sell at market.

Thanks to receiving the fuel-efficient cook stove from CARE project, Mr. Cao and Mrs. Len got to broaden their understanding on negative impacts of burning fire-wood on human health and even more 'macro' issues related to deforestation, greenhouse effect or climate change. They see the obvious impacts from saving fire-wood for cooking: "before we had to collect wood every day by walking a long distance to the forest. Our legs were shaking; our arms were in pain while the wood bundle remained the same heavy weight if not enough for the daily usage. Now we have more free time for much-needed rest to protect health, or doing other works such as milling maze and preparing food for pigs in an effort to earn more income from animal husbandry."

Actively engaging in the project brings a variety of benefits to the participants, of which Nong Van Lam is a person. Among other club members, Lam is one of the young ages who are curious and open-minded to the initiatives that help the life of his family and community people better.

EFFECTIVE REFORESTATION TECHNIQUES

Lam shared: "reforestation is of long-term value, for the good of our children's generation. We have done lots of slashes and burns that destroy the natural environment and the painful consequences are landslides, flash floods happening quite often in recent years. When this project of ADRA brings in a component of reforestation, I was very happy to join and scale up the planting area with my family."

The selected tree that is provided seedling by project is cunninghamia – a plant having strong survival even in harsh climatic conditions of Northern mountainous land. Lam told his own experience in planting the cunninghamia: "I do own the techniques to plant cunninghamia, which were obtained during the time I was working as the hired labor in China. These include digging the holes with appropriate depth for root development, maintaining the suitable distance among the plants for natural growth. An important knowledge that I had not learned but obtained from the CARE project is using A-shape ruler for seed planting. This is to prevent land erosion since rainwater will not flow down a slope straightly."

Adding to 2,700 trees already planted by the family, Lam received 4,000 seedlings from CARE project to extend the reforesting area of his family. "The plants that we own are like a growing treasure. After 10 years we might collect the wood and sell for profit. My family will keep replanting after that and we will try not to waste the forest land."

CUNNINGHAMIA PLANT IN CAO BANG

The CARE project incorporates a *community-based reforestation and afforestation model*, planting timber species to extend economic benefits for the habitants. Selected plant is taken from the native species list and is introduced with the advanced techniques that take climate change risks into account. Participants are informed about the climate knowledge to broaden their vision of the future.

Speaking from one of participating families was Mrs. Tan Thi Nen:

"From the communication event and training workshop organized by ADRA staff, we understand about the importance of forest cover in retaining water, minimizing flooding and prospering livelihood. Many families here are currently owning unutilized land, even given the land tenant by the government. Now the CARE project operates orientation and guidelines to plant cunninghamia, at the same time provides seedlings to increase motivation, more and more households are excited to register for plants. I also find the project management is effective, as during project implementation the project officers regularly check the commitment of action and tree growth with the families. It is clearly stated that the died trees will be replaced by the domestic resources of the family. However due to the proper reforesting technique, the survival rate our trees is really high (97-98%).

The community-based model of planting cunninghamia in Bao Lac (10/2015-12/2016) shows initial success and lessons learned for management and replication. Total of 189,100 seedlings were planted with the aim of reducing disaster risks and increasing income source for 132 households.

EARNING ECONOMIC BENEFITS

FROM REFORESTATION

Saying San Thi Nhan (29 years old) - a woman of San Chi ethnic minority: “participating in the reforesting activity of CARE project, I and the other family members will follow the taught technique to keep cunninghamia trees grow healthily in our land. After 10 years more or less, we expect to harvest the soft-wood and continue planting the next round. If my family is given more forest land, we would like to extend the area of this tree farm.”

Our wish of being lifted out of poverty and improving wellbeing can be assisted by the reforestation program.

According to the calculation of Nhan’s family, the current price of a mature cunninghamia tree is ranging from 150,000 to 200,000 dong. After 10 years, 2,000 planted trees will generate an amount of 300-400 million dong if there will be no drastic change in the market and price. The cunninghamia trees demand little care in the following period of first 2-3 years. Deducted the annual cost to grow this forest, average income within 10 years that family can obtain fall between 30-40 million dong, a considerable amount for smallholder farming families in mountainous region.

SOLAR ENERGY PROVIDES ELECTRICITY IN REMOTE AREAS

A large part of Vietnamese population resides in remote mountainous areas, where there are no access to electricity because they are too far from the national grid. The CARE project funded by ADRA Austria and Netherlands, implemented by ADRA Vietnam has shown that solar energy can be used for providing affordable electricity services to people living in off-grid areas.

Mrs. Luong Thi Khai at age of 80 is taken care by her children in Ban Lung village (Bao Toan commune). In 79 years, her daily activities had been untouched by electrical power. She shared the first approach with electricity services:

"When the first electrical current was connected to the house, I was explained by the children to use the light bulb and switch. Indescribable joy busted at that moment, I already knew since then our life would continue a transformational change."

The energy system installed at Khai's house is endowed with solar power. A panel sized 120 x 140 cm generating the capacity of 120W is provided by CARE project, along with one battery storage and two LED light bulbs, one fan and one mobile charging. On top, the solar energy model offers basic lighting, which is the most essential for everyone. The electric light then will be used for cooking, socializing or doing homework in the evening.

For Khai, whose one eye was blinded 10 years ago due to a bee sting, the basic lighting opens her way to do work more safely and faster. She said:

"In the evening when I still cook for the whole family and look after the grandchildren for their parents finishing work late, I see better to pick up things and move, therefore save time to do other works or rest. Besides, one family member sets up a light bulb on the way to the toilet, so it becomes easier for my walk".

Access to electricity has a positive impact on a wide range of factors influencing rural communities, from improved health to better educational facilities and improved standard of living.

AFFORDABLE AND ACCESSIBLE

BASIC LIGHTING AND ELECTRICITY SERVICES

Four adults in a family, of which three unluckily have disabilities since birth, that is the situation of Mr. Mu A Dinh B, one of few Mong ethnic minority families living in Na Ngam B village. Different in lifestyle from the other ethnic groups, the Mong people find settlement on top of the high altitude mountains. This tradition creates more difficulties for them in modern time, because most of habitants are isolated from social activities and the national grid. The desire to own electrical lighting becomes really strong in the heart of Mr. Dinh B and the other family members.

“My wife has a blind eye and I have a handicap in leg, the difficulties are multiplied when both of us get older. Besides we have an adult daughter who is physically and mentally disabled. The current house ground is not flat and darkness adds more danger to our movement, we all got few serious falls”, said Mr. Dinh B.

According to the initial assessment conducted by ADRA, despite being disadvantaged by the renewable energy sources such as hydro or wind, solar energy emerges feasible and abundant for the families living in high altitude. CARE project brings in the solar power model as an alternative source for the selected households. Mu A Dinh B becomes one of qualified beneficiaries to operate the model.

He opined: “thanks to the two light bulbs provided by ADRA project, many things change in my own house: we travel more easily, do more house works, save money from the expenses on kerosene oil. On top of that, I think my grandchildren can proceed further in education once they can revise study at home.”

The household of Mu A Dinh B is classed extremely poor. Burden to take care the whole family fall into the Dinh B’s daughter who is not disabled. Without rice subsidized by the government, main staple food of this family is maize.

CLEAN ELECTRICITY

Households of Ban Lung village also counts the four-member-family of Mr. Trieu Van Luc (32 years old) and To Thi Nguyet (28 years old) with their two sons. Access to electricity was opened to this family few years ago, based on their own resources to set up an independent system of pico-hydro power. The energy however used to be interrupted for nearly half of the year, due to water shortage in the stream where is situated the generator. Of the rest of time when bright electrical light did not illuminate the indoor space of Nguyet's house, they came to the former use of kerosene lamp.

Trieu Tuan Anh—the first son of Luc and Nguyet– voiced: "studying under the kerosene lamp was not effective, the oil odor was really uncomfortable so I could not stay focused and sometimes it made me feel sleepy quickly after the start."

Nguyet said in her person, she had to travel long distance (approximately 18km) from home to the town to purchase kerosene oil. In case of bad weather, the family might have had to experience the dark because of the lack of fuel.

Since the day when solar energy has powered Luc and Nguyet's house (November 2015), the electricity used for domestic purposes had been more stable. Luc informed that the home battery storage can accumulate for 6-8 hours of later use, which is enough for study of the children and chore works of the adults.

The CARE project has put emphasis on taking all stakeholders including the ethnic minority, the elder, the people with disabilities, men, women and children into the process, from mapping energy needs to operating the household models.

SOLAR ENERGY SERVING PRODUCTION

The production area to extract star anise essential oil of Mrs. Hua Thi Min lies on the hillside of Na Vieng village. Close to it, a small tent is set up for the resting purpose during production. A solar panel is laid on top of this tent, collecting the generous sun-free power to run electric light at dark. This system is assisted by CARE project of ADRA, helping address handful financial and socio-economic obstacles.

"In order to maintain the day and night production during harvest season, I and my siblings who work together have to set up the system on spot. All the equipment and tools will be moved to the area, even humans will reside there for a period to keep hands and eyes on the process. Obviously to run the machine and not stop working at night, we need light. Before, few bulbs were run by the motorbike battery because light from kerosene lamp was too dim. This battery could run for solely 2-3 hours , causing occasional interruption. Once it stopped, I had to drive bike back home to recharge. The travel wasted time of a whole", Min said.

Since the date having two LED bulbs powered by solar energy system, the production area gets brighter, that helps increase the productivity of extracting anise oil because Min and her family members can continue the work in dark within 6-8 hours.

According to the baseline survey conducted in CARE project site of ADRA in Vietnam, the average livestock size of households (estimated 4 pigs and 2-3 cows/buffalos per house) will provide sufficient amount of biogas for domestic purpose, mainly for cooking.

The **biogas model** is a practical solution while searching for the alternative renewable energy, which at the same time contributes to the improvement of environment by managing the pollution of animal waste and reducing the need of cutting tree for wood. The biggest challenge posed to local community is initial investment of the setup and the technical knowledge to utilize the system and by-products.

Via CARE project, ADRA adapts a response to the situation by piloting 10 biogas models in the first phase (from July to September 2015). Selected households are from four villages of the project site in Bao Lac district (Cao Bang, Viet Nam), including Ban Rung village of Bao Toan commune; Na Tong village of Hung Dao commune; Na Vieng and Na Ten village of Thuong Ha commune. This is expected to trigger the interest and determination of the surrounding households to learn and make similar energy schemes, after seeing the benefits of biogas.

BIOGAS EASES ETHNIC MINORITY WOMEN'S BURDEN

"We just switched to use the new source of energy. We haven't abandoned the old stove entirely for not being able to equip the complete set of tools to cook food for the pigs. Moreover, the gas flow has not been regulated to remain constant. I and my husband are learning more to make the most use of the biogas plan. Hopefully in the next few months, especially when the winter comes, it will bring more benefits to my family by cutting the expenses on firewood and chemical fertilizers" told Phong.

Women in rural Vietnamese families, particularly those belonging ethnic minority groups, shoulder the burden of household tasks, whether those are heavy or light works.

"I take care of the animal herd, plant the forest trees and collect the firewood for our domestic usage", shared by Mrs. Nong Thi Phong – a Tay ethnic minority woman living in Ban Rung village, Bao Toan commune(Bao Lac district, Cao Bang province, Viet Nam).

"That was normal when I used to carry home two bundles of firewood every day to fulfill the household's demand. We raisedten pigs and cooking food for them on the traditionally firewood-burnt stove normally took two and a half hours" Phong said. In the rainy season, sometimes she spent her household's budget to purchase wood from the suppliers, as it got too dangerous due to landslides' happening.

The construction and handing over of biogas digester from CARE project, which utilize pig manure to produce biogas fueling the new stove, help cut the time and the expenses spent on food preparation for Phong's four-member family. At the moment, it takes half as long for this lady to cook and to gather wood.

MY KITCHEN IS CLEAN AND SMOKE-FREE, WHICH IS GOOD FOR OUR HEALTH

"I was concerned about the health of my new-born baby. The smoke from the traditional stove caused respiratory disease to my mother in law, and cough for most of the other members. Even it just swirled around as long as the meal was prepared, the harmful particulars stuck in every corner of the house", To Thi Hau - mother of 17-month baby girl told us.

Like many families in Ban Rung village, Bao Toan commune (Bao Lac district, Cao Bang province, Viet Nam), Hau' family was not an exception but using traditional wood-burning stove. When we arrived, a grim reminder of the particles she inhaled whenever she cooked was the soot dangling from the roof.

"Since we have the biogas stove, breathing while cooking for an hour is much easier. There is no harmful smoke that I do have to inhale, and so does my little daughter who is always slung in the blanket over my back. I am hoping the disease of my mother in law will get improved and I don't have to worry anymore about the same problem happening to my kid", Hau happily shared.

That is even not the only benefit that Hau and her family are experiencing thanks to the installation of biogas system, she added "the new stove fuelled by biogas helps shorten the cooking hours and save the time from collecting firewood, so I can spend more time to care my baby."

The volume of firewood used in Hau's house, without utilizing biogas was falling into 40-50kg/day. That took half of a working day to gather.

ALTERNATIVE SOURCE OF ENERGY CURBS THE CUTTING OF TREE FOR FIREWOOD

"I hope the forest will remain as in my memory of the childhood's time. Last year happened the severe land erosion in the area, sweeping away abundant assets of the local residents. In my time, less people consumed less wood. Nowadays, they cut the trees and trim the branches to fulfill the human demand. It hurts but we have no other solution. My family also take forest wood to survive the winter's chill and on top of that, to serve the cooking purpose of daily meals", Ly Van Thong bared sincere words from his heart .

Thong's family of five adults and one little kid (2 years old) used to consume one bundle of wood per day, the volume doubled during winter time and the total was equivalent to 30m3 of wood per year. "The work of collecting firewood belongs to my wife and daughter in law. They normally trek a long distance, sometimes as far as four kilometers, to reach the forest. It is tiring and time-consuming but not yet counting the carry of wood bundle. A small amount of money is paid few times to hire the vehicles to replace the manpower."

In September 2015, being selected by the CARE project to pilot the household biogas models in Na Vieng village, Thuong Ha commune (Bao Lac district, Cao Bang province, Viet Nam), Thong gathered all people in his family to contribute the labor for construction. “I have been involved from the beginning of project that commenced in July. The project officers conducted different training sessions on a range of topics, including reforestation, sloping agricultural techniques, fermented eco-enzyme fertilizers and the alternative renewable energy. When they mentioned about the biogas, I reckoned that it would be really suitable for my household because we were raising three cows and five pigs, which would produce sufficient amount of fuel for the domestic need.”

Thong continued “After changing to use the cook fuelled by biogas, I have seen many conveniences. The water is boiled faster, the house has less smoke, and no one worries about wood getting wet and exposing long-time to ignite.”

“The most significant change happening to my family, and hopefully will be learned by the other households, is that this alternative source of energy will help curb the cutting of tree for firewood. The fertile soil will be protected and we can work on better farming”, Thong concluded.

BIOGAS IS CONVENIENT

FOR THE WHOLE FAMILY

On the blue flame of new biogas stove, a 78-year-old lady was quickly preparing a simple lunch for her children and grandchildren. She is living with them in Ban Rung village, Bao Toan commune (Bao Lac district, Cao Bang province, Viet Nam). “My kids all work faraway. The traveling time in this remote area is hardly speeded up so I always cook the meals for whole family, to save the time and relieve their hunger” told Mrs. Luc Thi Tho.

“Cooking fuelled by firewood is time-consuming, because I have to check the wood if it’s too wet to ignite the fire, after that wait for the stove to be heated up”, said Tho.

Similar to the other 10 households assisted by the CARE project to operate the family-sized biogas plants, Mrs. Tho found great convenience while using the new source of energy, especially for the elderly like her and also for the children. She revealed the fact to master all the equipment related to biogas system including the biogas flow meter, the digester, and thestove is not a hard task.

When Tho ended up in the last sharing, it sparkled in her happy eyes saying that “It helps reduce the misery of my daughter-in-law and I believe also in the generation of my grandchildren, as less wood is demanded for the need of cooking food, and therefore less to be collected. I and my mother suffered this extreme weight of the wood bundles in too many years.”

BETTER FARMING WITH THE BY-PRODUCT FROM BIOGAS PLANT

The installation of domestic biogas plants substitutes the use of not only firewood but also chemical fertilizers. In addition to the reduction of greenhouse gas emissions from cattle manure, less degradation of the forest, people directly profit from less indoor pollution, and higher crop yields with less contaminated products. As by-product of biogas plant, the digested water collected in the last tank after anaerobic digestion has been proven to be good for the farms in rural areas, avoiding the usage of chemical fertilizers, which is sometimes misused and therefore renders the harvest loss and harm for users' health.

The family of Mrs. Phong in Ban Rung village, Bao Toan commune (Bao Lac district, Cao Bang province, Viet Nam)was selected by ADRA to participate in the pilot phase of bringing biogas models into life. They completed the set-up and made the plant ready-to-use in September 2015. Being instructed by the project officers, Phong tried to water her vegetable garden by the by-product collected from the bio-digester. She found out that "The water doesn't smell bad odor at all. And I am surprised to see my vegetable grows better after few times of being watered. If using this water from the digester is good for farming, I believe in the next cultivating season we can reduce expenses on the purchase of NPK fertilizer (i.e. name of a chemical fertilizer)".

Not only has the water collected in last stage of biogas anaerobic digestion, the sludge created as last product can also be used as organic farming fertilizer. Beneficiary households in CARE project will be receiving more education throughout project duration to utilize the by-products of biogas plant, which help protect the environment and save the household budget.

PICO-HYDRO POWER ELECTRIFIES THE REMOTE NA TONG VILLAGE

"Everywhere was silent and monotonous when there is no electricity. It was in the evening when most of family members gathered in the house, but we didn't have much to do. Children went to bed really early and could not revise the lessons. I knew that few dropped out of school because they were not able to catch up. Then light came to our village, the children were able to do recreational activities. It changed our way of life. Now there's much more happiness", the ethnic minority woman named Xuyen (featured in photo) told. She is living with her family of five in Na Tong village; they are all from the Dao group – one of ethnic minorities in the area. Xuyen and her direct family members are experiencing the change created by a new source of reliable electrical power, similar to her people in Na Tong.

Na Tong of Hung Dao Commune, Bao Lac District, Cao Bang, Viet Nam is one of villages belonging to CARE project site. Due to the complicated topography and features of the population, connection to grid electricity is not yet available to 100% of households here. The area, however, is naturally endowed by abundant water source from the system of rivers and streams, which is possibly harnessed for hydro-electricity.

Pico-hydro becomes the responding solution of CARE project to the villagers of Na Tong, with the aim of bringing electricity to every single of total thirty-six households. According to the organization's baseline survey, five families already set up the small hydro-plants (under 1kWh capacity) for the period of 5-10 years before project. These systems sustained solely the families paying investment with unstable supply, due to the energy loss on electrical wiring and the risk of natural disasters.

In the phase of Climate Resilient Agriculture and Renewable Energy for Sustainable Livelihood Improvement (CARE) project, ADRA provided twelve hydro generators of 2kWh capacity, which allow the power supply for lighting, televisions and few production tools. The local communities divided by themselves into groups of three households to share the power from one generator. Their involvement was up to every stage, from labor contribution to setting up the management and maintenance of the machine and the wire.

Everywhere now in Na Tong village, the people are talking about the benefits of off-grid hydro schemes, like good quality light, the operation of electrical equipment that help form new livelihood, leisure and educational opportunities and a window on the wider world.

"There is light in the stilt house, that keeps my two and half-year-old grandson playing safer on the floor made of raw bamboo canes. My husband is the one mostly turning on the television in the evening, but he asks people to join in watching and sometimes he shares with us the news. We all feel happy of the change", Xuyen said.

There are a number of resident households in Na Tong village (Hung Dao Commune, Bao Lac District, Cao Bang, Vietnam), who already invested and set up the electrical power source to serve the demand of families, mostly used for lighting purpose. One of those is the family of Dang Mui Khe, belonging to the Dao ethnic minority group.

Khe with Lin – her husband, a daughter and a married couple of her son with two grandchildren whose ages are less than five years old are living under a shelter together. Their livelihood relies upon few acres of arable land, which is structured in the terrace fields. Rice and maize are two main crops to be grown. In addition to those are cassavas, peas and vegetables thriving under good climatic condition; that adds some more nutrition to rather poor quality meals of the family, and some extra income for buying new house and farming equipment.

MORE POWERFUL ELECTRIC CURRENT BRINGS OUR MODERN TOOLS TO LIFE

Khe told the ADRA project officers, who crossed an hour trekking route while reaching her house, “at first my husband participated in the project of ADRA. I remember he learned about the electrical safety and first aid for electric shock. He came back home that day and told us about the safety rules he had practiced in the training. That is useful, I think, especially for the time when we get the new electrical power supported by project.” Khe and Lin’s house is often selected as the meeting place for the surrounding community, simply because there is electricity. It is weak light emitted from three old light bulbs sustained by the 0.7kWh generator. “At least it is brighter than the other houses. People here have to work whole day and the only time for meeting is in the evening” shared by Lin.

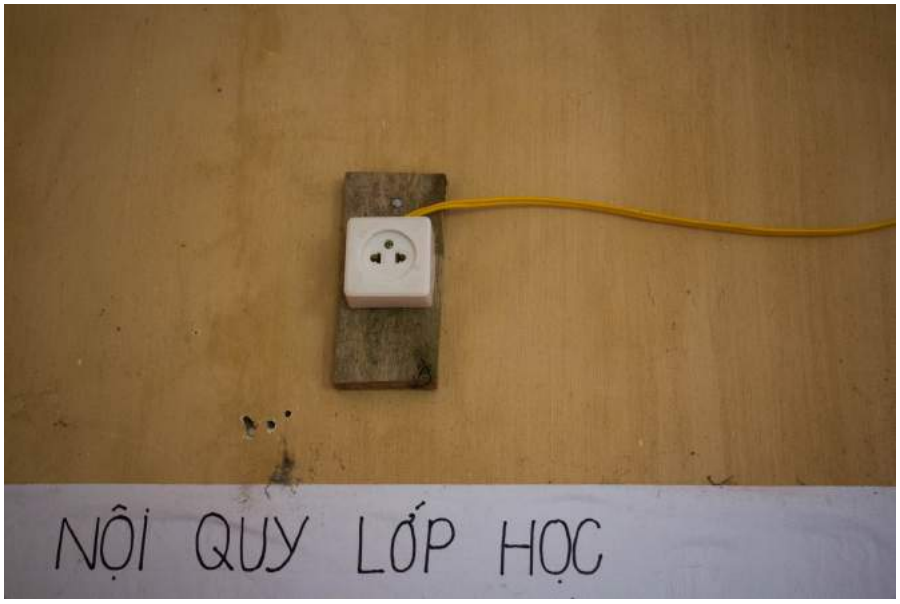
Better light and more stable power supply at the moment content all the residents of Na Tong. Particularly in the house of Khe and Lin, the 2kWh generator replacing the formal generator powers five traditional and one U-shaped LED light bulbs, and a television.

“We installed the generator at the foot of a small waterfall to utilize the water power. The good point is we are even able to run the house rice milling machine automatically by electricity rather to manually. This saves the time for my daughter and daughter in law to do other works, and to take care of the children”, Khe exposed her satisfaction.

WHILE THERE IS ELECTRICITY, WE LEARN TO SING ALONG WITH THE INSTRUMENTAL ACCOMPANIMENT

"We used to sing a cappella with the teacher, there was no instrumental sound along with. The whole class did not synchronize the rhythm and I don't think it's nice enough", Mai spoke and flashed her lovely smile.

Mai's school is situated in Na Tong village of Bao Lac district, Cao Bang province, Viet Nam. This is one of border areas with 100% of population has not yet accessed to the national electricity grid, due to remoteness and local capability to meet the setup requirements of the electricity company. The so-called Na Tac school of Mai provides primary education to seventy-two ethnic minority pupils, classified in five classes. The school equipment is assisted by the Department of Education and Training, however it has not been utilized for no existing power source.



Commencing from July 2015, the Climate Resilient Agriculture and Renewable Energy for Sustainable Livelihood Improvement (CARE) Project of ADRA selected Na Tong village to pilot electricity generating model. Twelve pico-hydro power generators that reflect the most locally adapting source were granted to the village, while the community involvement was recognized in all stages, from assigning households to share one generator, to contributing labor and construction materials, and setting up management groups and maintenance activities.

Na Tac school was prioritized by the community to share connection to one power plant with the nearby family. The household is responsible for operating and maintaining the generator. After setup, each classroom is installed an electric plugin to be used for lightening purpose and powering other school supplies.

"We plug in the electronic musical instrument to play during the music lesson. The pupils show great excitement on this", shared by the music teacher.

"Our school contributed construction materials to make the leading pathway for water while the household installed generator. After completion, the village gifted school another 200m electric wire from project. Thanks to this support, our school becomes more active in educational activities; at the same time, we don't have to ask the other households for electricity to run equipment in special events. This is the most significant achievement from my point of view", said Mr. Hoang Van Huyen, Principle of Na Tac school.

ELECTRICITY HELPS TO WIDEN THE KNOWLEDGE ON FARMING

Electricity powers the television. "That lets me update the weather news and proper farming techniques, from that increases the product quality and productivity", shared by Mrs. Luc Thi Thien, a resident of Na Tong village, Hung Dao commune.

The four-people-family of Thien was assisted to connect to a 2kWh hydro generator, sharing the produced electricity with another two households. She now has the new television and can listen to the news or approach entertaining channels.

"We are classified as medium income family, based on the ranking applied to this mountainous area. My family of four labors still relies on raising cows, pigs and cultivating paddy rice and maize for living. The income earned from the former is the main source for expenses, such as family businesses including special occasions of funerals or weddings; and to afford the studies of my children at university. The latter mainly serves household consumption", Thien shared with ADRA project officers coming to visit her house.

For us, the observers of the change in her life after participating in project, this forty-two year old woman was deemed to be full of positive energy while sharing her opportunity to get more engaged in the wider world, thanks to the power of new electric supply.

"My family used to study and install a 0.7KWh electric generator five years ago. That was a lot of investment but the supply could sustain only three to four light bulbs. There was light but it was not luminous inside the house and it was not able to run any electrical equipment". She continued "the current electricity allows some U-shaped LED light bulbs to operate maximum capacity, providing enough light for me to do chore work and keep caring the animals in the evening. Furthermore, it powers a television so all people in my family can keep posted of the public news. Personally, I have gained new knowledge on pig raising and preventing the cattle's diseases while following the experts' instruction on TV program titled Friend with the farmers. I will continue learning in the coming time on the cultivating techniques".

HOMEMADE WATER FILTER

Mr. Nong Van Son and Mrs. Vi Thi Luong (49 and 46 years old respectively) with their two sons reside in Na Ten village, one of areas selected for the implementation of CARE project.

Their families were supported in knowledge and tool to set up a homemade water filter system. Prior to the success of installing this system, Mrs. Luong participated in the thematic training course designed by ADRA. Not only discussing about the benefits of using safe and clean water, the lady also learned about the selection of materials including gravel, sand and charcoal and the how-to-do of homemade water filter. Coming back home, Luong shared this know-how to her husband and children so that their family could practice together.

The selected container is a 94 liter plastic barrel, which is ensured in terms of safety for users and cost-effectiveness for the project. Materials for filtration are utilized from local sources. In this family, Mr. Son collected all the materials.

Mentioning about the plus points of having this Do-It-Yourself filter at home, Son told: “few months ago when opening the barrel to do cleaning and replacing the materials, I saw dirty particles covering gravel and stuck in the layer of sand. By our eyes we had not seen these in the underground water running to home before. Not mentioning to the unseen bacteria that the project officers diffused knowledge to us, we had thought that was clean water.”

The family of Son and Luong is considered a representative one of the village in using safe water. In addition to four basic layers recommended for filtration: gravel-sand-coal-sand, Mr. Son decided on another top layer of gravel in order to restrict the mobility of sand and increasing the effectiveness of filtration. Besides, the inflow of unfiltered water was made smaller to prolong the filtering process; that resulted in cleaner water.

Mr. Son said when being proposed to share the family’s water filter model and experience: “usually my wife is on behalf of the family to attend the communal meetings, but I am willing to share my own experience to the members of community development club set up by ADRA project, so that every onw will enjoy better health due to safer and cleaner water.”

Mother of Son and Luong also benefits from the clean and safe water .

CLEAN WATER

HELPS DISEASE ELIMINATION

Ms. Binh Thi Nhan is the community health officer of the village where she was born and grew up—Na Ten village. Recording illness cases occurring in the area, she stated that water borne diseases were prevalent, including dermatological and intestine disorders. Village members straightly used water coming out of stream, or river, that contains bacteria due to changing human habits in modern time, long distance of connection and bamboo pipes utilized as local material.

“Since the CARE project set up, knowledge of using only clean water to first and foremost protect human health was disseminated in the site, with a wide range of participation. When the community could acknowledge the situation, project helped bring theory into practice. Local habitants were instructed to make their own filtration system installed in the house. Water for drinking and cooking was strictly reminded to be taken after filtration, water for washing and cleaning as well as other purposes was encouraged to be utilized as much as possible from this source”, said Ms. Nhan.

She continued: “I recognized a downward trend in number of diarrhea cases recorded, as well ones having skin diseases. My family now worries less for the health of kids in the house.”

SLOPING AGRICULTURAL LAND TECHNOLOGY

Mountains and highlands hold 3/4 of the total area of Vietnam, sloping land therefore plays an important role in developing agricultural production of the nation. Due to unsustainable farming methods such as slash and burn, overexploitation of tree harvest in combination with nomadic way of life of many ethnic groups, the ecology of this land type has been acutely degraded. The Sloping Agricultural Land Technology (SALT) is one of modern methods that makes good use of traditional technique of building terrain fields, at the same time creates green belts so as to limit the land erosion, enriches the life of soil and increases the products for farmers.

Mr. Hoang Van Hung in family of five that has three main labor. The household decided to implement the pilot SALT model in Na Vieng village, Thuong Ha commune. The owned hill land of 1,500 m2 has the angle between 15 and 20 degrees. “It was not easy to follow the instruction at the beginning as we had to grow the green belts, that was not traditionally done. Nevertheless during the whole process the family was enthusiastically assisted by project officers and coordinated agricultural extension officers”, said Hung.

Family of Hung built three green belts, which are 8-10 meters of distance from each other. In the first crop, they planted corn and soybean together and Guinea grass in the green belts. After the harvest, good result of SALT model showed an obvious diversity in collected product types. Guinea grass in green belts helps bind soil to sloping land with their roots and supplement a source of food for cattle. The harvested amount of corn and soybean served only domestic demand in this season, however Mr. Hung looked forward to an increase in the next crops after more sharing and orientation of the project.