

People's Committee of  
Dong Xuan District

A wide-angle photograph of a lush green rural landscape. In the foreground, there are vibrant green rice paddies divided by narrow water channels. In the middle ground, a dense line of trees separates the fields from the background. In the background, a large, rounded mountain covered in green and yellow foliage dominates the horizon under a clear sky.

# A new approach to dealing with malnutrition



# **Scaling-up nutrition sensitive agricultural initiatives in poor mountainous areas (NSA)**



# Foreword

The Medical Committee Netherlands-Viet Nam (MCNV) has been a partner of Phu Yen province since 2000, through Community Health Development projects in Son Hoa and Song Hinh districts. Since 2008, MCNV has cooperated with Dong Xuan district to combat malnutrition among children under 5 years of age. In the period 2017-2020, MCNV collaborated continuously with the People's Committee of Dong Xuan district (DPC) to implement a project on Scaling-up nutrition sensitive agricultural initiatives (NSA) in poor mountainous areas. The project is co-financed and technically supported by the Netherlands Research Council (NWO), Vrije Universiteit Amsterdam, the Netherlands, Hue University of Medicine and Pharmacy, and Hue University of Agriculture and Forestry. This document presents stories recorded during the implementation of the project.



# Persistent problem

Over the past years, the malnutrition rate in under-five-year-old children in Dong Xuan's mountainous areas has been much higher than the average in the whole district. Malnutrition in children in mountainous areas has been a concern for years and the government and local authorities have been endeavoring to reduce this gap.



Doctor: Nguyen Thi Thanh Nhan – Teacher of Hue University of Medicine and Pharmacy  
– evaluating the nutritional status of children in Phu Tien village, Phu Mo commune

*While parents are going to work on their farms, children will be cared for by their grandparents or relatives (taken in Phu Dong village, Phu Mo commune)*



*Farmers are taking care of their rice paddies in Phu Giang village, Phu Mo commune*



## **Income challenge**

In ethnic minority communities in Dong Xuan District, in addition to livestock breeding, agricultural production activities focus on the main food crops, including rice, and commodity crops such as cassava and sugarcane. In recent years, climate change and the instability of the sugarcane and cassava markets have significantly affected people's income, which directly impacts on food security in the households and the children's diet, in these areas.



According to the Vietnam National Institute of Nutrition, the relationship between food security and malnutrition is a top concern in the Central Highlands and Northern Mountainous areas. However, working towards food security only is not enough to improve malnutrition in individuals, unless the connections among food security and health care, disease reduction, improved sanitation, and health and nutrition education are strengthened. This requires a multidimensional approach to solving the problem of persistent malnutrition among children in mountainous areas.

*A family in Phu Dong village, Phu Mo commune coming home after harvesting cassava*



# Challenge of ensuring good nutrition for preschool children

Around 450 Ba Na and Cham ethnic minority children attend 15 kindergartens in Dong Xuan district. Before the school year 2018-2019, most of these kindergartens were unable to serve as semi-boarding schools, meaning that the children were not provided with school meals as are children in the lowland areas. This is one of the main factors causing malnutrition in mountainous areas.



*Children playing at Phu Tien kindergarten, Phu Mo commune*



*Preschool children after school in Phu Giang village,  
Phu Mo commune*



*Dinner for a family in Phu Giang village, Phu Mo commune*

## **Behavior change challenge**

Despite efforts to change behavior in caring for children and pregnant women in mountainous communities, challenges still exist. Perception and behavior change are not the only factors affecting this process, because improvements in living conditions, agricultural production activities, income level, and the opportunity to access healthy foods for mothers and children are also required to solve the problem.

According to a Phu Mo village health worker, although a number of families recognize the importance of a nutritious meal to a child, many factors stop them changing their behavior. For instance, parents have to work for a whole day outside, so they don't have enough time to take care of their children. Their income is unstable, making it hard to ensure that children have nutritious meals, and families have not been concerned about production to create food at home because they focused on production of cash crops. Many problems require a variety of interventions to help reduce the barriers to good nutrition.

*A child in Phu Giang village, Phu Mo commune is fed with nutritious porridge by his mother*





People washing their clothes in Ba Dai River, Phu Mo commune

# Weather Challenges

In recent years, Dong Xuan District has often suffered from severe weather conditions. In mountainous areas, shortage of water for production and domestic use is common in the dry season, while floods occur during the rainy season.



# Solution: Nutrition-sensitive agriculture

To solve persistent malnutrition among children in ethnic minority communities, Dong Xuan DPC and MCNV applied a multidisciplinary approach called 'nutrition-sensitive agriculture'. This approach focuses on three main aspects:

- Enhance agricultural production to produce nutritious food for daily meals of households.
- Improve supply chains of nutritious food in remote communities by promoting the process and use of nutritious foods, while supporting local small businesses to selling and distribute nutritious products and foods.
- Change community behavior in the care and nurturing of children and pregnant women.

Nutrition-sensitive agriculture interventions were implemented by the project through the period 2018 - 2020. Research is carried out in parallel with the project implementation process, to gain evidence on the effectiveness of nutrition-sensitive agriculture





# Interdisciplinary research approach

An interdisciplinary research approach has been used during the implementation of the NSA project; it requires cooperation and discussion about malnutrition prevention between research and implementation agencies. The Dong Xuan Department of Agriculture and Rural Development (DARD) and District Health Center (DHC) are main partners implementing the project in the field, with technical assistance from researchers at the Vrije University Amsterdam, Hue University of Medicine and Pharmacy and Hue University of Agriculture and Forestry. Besides, households with children under 5 years and/or pregnant women participated in planning, contributing to/deciding on the implementation of the intervention model.

In addition to the project funds, the NSA project received financial support from Dong Xuan DPC, funds from Government programs to prevent malnutrition, assist agricultural production, and support meals for pre-school children. During the implementation of the project, MCNV acted to foster cooperation and ensure full participation of all stakeholders.

*Research team advises mother with children under 5 years in Phu Tien village, Phu Mo commune*





A garden of nutritious vegetables in Phu Giang village, Phu Mo commune

## **Agriculture solution: Nutrition-sensitive agriculture model**

Even though they live in agriculture areas, the mountainous communities of Dong Xuan district have relied heavily on mobile vendors from outside the villages for foods such as fish, pork, beef, chicken, eggs, and vegetables. Within the NSA project, DARD of Dong Xuan has advised Dong Xuan DPC and People's Committees of communes to not only support people to produce commodity agriculture products but also to produce food for their own families. The NSA approach aims to create a stable income for households as well as reducing risks of food and nutrition insecurity resulting from the negative impacts of market volatility and climate change. During the past two years, DARD and the Agriculture Extension Station (AES) of Dong Xuan district have supported more than 400 households in ethnic minority communities at 15 communes with agricultural models such as raising chickens for eggs, raising quails, ducks, fish, and frogs, and planting nutritious vegetables and fruits such as bananas, papayas and other fruit trees.



*For the first time, chickens are raised for laying eggs in a household in Village 1, Da Loc commune*





*Mrs. Yen's household is one of the pioneers in quail raising in a garden at Phu Tien commune*



# Changes in agriculture production

Mrs. Yen's household has changed its agriculture production structure. From mainly planting rice, acacia cassava they are now also raising chickens, ducks, quails, catfishes, planting vegetables, sweet potatoes and fruit trees such as avocado, Thailand jackfruit and grapefruit. By changing the practice, the nutritious food resource and the income of the household have been improved, and her household now can sell food to people in the community and the outside markets.

*Yen's household has developed hens to lay eggs and get meat*





Mrs. Là O Thi Nga



# Raising muscovy duck, difficult but easy

Despite a shortage of abundant water, Mrs. La O Thi Nga and La O Thi Sim in Phu Giang village, Phu Mo commune successfully raised Muscovy ducks to provide meat and eggs for their families and for sale in the community. It was thought to be impossible to raise ducks in the dry mountainous areas, but the model of raising Muscovy ducks succeeded with the care from these households and the model is now applied by many other households.





Mrs. La O Thi Lang in Phu Giang village and Mrs. La Lan Thi Diem in Phu Tien village, Phu Mo commune, effectively raised chickens for egg-laying. Mrs. Lang is extending the model of raising chickens, while also applying the model of raising Muscovy ducks, to produce more food and generate more income.







Mrs. So Thi Giac, Phu Giang village, Phu Mo commune, uses eggs in her family's daily meals

## Chicken raising for eggs, familiar but strange

According to households in Phu Mo, they prefer chickens that lay eggs; the variety they have produces a significant number of eggs. However, it's a new type of chicken, so they had to learn new methods to take care of the chickens, especially to prevent diseases and create breeding stock.



Mr. La Doan Nam, Suoi Coi No.2 village checks 10-day-old chicks, hatched in an incubator provided by the project. According to Mr. Nam, success in providing chicks helps people to access new breeds at an affordable price to keep and develop breeding stock at household level.

For Mrs. So Thi Hoa, Phu Loi village, Phu Mo commune, self-managing the incubators and having success in creating the first flock of ducks are not only a source of happiness but also the motivation to continue the work. It encourages farmers to increase the numbers of chickens and ducks and to act according to the technical guideline to eliminate diseases in their poultry.

# Self-production of young poultry

This is the first time that people in an ethnic minority area are using incubators to produce their own new generation of poultry. The NSA project supported 35 incubators in 15 villages, with the aim of helping households increase their livestock production as well as giving the community the capacity to replace poultry reduced by local diseases. This model has created a great motivation for raising poultry, while helping people to improve their skills in caring for livestock and preventing diseases.

*People using incubators to hatch chicken, duck and quail eggs*



# Taking advantages of nature

Phu Hai village, Phu Mo commune is located on top of a mountain. However, despite its geographical location, the surrounding forests help retain water resources and are home to thousands of termites. Local people take advantage of both the water resources and the termite nests for two agricultural models: raising frogs and catfish.

According to Mr. So Minh Thuong, Phu Hai village, when catfish and frogs are fed with termites, they grow quickly. The NSA project is supporting Mr. Thuong to produce his own young stock of frogs, which will be used for frog production in his household and to supply the community.





Mr. La O Dom Phu Hai village, Phu Mo commune, checking the frog tank



Peer education from Phu Hai's model to be applied in Phu Tien village



*Mr. Ka Pa Hung – Agriculture staff of Phu Mo People's Committee checking trichathera trees*



*Crickets at Mr. Le Van Huong's household in Village No. 1, Da Loc commune*



*Mr. La O Choai's earthworms in Phu Tien village, Phu Mo commune*



*People use flying ants as a substantial food resource for livestock*

## Animal food

Along with the increase in the number of households raising chickens, ducks, fish and frogs, the DARD and the AES have focused on helping households develop food sources for livestock. In addition to producing additional food sources, people use light to attract flying ants at night, and dig up termite nests to supplement food for livestock.

*Mr. Dinh Van Nhon Phu Hai village, Phu Mo Commune, feeds his frogs and catfish with natural termites.*





Vegetable gardens at Phu Loi and Phu Tien villages, Phu Mo commune







*Mrs. La Lan Thi Thao, Phu Loi village, Phu Mo commune planted a considerable number of vegetables. Therefore, she not only uses the vegetables for her family but also sells them to the local people.*

## **Nutritious garden**

In the past, people only grew tobacco and bok choy for Tet Holiday, but now many types of nutritious vegetables such as amaranth, water spinach, katuks, dragon beans, green beans, pumpkins, bitter melons, are planted by many households in Phu Mo commune to consume in their daily meals.



*Once people in Phu Mo commune recognized the benefits of a nutritious garden, changes have taken place in home garden planting, care and maintenance*



A vegetable garden in Phu Loi village, Phu Mo commune.



Mr. Pham Le Hoang- AES Dong Xuan is checking the new dwarf varieties of papaya in Phu Dong village, Phu Mo commune



## The diversity of agricultural models

To diversify nutritious products in the community as well as ensure the adaptation to regional conditions and climate change, the NSA project has promoted the development of dwarf varieties of papaya, transplanted bananas, green pomelo, grafted mango, Thailand jackfruit, and cassava intercropped with beans.

According to an agriculture staff of Dong Xuan district: *“Production for income was a long-time custom of people in the communes. However, since the implementation of the NSA project, people now not only produce for income but also care about developing a vegetable garden, raising chickens or frogs to produce more nutritious foods for their families.”*

Mrs. So Thi Vinh - Phu Giang village, Phu Mo commune collects bananas from her field



People are harvesting peanuts intercropped with cassava in Phu Giang village, Phu Mo commune



## **Education solution: school meal model**

This initiative is being implemented by Department of Education and Training (DoET) for the first time at non-boarding schools in Dong Xuan district. The program is carried out through cooperation among schools, parents and owners of nutritional porridge shops, in which the NSA project funds 50% of the fee for each meal and the rest is contributed by the parents. Although the State has a policy to support preschool children in extremely difficult areas, according to Decree 06/2018/ND-CP, many mountainous-area schools have not yet organized meals for children. Thanks to this initiative, DoET could help preschool children here benefit directly from the policy.



*Teachers and children in Phu Giang and Phu Hai villages, Phu Mo commune*



## A key role for parents

In non-boarding schools, only one teacher takes responsibility for a class; some schools even have no water. Therefore, parents take turns to assist teachers in preparing meals, feeding children, and cleaning. In addition to the school meal fee, other parental supports are essential for the school meals to go well.



Parents washing dishes after lunch time at school

*As one mother said: “As the school meal model not only brings benefits to our children’s health but also for the parents, we are willing to pay 100% of the fee for school meal after the implementation of the NSA project.” – Individual interview*





*A teacher and a mother preparing for a school lunch*



## Changes

Since the introduction of the school meal model, children have learned new skills such as self-care, monthly weight monitoring, hand hygiene before and after meals as well as after using the toilet. Furthermore, many parents have learned from the school meals to change their way of preparing meals and pay more attention to nutritional care for their children at home.

A teach commented: *“The school meal model enhances the relationships and beliefs among porridge shop owners, schools, and parents. Besides, children normally talk about their school meals to their parents and request them to make similar foods at home. Therefore, parents have learned new ways to prepare meals from the porridge shop owners.”* – Individual interview





*Children in Phu Giang kindergarten learned new skills from school meals*



A teacher said: *“The school meal not only brings nutrition and happiness to children, but also strengthens relationships among them. Teachers also encourage children to finish their meal completely. Therefore, at school, children eat more compared to when they are at home. All of these influences contribute to constant weight gain and nutritional improvement in children.”* – Individual interview



Preschool children at Phu Loi kindergarten, Phu Mo commune at learning-time

# Not just a meal

According to a teacher at Phu Mo kindergarten, the school meal model not only brings nutrition but also makes the children feel happy about going to school. The proportion of children who were absent from school has decreased significantly, while the children steadily gained weight. Additionally, the connection between teachers and parents has been strengthened, they communicate more about education and nutritional care. The program has brought several unexpected positive effects.



Lunch in Phu Giang kindergarten

# Daily meal

In non-boarding schools, teachers and parents, depending on the situation, cooperate with small business households (normally called “porridge shops”) to prepare meals or the main school will prepare meals and then deliver them to village schools. In both models, food safety and nutrition are ensured.

*Mrs. La O Thi Pham, porridge shop owner in Phu Giang village, preparing breakfast for children*





*Mrs. La O Thi Sot, porridge shop owner in Phu Tien village, bringing lunch to kindergartens*

*A porridge shop owner shared, "I like the school meal model, not because of the income but because it makes me happy when I am doing my job, especially when the children are healthy and joyful. My main goal is to provide them with nutritious and delicious meals." – Individual interview*

# Health solutions: behavior change by education

Behavior change for better care and nurturing of children and pregnant women is the main goal of Dong Xuan DHC under the Prevention of Child Malnutrition program. Through the NSA project, DHC has supported to establish 35 household groups for 400 members in mountainous communes in Dong Xuan district. These household groups are the center for activities aimed at raising awareness, knowledge and skills, not only focused on nutrition but also paying attention to education and agriculture.



*Household group meeting at Phu Dong village, Phu Mo commune*



A mother in Phu Dong village responded in an interview: *“In the past, we didn’t have any idea about nutrition, we fed our children with any food we had. However, since the implementation of the Netherlands project, we take better care of our children and learned to cook nutritious foods for them.”* - Individual interview



*A mother in Phu Giang village, Phu Mo commune, feeding her children with nutritious porridge*

# Family communication

For the health sector, family communication plays a key role in changing community behavior on care and nurturing of children and pregnant women. At monthly meetings, members of household groups will together check the children's weight, evaluate nutrition charts, and exchange knowledge about child care and nutritious meal preparation.

*A household meeting in Phu Giang village, Phu Mo commune*



*A mother in a household meeting, Phu Giang village, Phu Mo commune*

As an Officer of the DHC commented: *“Nowadays, a number of parents have changed how they care for their children, also personal hygiene, such as helping them brush their teeth, wash their hands and feet, and change into fresh clothes daily. In addition, people pay more attention to cleaning the house, the barn and areas around the houses to eliminate diseases.”* – Group discussion





## Leader

Mrs. So Thi So is the leader of a household group in Phu Giang village, Phu Mo commune. As an energetic and enthusiastic person, Ms. So has inspired the group members to change nutritional care for the children and pregnant women. It's true that the leader plays an essential role in imparting knowledge and skills about health, education and agriculture to the group members.

A village health worker said: *“The more enthusiastic and proactive the leader is, the more efficient the group is”* – Individual interview



# Health care in the first 1,000 days of life

Improving mother's knowledge and skills in health care for the children's first 1,000 days of life is one of the main focuses of the Health sector. This contributes partly to the program: "Nutrition care in the first 1,000 days of life to prevent maternal and child malnutrition and improve Vietnamese stature" issued by the Government in Decision No. 1896/QĐ-TTg dated December 25th, 2019.



Doctor Doan Thi Thu Ha - an officer of Dong Xuan DHC, advising about nutrition to a mother in Phu Hai village, Phu Mo commune

A village health worker said: *“After participating in the project, mothers have gained more knowledge... for example, they recognized morning sickness in the first months of pregnancy, or know when to have ultrasound or prenatal care, or they learn more about a nutritional menu needed for a healthier fetus.”* – Interview with a village health worker



*Mr. La O Hoa – Officer of Phu Mo Health Station, advising a mother about nutrition*



Spoken by an Officer of a village health station  
“Mobile examinations and counselling are very essential because children will receive specific advice on a case-by-case basis. Furthermore, people do normally act on the advice of doctors, or district or province health workers.”– Individual interview

*Doctor Nguyen Thi My and an officer of Dong Xuan DHC examine and give counselling on nutrition in a village of Phu Mo commune.*







## Mobile examinations and counselling

In the period 2018 – 2020, Dong Xuan DHC maintained mobile examinations and counselling for children under 5 years old and pregnant mothers in every village of Phu Mo commune. This activity attracted many people, especially pregnant women or mothers having with young children. The nutrition data on the children will be kept to be checked and identified where support is needed.



# Local nutritional porridge shops

This model was initiated by Dong Xuan DHC with the aim to supply children and the community with nutritious porridge and foods that had only been seen in the plains or cities. With this introduction, the porridge shops, for the very first time, appeared in remote and mountainous areas of Dong Xuan district.



*Mrs. La O Thi Sot preparing food at the porridge shop*

Thanks to the support of Dong Xuan DHC and DoET, the owners of the local micro-enterprises were trained about food safety, and equipped with facilities and knowledge for nutritional food processing. The nutritional porridge shops provide nutritious porridge, rice noodles, and rice for kindergartens.



*Mothers feeding their children at a porridge shop in Phu Tien village*

# Results

After the pilot period from March 2018 to September 2020, the initial results have been recorded:

- In the intervention area, around 300 children less than five years old participated in the project. In 2020, underweight/malnutrition fell 7.3%, while the rate of stunting decreased by 3.2%, which is much higher than the average decrease of 1%-1.5% before the project. In March 2021, the research team will conduct a comprehensive assessment of the malnutrition status and food security at the household level to provide sufficient evidence on the success of the project;
- Up to September 2020, around 450 preschool children at mountainous non-semi-boarding schools have accessed to nutritious school meals. According to a monitor of children's nutrition at Phu Mo kindergarten, after the project intervention, the underweight malnutrition rate between the beginning and the end of the school year declined considerably, at 10%-12%, compared to 2%-4% in previous years. In the period from January 2020 to April 2020, the children did not go to school due to Covid-19, and the underweight/malnutrition rate at Phu Mo kindergarten rose from 17% to 26% (by 9%). This unplanned situation change strongly supports the importance of the school meals for child malnutrition.



*A family dinner in Phu Loi village,  
Phu Mo commune*



*A nutritious garden in Village No.1, Da Loc commune*

From June to July 2020, a qualitative research was carried out by MCNV with the Vrije Universiteit Amsterdam which recorded the following results:

- Around 350 Cham and Ba Na ethnic minority households in 15 villages implemented a nutrition-agriculture production model, in which 15% of them produced more food, not only for their own family but also for selling to the community, porridge shops and markets;
- More than 50% of the households having children under five years old and pregnant women in Phu Mo commune changed their behavior regarding care for children and pregnant women, including: exclusively breastfeeding for the child's first 6 months; eliminating weaning before the sixth month; participating in vaccinations for children and pregnant women; changing the way they prepare meals for children; improving personal hygiene for children; and sanitizing the area surrounding the house.



*Mrs. La O Thi Loan's family, Phu Mo village, changed dramatically their agriculture and child care practices.*

## Lessons learned

After 3 years of implementation, the NSA has provided the following lessons:

- The diversity of nutrition-agriculture production model is required to ensure the adaptation to the natural condition of each village and the economy situation of each family;
- A well-run school meal model at non-semi-boarding schools is the foundation to turn the school into a semi-boarding school;
- Knowledge sharing between people through household groups and study tours is an efficient tool to improve knowledge and skills and to change behavior of the community regarding nutrition and agriculture;
- A multi-stakeholder approach is essential and effective to address malnutrition. However, this approach will only work when there is a specific action plan between the sector departments under the direction of the DPC.

# Orientation

Dong Xuan DPC and MCNV expect a new phase of cooperation in prevention of malnutrition among children, and food security and nutrition improvement at household level for ethnic minority communities with the following orientation:

- Continue to seek technical and financial support from national and international organizations to promote nutrition-sensitive agriculture;
- Integrate budgets for production from the National Target Programs for New Rural Development and Sustainable Poverty Reduction to support people to implement nutrition and agricultural production models;
- Integrate family communication methods, health care for the first 1,000 days of life, and mobile examination and counselling into malnutrition prevention activities of the DHC.

*Prepare for a nutritious meal at a household, Phu Tien village, Phu Mo commune*





*Officer of the DHC and mothers, Phu Giang village – Phu Mo commune, in a group discussion about the results of the NSA project*

## Orientation

- Scaling-up the school meal model at non-semi-boarding kindergartens and develop the semi-boarding model in mountainous schools, using the policy supporting meals for preschool children in Decree No. 06/2018/ND-CP.
- Since the Vietnam National Assembly and the Government are proceeding to approve a new program called the National Targeted Program on Social Economic Development in Ethnic Minority and Mountainous Areas, in the period 2021-2030, with 10 main projects; the successful model of the NSA project could be integrated into two relevant projects in this program, namely:
  - Project No. 3: Developing agriculture and forestry production and promoting the potentials and strengths of the regions to produce goods according to the value chain;
  - Project No.7: Take care of people's health, improve the physical condition and stature of the ethnic minorities, and prevent child malnutrition.



**Sincere thanks are expressed to:**

- Mr. Pham Trung Thanh – Head of Dong Xuan Department of Education and Training
- Mr. Dang Ngoc Tan – Deputy head of Dong Xuan Department of Agriculture and Rural Development
- Mr. Pham Le Hoang – Deputy Director of Dong Xuan Agriculture Extension Station
- Doctor Do Quang Trung – Deputy Director of Dong Xuan District Health Center
- Mr. Nguyen Khac Si – Photographer
- MCNV Vietnam





*Phu Giang villagers coming home after working on the farm*

