



World Vegetable Center

Vegetables Go to School **BURKINA FASO**  
**School Vegetable Gardens:**  
**Linking Nutrition, Health and Communities**



**Project Documentation**

**Vegetables Go to School**  
**BURKINA FASO**

*School Vegetable Gardens: Linking  
Nutrition, Health and Communities*

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## Abbreviations

VGtS – Vegetables Go to School

WASH – Water, Sanitation and Hygiene



## **EXECUTIVE SUMMARY**

This report documents the preparation, implementation, findings, and recommendations of the Vegetables Go to School (VGtS) school garden program in Burkina Faso.

Vegetables Go to School is a new multidisciplinary, school-based project developed by a team from Burkina Faso government and a team of international researchers from the World Vegetable Center, Swiss Tropical and Public Health Institute and Freiburg University, and funded by the Swiss Agency for Development and Cooperation. The project aims to address malnutrition among Burkinabé children through a comprehensive school garden program.

### **Summary of the School Garden Program**

The VGtS school garden program in Burkina Faso is overseen by the County Team consisting of members from four ministries: Agriculture, Education Research and Health. The country team works with the International Research Team to design research protocols and curriculum for the pilot study. The country team trained school staff on the school garden program, research protocols and monitored their progress.

In the pilot phase, 30 schools participated in the project. The VGtS school garden program has a two-pronged approach: classroom curriculum and school garden. The VGtS school curriculum teaches students: Good Gardening Practices; Nutrition Education; and Water, Sanitation and Hygiene (WASH). The school garden incorporates hands-on gardening activities and demonstrations to enhance the learning experience for students.

The program impacts the lives of students' families and community through dissemination of agricultural information and technologies, and messages

on nutrition and WASH. The program encourages families to start their own home gardens by modelling the school garden. Ultimately, the whole community is involved in growing nutritious and diverse vegetables for home consumption, leading to improved nutritional well-being and local agricultural and community development.

## Research Findings

Results are only available for the first school year (2014 – 2015). Endline data for the second school year have not yet been analyzed. There were issues with the project implementation in the first year and this might explain the lack of observed impact. It is expected that data for the second year might show more impact.

## Key Recommendations

The recommendations in scaling up the project nationally include to:

- **Ensure year-round availability and accessibility of water** for vegetable production
- Conduct frequent **refreshment training** for the School Team
- **Increase the ownership of the project by host communities** to increase their willingness to invest in the daily implementation of the project and allow the withdrawal of international actors
- **Allocate funding for monitoring and evaluation** for the Country Team
- **Increase the project ownership by the ministries** involved to mobilize human and financial resources for project activities.

## INTRODUCTION

In the heart of the West African semi-arid savannah and forests, Burkina Faso is rich in natural resources, especially precious metals such as gold, zinc, and manganese. However, due to mining and human activities resulting in rapid deforestation and landscape degradation, Burkina Faso suffers from severe drought and flooding, low agricultural productivity and chronic food and nutrition insecurity. As one of the poorest countries in the world, with about 44% of its population living on less than US\$1.90 per day (WB 2017), access to healthcare and sanitation is a problem for the vast majority of Burkinabé.

Agriculture contributes to 33% of the country's GDP and employs about 85% of the labour force (WB 2017; FAO 2015). However, the national rate of global acute malnutrition (GAM) for children under five years of age increased to more than 10% in 2015 (WFP 2017). According to IFPRI's Global Nutrition Report 2016, 32.9% of children under five were stunted, 10.9% wasted, and nearly half (49.5%) of women of reproductive age had anemia in Burkina Faso (IFPRI 2016). Moreover, it was estimated that undernutrition in children cost 7.7% of the country's GDP (AUC 2015).

To tackle widespread malnutrition and food insecurity, community-based agricultural strategies have gained popularity among governmental and non-governmental initiatives. One of the mechanisms is leveraging the school system as a means of educating children and impacting the community on agriculture, nutrition and health. While primary school is mandatory for children between 5 and 18 years old, retention rates, gender and regional disparities, secondary school enrolment and quality of education are concerns of Burkina Faso's education system (WFP 2017).

To improve school enrolment, retention of students, nutritional status and academic performance, a School Feeding program was implemented in



Burkina Faso. In 2013, School Feeding covered 87.3% of all schools, and operated in all 45 regions. The feeding provided at least one nutritious meal a day for the students.

Other agriculture, health and nutrition interventions implemented by relief and development organizations in targeted regions include:

- Vitamin A supplementation in the Sahel region
- Distribution of Vitamin A enriched oil
- Iron and iodine supplementation and de-worming
- School garden to strengthen school canteens
- WASH programs in targeted school

Vegetables Go to School (VGtS) is a new multidisciplinary, school-based project implemented in Bhutan, Burkina Faso, Indonesia and Nepal. VGtS in Burkina Faso is developed by a team from Burkina Faso government and a team of international researchers from World Vegetable Center, Swiss Tropical and Public Health Institute and Freiburg University, and funded by Swiss Agency for Development and Cooperation. The project aims to address malnutrition among Burkinabé children through a comprehensive school garden program with emphasis on gardening, nutrition education and Water, Sanitation and Hygiene (WASH).

The first phase of the project began in 2013 with the main objectives to:

- Establish the school garden program in pilot schools
- Gather scientific evidence on the benefits and impact of the program in improving students' knowledge, attitude and behavior in healthy eating and lifestyle habits
- Understand the program's linkages with the local community
- Fine-tune the program for scaling up as a national school garden program

This report documents the preparation and implementation of the VGtS School Garden Program in Burkina Faso, benefits and keys to success of the program and empirical results. Finally, it outlines the challenges of the program and recommendations to move the school garden program forward nationally. The report is intended for government and non-government organizations that would like to implement a school garden program for their community or country.



## APPROACH

The school is a central part of the community as a place of learning. It also serves as a place of regular interactions between students, parents, teachers, community members and local businesses. These roles allow the school to motivate positive change in its community. Governments and non-profit organizations are leveraging on the existing school infrastructure and systems to introduce their agenda in community-based interventions. School-based health and nutrition programs are powerful strategies to improve local health situations and alleviate malnutrition.

Vegetables Go to School is an agricultural intervention aimed at promoting nutrition and health knowledge and practice in schools.

The project's school garden program aims to increase students':

- Gardening, nutrition and WASH awareness and knowledge
- Environmental awareness
- Interaction with the community
- Practical learn and application
- Vegetable consumption

The program takes a two-pronged approach: classroom curriculum and school garden.

## Curriculum

The VGtS school curriculum teaches students:

- Good Gardening Practices
- Nutrition Education
- Water, Sanitation and Hygiene (WASH)



These three core components are incorporated to provide students with a solid foundation on the importance of choosing, growing and eating nutritious and clean foods to stay active and healthy. Gardening, nutrition and WASH go hand-in-hand to address malnutrition.

Good and safe **gardening** practices give students the knowledge and ability to grow their own foods. Students learn how to establish their gardens, make beds, install irrigation, sow and transplant seedlings, compost and nourish the vegetables, and how to protect their vegetables against insects and pests.

**Nutrition** principles teach students the basis of balanced diets and how to make healthy food choices including choosing nutritious and diverse vegetables to plant in their gardens, and how to properly harvest, store and cook or eat vegetables. Students learn about the health benefits of vegetables and are encouraged to eat more vegetables daily.

Lessons on **WASH** teach students proper sanitation and hygiene practices. Poor WASH practices can lead to life-threatening illnesses caused by bacteria and pathogens. Ensuring a clean environment and washing hands after gardening activities and before handling food reduces the chances of infections. Diarrheal diseases and worms could further reduce nutrition absorption in the body and cause stunting and underweight.

## **School Garden**

The VGtS school garden program incorporates hands-on gardening activities and demonstrations to enhance the learning experience for students. Each school establishes and maintains an on-site school garden growing diverse vegetables during the school year.

The garden is a live teaching tool for students to apply their classroom knowledge, gain experience in gardening, and eat the fruits of their labor. Apart from gardening activities, students also learn how to prepare nutritious foods and practice proper WASH techniques. In the process, students increase their vegetable consumption, learn gardening skills and are informed to make better nutrition and health choices in life. Students become connected to the environment, appreciate nature, and are physically active. Moreover, through taking care of the garden, students gain a sense of responsibility and confidence in their achievements.

## **Beyond the School**

The school garden program can further impact the lives of students outside the school. The school is an avenue to disseminate agricultural information and technologies, and messages on nutrition and WASH with the community.

The lessons learned in school are easily brought home as the students share their knowledge and skills with the family. This exchange of know-how becomes a valued experience for the family. It motivates the family to start their own garden at home by modelling the school garden. Thus, as more students engage in the practice and take home their learning, more families in the community see the benefits and viability of gardening, leading them to widespread home gardening.

Home food production allows families to produce and consume a variety of foods at affordable cost. The initial cost of seeds and materials could usually be found or bought locally at low or no cost. Other non-monetary costs are manual labor for preparing the land and maintaining the garden. The home garden could feed the family without spending money on purchasing vegetables at the market. Surpluses from the garden could be sold to supplement household income.

Ultimately, the whole community is involved in growing nutritious and diverse vegetables for home consumption, leading to improved nutritional well-being and local agricultural and community development (Fig. 1).

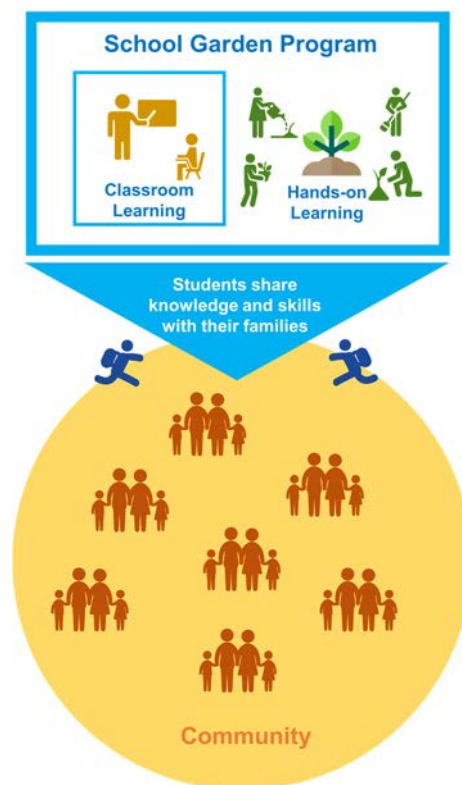


Figure 1. School gardens and community development.

## **Burkina Faso School Garden Model**

In Burkina Faso, the VGtS school garden program is supervised by the Ministry of National Education and Literacy (MENA) and works in cooperation with the Ministry of Health, Ministry of Agriculture and Food Security and the Ministry of Scientific Research and Innovation. The program improves the community's nutrition through two routes (Fig. 2).

In the first route, the teachers are trained as extension workers to teach students about agriculture, nutrition and WASH. The students are then encouraged to share their knowledge with their families and help establish home gardens. The program supports local women's groups in the second route in establishing home gardens, thus increasing home food production and consumption. With both school and home gardens in the community, food security and nutritional well-being are expected to improve.

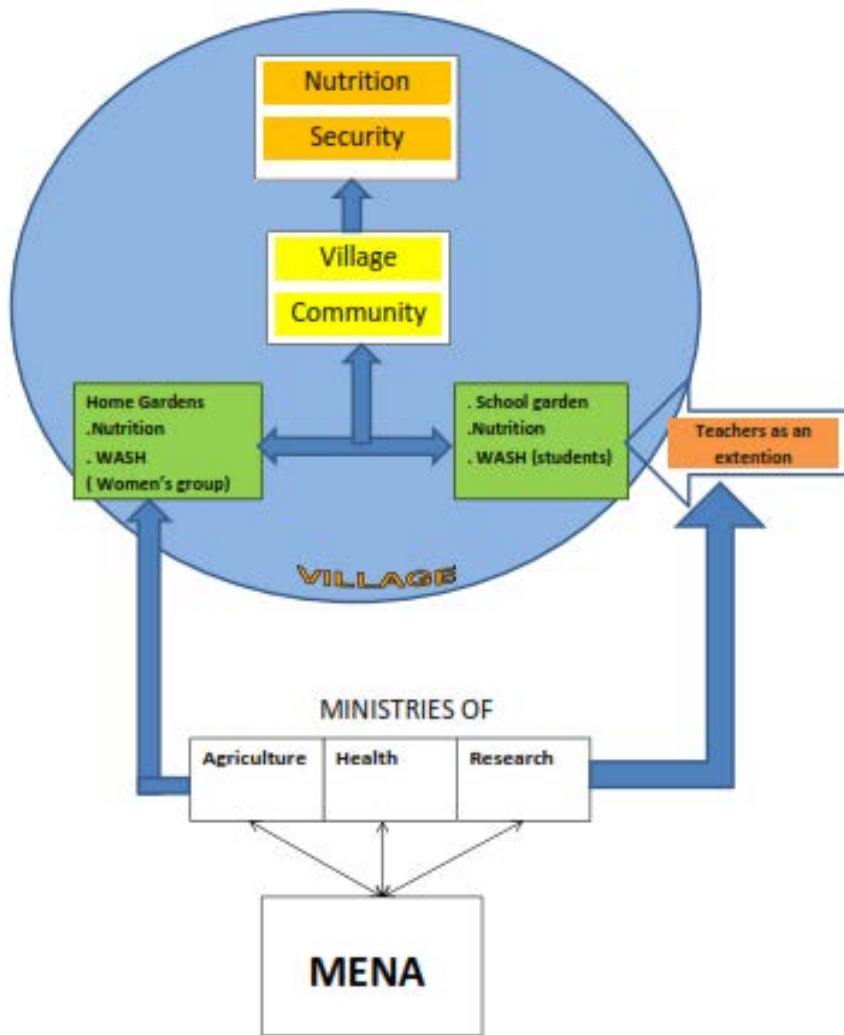


Figure 2. Diagram of the implementation strategy of VGtS in Burkina Faso



## WHO IS INVOLVED?

Who is Involved?	Main Roles
Country Team	Oversee all aspects of the project in the country.
International Research Team	Provide technical assistance and work with Country Team on research protocols.
School Team	<p><i>Headmaster</i> gives directions and overall management of the project activities in school.</p> <p><i>Focal Teacher</i> oversees all aspects of the school garden program in the school.</p> <p><i>Students</i> are the direct beneficiaries of the program.</p>
Focal Point	Government focal points for agriculture and education provide technical assistance for the school garden
Community	<p>Community leaders are the main authority of community initiatives.</p> <p>Parents and community members such as women educators interact with school garden program through students and focal teacher. They are the indirect beneficiaries of the program.</p>

## Burkina Faso Country Team

The core group of the VGtS project and moving the school garden program forward in Burkina Faso is the Country Team. The Country Team consists of a Country Manager from Ministry of Education (Ministry of National Education and Literacy) and one focal member from each of the government ministries:

- Ministry of Education
- Ministry of Agriculture and Food Security
- Ministry of Health

The Ministry of Education coordinates the program and ensures that the program is in line and consistent with the educational program in the country. At the regional level, it provides advisory support, monitoring and ensure the day-to-day implementation of the program lessons and activities. The Ministry of Agriculture provides the technical support in the area of agriculture while the Ministry of Health provides the technical support in the area of health and WASH.

In addition, a team from the Ministry of Scientific Research and Innovation is in charge of the research component of the project in partnership with the International Research Team. The ministry worked closely with Swiss Tropical and Public Health Institute to conduct studies on intestinal and urinary parasitoses, and on the drinking water quality of students and families. The study was conducted in 8 project schools.

The Country Team is primarily responsible for pulling together the country's resources for the school garden program and for rallying government support for the project. In addition to these key tasks, they are responsible over multi-sector activities including developing the country action plan, preparing school garden curriculum and teaching materials, implementing the project

across the country, training teachers, monitoring the project's progress and holding regular meetings on project-related activities. Furthermore, they work closely with teachers involved in the project who reported to the Country Team on their activities and progress. Likewise, the Country Team reported their progress back to their respective government departments to discuss the project's goals and directions and determine relevant training support and resources from the different departments.

## **International Research Team**

The function of the International Research Team is to work closely with the country team in research-related activities of the project. The research team trained the country team on developing the initial country action plan for the school garden program. The one-month training was organized prior to the start of the project and was led by the World Vegetable Center in Shanhua, Taiwan. The research team works with the country team to develop study protocols and analyze data for technical and scientific publishing. Furthermore, the team provided curriculum materials, nutrition topic materials and WASH and community strategies for the promotion of school and home gardens.

The International Research Team consists of scientists from the following organizations:

- **Swiss Tropical and Public Health Institute**
- **University of Freiburg**
- **World Vegetable Center**

## School Team

### **Headmaster**

The headmaster is the school's authority and supporter for the school garden program. He or she decides on the school's land use, staffing, class scheduling and the school's activities. Activities relevant to the VGtS school garden program are approved by the headmaster, including nominating the focal teacher for teaching and maintaining school garden activities.

### **Focal Teachers**

Each school appoints focal teachers to oversee the school garden activities and lessons. The teachers are usually in charge of from class 4 (CE2) and class 5 (CM1). The focal teachers are responsible for establishing the school garden, teaching the school garden curriculum, leading students in gardening activities, promoting health and nutrition messages and providing technical assistance to parents who decide to start their own home gardens. The focal teachers are trained by the Country Team through a series of trainings on the program's action plan and data collection.

### **School Gardener**

A school gardener maintains the school garden throughout the year, especially during off-school hours and vacations. The school gardener helps teach the gardening aspects of the program to the students (plots preparation, irrigation, taking care of the garden, etc.).

### **Students**

The students from class 4 (CE2) and class 5 (CM1) take part in the program's lessons and actively participate in school garden activities. These activities included, but were not limited to setting up the garden, making the garden beds, sowing the seeds, taking care of and watering the vegetables. Students are encouraged to promote vegetable gardening, nutrition principles and WASH techniques in their homes.

## **Focal Points**

Focal points for agriculture and education are extension workers in the local community who provide technical assistance in agriculture and education to aid the establishment and maintenance of the school garden.

## **Community**

### **Community Leaders**

At the community level, the community leaders, mainly the Village Chief provide leadership in mobilizing local communities to build the feeling of ownership of the project activities by the local communities. They are the main authority for initiatives in the community and provide decision-making, approval, support and resources for local activities.

### **Parents**

Parents' Association and school management committees monitor the implementation of the project activities, participate in funding and purchasing of small equipment or tools. Moreover, parents are encouraged to participate in school garden activities and given seeds from the VGtS project and encouraged to grow their own gardens and increase their family's vegetable consumption. Newly set up home gardens are monitored and supervised by the focal teachers and extension workers.

### **Women Educators**

The Association of Women Educators manage the school canteen, cook the food for the students and organize promotion campaigns to raise awareness on the benefit of nutrition and WASH practices. For the forthcoming year, these women will establish home gardens to strengthen the school gardens.

# PROCESS



**R** Collection of research data in project schools

Figure 3. Project planning process.

## **PREPARATIONS**

Several important preparations were necessary prior to implementation of the school garden program in schools.

### **Plan Project**

A project planning workshop was held with country representatives, the donor, and the International Research Team consisting of scientists from partner research institutes. During this workshop, the project's objectives and strategies were discussed and the initial plan of the project was set in place (Fig. 3). The roles and responsibilities of the attending members were defined. This included assembling the project Country Team.

### **Assemble Country Team**

The World Vegetable Center worked with Burkina Faso government authorities to nominate and invite Country Team members, including a Country Manager and a focal member from the Ministry of National Education and Literacy, Ministry of Agriculture and Food Security, and Ministry of Health.

### **Train Country Team**

The Country team was trained on the objectives and strategies of the project by the World Vegetable Center, Swiss Tropical and Public Health Institute and University of Freiburg. The 4-weeks training included current school garden approaches, hands-on garden management, nutrition education, WASH and health topics, and communication and promotion strategies. During this period, regular Country Team meetings were held to develop the Country Action Plan and research protocols.

The training of trainers manual titled, “**Vegetables Go to School: Improving Nutrition by Agricultural Diversification**” was used as a guide throughout the training. Topics included:

- School Vegetable Garden Design and Realization
- Saving Your Own Vegetable Seeds
- School Gardens and Nutrition
- School Vegetable Garden and Synergies with Water, Sanitation, Hygiene and Health
- Communication Strategies for School Vegetable Gardens
- What Is the Impact of Our School Vegetable Garden?
- Collaborative Data Management and Data Sharing

## **Develop Country Action Plan**

The Country Action Plan was developed by the Country Team with assistance from the International Research Team. The action plan was a blueprint for the implementation of the VGtS school garden program in the country. This included the project approach, timeline, activities and roles and responsibilities related to the project.

The project was initially planned for three phases, with the first phase being a pilot phase for implementing and fine-tuning the program in 30 schools for scaling up and collecting research data for scientific evidence.

## **Identify Stakeholders**

Stakeholders are individuals or groups which are directly or indirectly affected by or those who can influence the project. The contribution of stakeholders for the successful execution of the project activities is on a



voluntary basis without any financial compensation with the main aim of improving the nutrition and health status of schoolchildren.

The main stakeholders involved in the implementation of the VGTS project are:

- The Ministry of Education at the central and the regional level
- The Ministry of Agriculture at the central and the regional level
- The Ministry of Research through the “Institut de Recherche en Sciences de la Santé”
- The targeted schools including the students and teachers
- The local community including community leaders, Parents’ Association and Association of Women Educators

## **Identify Schools, Head Teacher, and Focal Teachers**

Two regions were selected prior to project implementation.

1. The region of Centre-Ouest with the hope that the VGtS project can complement the already existing “Blue Project”
2. The region of Plateau Central selected for its high rate of acute malnutrition.

Project schools were selected by first creating a list of primary schools for each region that met the eligibility criteria of having:

- Land available for establishing a school garden
- Access to a water source

The use of these criteria ensured a more meaningful comparison between control and intervention schools, which was necessary because logistics and budget allowed for only 10 treatment schools per year. From this list, 10

schools (5 per region) were randomly selected to receive the school garden in the first year of the project and 10 schools were randomly selected as a control. In the second year of the pilot, control schools became treatment schools and 10 new schools were randomly selected as a control. Therefore, the number of treatment schools were 10 in the first year and 20 in the second year while there were 10 control schools in each year.

## Develop School Curriculum

The project created a curriculum for VGtS to guide focal teachers and students in the implementation and maintenance of the school garden program.

## Develop Other Materials

Other materials developed by the project include:

**Pre-intervention and Post-Intervention Surveys** to assess students' knowledge, attitude and practice towards gardening, healthy eating and WASH practices and the impact of the school garden program

**Teacher Training Materials** on gardening, nutrition and WASH.

***Vegetables and Nutrition for Schools in Burkina Faso*** was developed by the World Vegetable Center and Country Team members as a nutrition teaching material for schools. The material aids teachers in teaching students simple and useful nutrition concepts. The material is focused on helping students make healthy food choices by understanding the importance of nutrition, current nutritional problems in Burkina Faso, good nutrition and balanced diets, specific nutritional needs of different family members, and the health benefits of vegetables. In addition, the material provides photos, nutritional content and recipes for common vegetables to encourage planting and eating vegetables.

Topics include:

- Introduction to Good Nutrition (Nutrition in Burkina Faso)
- Healthy Diet
- Good Nutrition for Burkinabé
- Nutrition Through Life
- Health Benefits of Vegetables
- Names and Photos of Common Vegetables
- Vegetable Planting Calendar
- Nutritional Information of Vegetables
- Vegetable Recipes
- Promotion

***We Grow Vegetables, We Eat Vegetables! Communication Strategies for School Vegetable Gardens*** is a communications toolkit developed by World Vegetable Center for school garden implementers. The toolkit is a practical step-by-step guide to develop a communication strategy to effectively promote school gardens and engage the participation and interests of students.

Topics include:

- How is your school garden growing?
- To set a goal, begin at the end
- A-U-D-I-E-N-C-E
- Develop your message
- Awareness

- Incentives
- Share your experience!
- Plan a strategy
- Sample strategy
- Take the Healthy Pledge
- Classroom posters

## Teacher Training and Workshops

Once trained, the Country Team organized and delivered the training to teachers and school gardeners. In each school, the school team involved in these trainings were mainly the headmasters and the teachers of class 4 (CE2) and class 5 (CM1).

In addition, the Country Team hired WASH specialists from local organizations in Burkina Faso for the training of trainers since none of the members of the team is a WASH specialist.

Training sessions were organized for not more than five days to accommodate teachers' schedules. The teachers, headmasters, gardeners, focal points and pedagogical supervisors were gathered to:

1. Build their capacity in vegetable production, nutrition and WASH
2. Train them on how to establish and manage a school vegetable garden
3. Integrate VGtS activities in their training curricula.

The trainings were 70% practical sessions for agriculture trainings and 25% practical sessions for nutrition and WASH. All the trainees received hard copies and electronic copies of the supporting training materials and a training certificate. The main trainings conducted were:

- Trainings of school teachers and gardeners on school garden establishment from 17 to 20 October (Loumbila), 2014, from 6 to 7 November (Ouagadougou), 2015 and from 5 to 6 March 2016 (Ouagadougou)
- Training of school teachers on nutrition and WASH from 22 to 24 October, 2015 in Ouagadougou



# SCHOOL GARDEN PROGRAM

## School Garden

The establishment of school gardens was made by the School Team under the direct supervision of the Country Team, the pedagogical supervisors, the education and agriculture focal points, and members of the local communities including Parents' Association and the Association of Women Educators.

The management of the garden is the responsibility of the headmaster who delegates the responsibility to the focal teacher. This teacher is assisted in his or her responsibility by the school gardener, the parents of students, the women educators and students who are always willing to help.

### List of intervention schools

<b>Region</b>	<b>Plateau Central</b>	<b>Centre-Ouest</b>
<b>01</b>	Goué classique	Douré
<b>02</b>	Loumbila (A)	Saria (A)
<b>03</b>	Tangzougou	Doulgou classique
<b>04</b>	Wanvoussé	Essapoun
<b>05</b>	Lallé	Goundi (B)
<b>06</b>	Nambéguian	Tanghin (A)
<b>07</b>	Tabla	Ipendo (A)
<b>08</b>	Zitenga (A)	Kordiè (A)
<b>09</b>	Linoghin	Tio
<b>10</b>	Watinoma	Gogho

### List of control schools

<b>Region</b>	<b>Plateau Central</b>	<b>Centre Ouest</b>
<b>01</b>	Nagréongo-centre	Godéoualgtenga
<b>02</b>	Sargo	Nayalgué
<b>03</b>	Ouidi	Ouézindougou
<b>04</b>	Rapadama (A)	Réo, secteur 4
<b>05</b>	Wayen	Zoula (A)

### Site Selection for School Garden

School gardens were established near a reliable water point. In addition, if needed, water basins were built to facilitate the storage of water for irrigation purposes. Each established school garden has an average surface of 500-600 m<sup>2</sup>.

### Gardening Materials

Rakes, hoes, watering cans, buckets, treatment devices and protection wire fences were provided to the schools to set up the gardens.

### Vegetables Grown in the School Garden

The main crops grown in the school gardens are lettuce, cabbage, tomatoes, amaranth, onion, and African eggplant. Some vegetable seeds were provided by World Vegetable Center's Mali office (amaranth, onion, African eggplants) and the remaining were purchased from the local market. The harvesting periods of the different crops are:

- Cabbage harvested from January to March
- Lettuce harvested from December to June
- Tomatoes harvested from January to March
- Amaranth harvested throughout the year
- African Eggplant harvested from November to April
- Onion harvested from December to April

### **Vegetable Harvest and the School Canteen**

Once harvested, the vegetables from the school garden was cooked by the school canteen. The vegetables supplement students' diets with at least one or more meals made of fresh vegetables and the normal school ration made of cereals, pulses and oils. The food surpluses were dried by women educators to be preserved for later use in school meals for the students.

### **Students' Participation**

Students participated in weekly garden lessons and activities organized at the school garden. Moreover, the students helped fetch water and water the garden early in the morning before school classes begin and in the afternoon before going back home.

### **Sustainability of School Gardens**

The sustainability of school gardens is linked to the feeling of ownership of the project activities exhibited by local communities and built by the project team on the targeted sites. In areas like Saria A and Goundi B, school gardens and school life are well embedded in the community life. Good collaboration between the school team and local communities, involvement and sense of ownership of the school garden by local communities have contributed to the sustainability of the school garden. However, in areas where willingness to voluntarily contribute to the school garden for the community interest is low, school gardens are often not sustainable.

### **Curriculum – Gardening, Nutrition and Health and WASH**

Prior to implementation of the school garden program, World Vegetable Center and the Country Team developed the VGtS school garden curriculum. These curricula were later on revised with the help of the Swiss Tropical and Public Health Institute, the Country Team and the World Vegetable Center.



The current curricula include agriculture, nutrition, and WASH topics and cover 32 academic weeks.

### **School Garden Lessons**

The design of the VGtS curricula was done with the existing national curricula in mind to include the adaptation and the integration of VGtS topics within the regular subjects. VGtS topics are encompassed within natural science lessons, civic and moral lessons, and practical production activities. Each lesson lasted one to one and half hours with practical sessions not exceeding half of the allocated time. All the topics were taught in regular school subjects. Lessons were delivered with the help of basic tools including seeds, visual cards and any other relevant visual materials.

The practical gardening lessons were delivered in the school garden by the gardener and by focal teachers for the theoretical issues. Agriculture focal points are invited to teach specific topics such as pest management. Teachers sometimes bring class 2 or 3 to the school garden for practical mathematics and science classes.

### **Linking with Other School Nutrition and Health Initiatives**

The Vegetable Go to School project is currently linked to the National School Feeding program and to school sanitation activities.

In order to improve school enrolment, retention of boys and girls and to improve the nutrition status and school performance of schoolchildren, a School Feeding program has been implemented in Burkina Faso for decades. All the 45 regions of Burkina Faso are actually covered by the School Feeding program. 41 regions out of 45 are covered by the National School Feeding program implemented by the Ministry of Education; the four regions remaining are covered by programs implemented by Catholic Relief Services

and World Food Program. In 2013, the coverage of the School Feeding program was 87.3%.

The vegetables harvested from the VGtS school gardens were used by the school canteens to supplement students' meals with nutritious vegetables. This helped increase students' vegetable consumption and reduce the cost of buying vegetables in the market.

### **Public Promotion**

To raise the awareness on the benefit of school gardens and increase the feeling of ownership by local communities, promotional activities were organized including:

- One nutrition day per school during which local communities were invited to attend school promotional activities and visit the school garden
- One TV report was made on the VGtS project and broadcasted on national television



## Family and Community

Beyond the school walls, the project expands its influence by connecting to families and communities. Parents and community members are actively involved alongside the children from establishing to helping maintain and support the school garden. This positive relationship with the community mutually benefits the school and the community, leading to increasing:

- Awareness of the benefits of gardening, nutrition and WASH in the community
- School-community interaction
- Parents' role in students' health
- Vegetable production and consumption in the community

The school interacts with students' families and community in several ways:

### **Home Garden**

Through the project, the school gives students seeds to bring home. The parents are encouraged to establish their own home gardens and grow vegetables organically. Producing and consuming their own vegetables ensures affordable food sources for the family with little or no pesticides and harmful chemical substances.

### **Influence on Local Agriculture and Community Development**

The program may potentially impact vegetable production, nutrition and WASH practices in the targeted communities. In the past, these communities, used to produce vegetable only for marketing purpose; nowadays based on sensitization activities, they have started to produce vegetable not only to sell but also to improve their household dietary consumption pattern. Furthermore, these communities have also admitted that the rate of diarrhea diseases has decreased in their area due to improved WASH practices.

In addition, despite the fact that most of the vegetables promoted are those that are locally known and accepted, the introduction of new vegetables like amaranth, which were not common in some localities, was welcomed and accepted.

## RESEARCH

The research protocols and assessments were developed by World Vegetable Center and the Burkina Faso Country team. A scientific paper detailing the VGtS research methods and results for school gardens in Burkina Faso was submitted to the *Food and Nutrition Bulletin* (Schreinemachers et al., n.d.). The following results are based on the scientific paper.

During the first year of the project, the study measured five main outcome indicators (Table 1) of students before and after participation in the Vegetables Go to School garden program.

## Outcome Indicators

**Table 1. Outcome indicators used in the study**

Indicator level	Explanation	Testing method
A. Awareness	School girls and boys become aware of fruits and vegetables. They can recall different kinds and tell the names.	1. Ability to identify fruits and vegetables from a photo
B. Knowledge	School girls and boys know that different foods can help the body perform different functions. They also know some basics about sustainable agricultural production systems.	2. Food-nutrient association 3. Food-job association 4. Insect pests and natural enemies 5. Crop rotations
C. Preferences, attitudes	School girls and boys not only know about fruits and vegetables but also develop a desire to eat them.	6. Number of fruits and vegetable liked by the children 7. Preference for healthier snack choices
D. Dietary behavior	School girls and boys change their dietary and/or agricultural behavior.	8. Dietary diversity 9. Number of different vegetables consumed
E. Nutritional status	Long-term changes in dietary behavior could lead to improvements in nutritional status.	10. Anthropometrics (z-score)

## Baseline Information

The students' characteristics of control and intervention schools (Table 2) shows some differences between groups due to the small sample size of the first year's study.

**Table 2. Average characteristics of the sample of school children, 9-15 years old, in Burkina Faso at baseline, 2014. Standard errors in italics.**

Characteristic	Control (n=472)	Intervention (n=465)	p-value	Significance
Age (years)	10.9 <i>0.1</i>	10.7 <i>0.1</i>	0.10	
Male (%)	46.2	47.3	0.73	
Female (%)	52.3	51.0	0.68	
Coming to school by foot (%)	96.2	95.9	0.88	
Walk to school for more than 30 min./day (%)	27.5	33.6	0.46	
Household size (persons)	11.4 <i>1.3</i>	11.8 <i>1.3</i>	0.83	
Vegetable garden at home? (%)	19.3	35.9	0.19	
<i>What meals do you regularly eat together with your parent(s)?</i>				
All meals (%)	38.3	40.4	0.87	
Only dinner (%)	22.5	25.8	0.75	
We never eat together (%)	29.4	12.0	0.10	
<i>Where do your parents work?</i>				
On a farm (%)	92.6	93.3	0.77	
In own shop or business (%)	5.9	4.5	0.54	
Work for a company (%)	2.5	3.9	0.43	
Work for government (%)	3.2	0.4	<0.01	***
<i>Which of the following items do you have at your home?</i>				
Tap water (%)	0.6	0.0	0.49	
Soap in the toilet (%)	97.9	99.4	0.36	
Water in the toilet (%)	80.5	70.7	0.45	
Refrigerator (%)	0.6	0.0	0.49	
Toothpaste (%)	2.5	0.4	0.05	*

Notes: \*\*\*p<0.01, \*\*p<0.05, \* p<0.10.

## Results

Results are only available for the first school year (2014 – 2015). Endline data for the second school year have not yet been analyzed. There were issues with the project implementation in the first year and this might explain the lack of observed impact. It is expected that data for the second year might show more impact.

**Table 3. The impact of school gardens linked to complementary teaching and promotional activities about nutrition, water, sanitation and hygiene on the nutritional awareness, knowledge, preferences, eating behavior and nutritional status of 8- to 11-year-old schoolchildren in Burkina Faso, 2015, standard deviations in italics**

	Baseline (2015)			Follow-up (2016)			Impact	
	Control (n=472)	Interv. (n=465)	p- value	Control (n=472)	Interv. (n=465)	p- value	Mean	p- value
<b>Awareness:</b>								
1. Ability to identify fruit and vegetables	46.8 <i>6.2</i>	51.3 <i>6.2</i>	0.61	65.8 <i>3.9</i>	72.5 <i>3.9</i>	0.25	2.1	0.77
<b>Knowledge about:</b> <sup>a</sup>								
2. Food-nutrient association	56.0 <i>2.1</i>	56.0 <i>2.1</i>	0.99	56.1 <i>2.0</i>	61.5 <i>2.0</i>	0.07 *	5.4	0.21
3. Nutrition	54.2 <i>1.6</i>	57.4 <i>1.6</i>	0.18	60.5 <i>2.4</i>	67.5 <i>2.4</i>	0.05 *	3.8	0.40
4. Water, sanitation and hygiene	45.6 <i>2.1</i>	46.3 <i>2.1</i>	0.82	68.6 <i>3.2</i>	71.5 <i>3.2</i>	0.53	2.2	0.71
5. Beneficial insects and pests	72.5 <i>2.5</i>	65.1 <i>2.5</i>	0.05 **	51.5 <i>1.8</i>	48.8 <i>1.8</i>	0.29	4.7	0.34
6. Crop rotations	42.2 <i>3.2</i>	43.9 <i>3.2</i>	0.71	43.6 <i>3.6</i>	48.9 <i>3.6</i>	0.31	3.6	0.50
<b>Preferences:</b>								
7. % of fruit and vegetables liked	54.0 <i>3.5</i>	52.4 <i>3.5</i>	0.76	60.1 <i>2.3</i>	55.7 <i>2.3</i>	0.19	-2.8	0.60
8. % of healthy snack choices	53.4 <i>2.3</i>	57.2 <i>2.3</i>	0.26	54.7 <i>3.2</i>	57.5 <i>3.2</i>	0.55	-1.0	0.73



	Baseline (2015)			Follow-up (2016)			Impact	
	Control (n=472)	Interv. (n=465)	p- value	Control (n=472)	Interv. (n=465)	p- value	Mean	P- value
<b>Behavior (24h recall):</b>								
9. % of children who had eaten vegetables	88.3	75.5	0.11	99.4	98.5	0.37	0.2	0.69
10. % of children who had eaten fruit	55.3	47.1	0.37	0.4	0.2	0.65	-0.0	0.97
11. Food categories consumed	3.1 <i>0.1</i>	2.7 <i>0.1</i>	0.07 *	1.0 <i>0.0</i>	1.0 <i>0.0</i>	0.36	0.4	0.07 *
<b>Nutritional status:</b>								
12. Body height (cm)	137.2 <i>0.9</i>	137.0 <i>0.9</i>	0.85	141.4 <i>0.8</i>	141.1 <i>0.8</i>	0.78	-0.1	0.96
13. Body mass index	15.6 <i>0.3</i>	15.6 <i>0.3</i>	0.99	15.9 <i>0.5</i>	16.0 <i>0.5</i>	0.92	0.1	0.86
14. Children stunted (%) (height<2 sd)	21.4	14.0	0.18	8.3	5.4	0.21	0.1	0.79
15. Children wasted (%) (BMI<2 sd)	16.5	17.4	0.89	18.9	16.8	0.79	-0.1	0.63
16. Children overweight (%) (BMI>1 sd)	3.4	8.4	0.23	10.8	13.3	0.77	-0.3	0.22

Notes: \*\*\*p<0.01, \*\*p<0.05, \* p<0.10, NS=Not significant (p≥0.10). <sup>a</sup> % of correct answers.

## BENEFITS

Validated benefits of the VGtS school garden program was reported in the impact assessment (previous section). However, several benefits were observed and may not be measurable in the short-term period. These observed present and potential benefits of the school garden program were documented from face-to-face interviews with the Country Team, head teachers, focal teachers, students and their families, and through the World Vegetable Center rapid assessment, external evaluations of the project and the impact assessment.

Beyond the school, the VGtS school garden program was seen to have **increased the awareness of the health benefits of vegetables** among families of intervention schools resulting in **increased home vegetable production for home consumption**, and **diversification of agricultural production** with the introduction of new vegetables.

### Students

#### Observed Benefits

- Knowledge and skills in gardening, nutrition and WASH
- Awareness about fruits and vegetables
- Awareness and care for environment
- Understand the importance of agricultural producers in the community
- Better engagement in school activities
- Sense of responsibility as teachers on gardening, nutrition and WASH at home and in the community

## **Long-Term and Potential Benefits**

- Increased vegetable consumption
- Agricultural skills for future employment opportunities
- Ability to produce food and contribute to local and national food and nutrition security
- Ability to make healthy eating and lifestyle choices throughout adulthood
- Ability to teach their children on gardening, nutrition and WASH concepts

## **Schools**

### **Observed Benefits**

- Increased school capacity to implement school garden program:
  - Established garden facilities
  - Trained school staff
  - Productive use of school land
- Enhanced quality of education through hands-on learning program
- Increased interaction with families and the community
- Increased importance of school in the community as a resource center for sharing new agricultural technologies, and nutrition and health messages
- Greening of school environment

### **Long-Term and Potential Benefits**

- Recognition for higher quality of education in the school district
- Increased school enrolment and retention of students

## Families

### Observed Benefits

- Increased establishment of home gardens in the community
- More children-parent interaction and bond due to engagement in school garden and home garden activities
- Increased home vegetable production and consumption (for families with home gardens)

### Long-Term and Potential Benefits

- Increased local vegetable production and consumption
- Income from selling vegetables in local and distant markets
- Household food and nutrition security, improved nutritional status

## Community

### Observed Benefits

- Exchange of new farming technologies
- Increase in home gardens and vegetable production near intervention schools
- Increased vegetable consumption for the household
- Increased vegetable diversity with the introduction of new vegetables

### Long-Term and Potential Benefits

- Diversification of agricultural production
- Increased local vegetable production
- New products and market opportunities
- Increased consumption of diversified food products
- Improved nutritional status

## Government

### Observed Benefits

- Coordination of multi-ministry school garden program
- Rallying support from multiple government ministries
- Enriched school garden program ready to be used by other schools
- Scientific research protocols and results for school garden program



# CHALLENGES & KEYS TO SUCCESS

## Challenges

Several challenges were met by the VGtS school garden program. The following is a highlight of the main challenges:

### **Setting Up and Maintaining the School Garden**

The main challenges and constraints related to the establishment and maintenance of school gardens were:

- Access to water
- Finding motivated teachers, gardener and volunteer help when the water problem arises, or when there is a need to make soil amendments
- Recruitment and payment of the gardener
- Livestock straying onto school gardens despite the fences
- In some areas people do not like working for free. Other non-monetary incentives should be considered to motivate the school staff and local community members to participate in setting up and maintaining the school garden

### **Access to Water**

School garden activities were planned for the whole academic year. However, due to difficulty in having available and accessible water year-round, school gardens did not always operate throughout the whole academic year. In all the program schools, school gardens were 100% operational from October to March of each year. For the period from April to July when temperatures are very high and groundwater is very low, only 20-30% of school gardens remain operational.

In the worst scenario, there were cases where parents had to fetch water with buckets and jerry cans using donkey carts from distant places water the vegetables. The use of water basins also alleviated the arduousness of the chore of fetching water for the gardener, since during their break time, students actually fetch the water and fill the basin.

Some areas have ferruginous soils making the soil amendment process more difficult and this requires carrying arable soil long distances from farm fields to school gardens.

It is obvious that the establishment and management of school gardens required a lot of labor, but with good organization and a good task allocation within the school team, the gardener, the local community and schoolchildren, this process can become easily manageable and lead to positive results.

### **Teaching Constraints**

The lack of adapted visual cards and relevant visual materials sometimes made the teaching process challenging. Training sessions that are supposed to be more practical than theoretical can become almost completely theoretical due to the lack of relevant materials. This situation often demotivates the teachers. To overcome this situation, some teachers have tried to adapt by drawing visual materials with the help of school children.

### **Coordination of the Program**

Time constraints and the coordination of various activities between the stakeholders were the main constraints at the coordination level. Agents from the various ministries usually give priority to the programs of their respective ministries. This also had an effect on the commitment of the various stakeholders to participate in the implementation of key activities due to their work obligations.

## **Schools' Capacity to Implement the Program**

Depending on the areas, some schools had more difficulty in implementing the program since the availability and accessibility of water is related to the depth of the groundwater. In addition, the project did not train all the school teachers, but only those nominated by the headmasters. Due to the high mobility of school teachers and their unavailability for reasons beyond their control, some schools were challenged with finding a qualified teacher to replace the original teacher on short notice. Some teachers also requested a financial stipend since they believed that VGTS activities were extracurricular and extra work.

## **Keys to Success**

Several factors contributed to the success of the school garden program:

- The multi-ministry participation in the school garden program was vital in mobilizing resources and support for the program from the different ministries
- Government support for the program
- Good international partnership with research institutes to assess and generate valid data for the project
- Regular communication of Country Team with headmasters and focal teachers through meetings, and on-site visits
- Motivated headmaster for supporting the school garden program
- Motivated focal teacher and gardener in running and teaching the program to the students
- Students taking initiative to participate in the program and share what they have learned with the family.



- Supportive parents and women educators who participated in school garden activities
- Access to a stable water source

## Success Stories

### Story 1

The school of Doulou Classic is located northeast of the city of Koudougou in the Centre-Ouest region. The school has an enrollment of 375 students including 184 girls and 191 boys and has implemented the VGtS project since 2014.

Kombasséré Pasgnaba Alain and Kaboré Yvette were both students in class 5 during the last academic year (2015-2016) at Doulou classic primary school. Based on the knowledge gained in the field of vegetable production with VGtS, they have voluntarily decided to implement the skills acquired at school in their community by establishing a vegetable garden in their village. The vegetable crops grown were onions, eggplants, local beans and sorrel. These vegetables had mainly served to improve the quality of their family meals and the rest were sold to buy their school supplies.

### Story 2

Trainings on vegetable production, improved hygiene practices such as manufacturing liquid soap for hand washing and the maintenance of sanitation (latrines, water point, and kitchen utensils) were organized at the beginning of the 2015-2016 academic year for teachers and parents of Douré A Primary school. Mr. Sakandé Lassané and his wife were among the parents trained and have since started manufacturing liquid soap at home for the use of their family and also for sale. They have also trained others in their community to produce liquid soap for their families.

## RECOMMENDATIONS

Despite some difficulties, the implementation of the project VGTS in Burkina Faso has benefited from the high commitment of the Country Team, School Team, International Research Team, the support from governmental and local stakeholders, the strong interest of children and school teachers and the linkage with the National School Feeding program.

The recommendations in scaling up the project nationally include to:

- **Ensure year-round availability and accessibility of water** for vegetable production
- **Conduct frequent refreshment trainings** of the School Team
- **Increase the ownership of the project by host communities** to increase their willingness to invest in the daily implementation of the project and allow the withdrawal of international actors
- **Allocate funding for monitoring and evaluation** for the Country Team
- **Increase the project ownership by the ministries** involved in order to mobilize human and financial resources for project activities.

School gardens activities in drought prone countries like Burkina Faso is challenging since annual rainfalls are low in most of the regions. Scaling up school gardens requires first to find sustainable solutions to water scarcity. In addition, prior to scaling up the school garden program nationally, the government of Burkina Faso should first take ownership of the project activities. This can be done by making the establishment of school gardens in primary school mandatory in addition to WASH and nutrition curriculum.

The involvement of national stakeholders in all the project development and activities can facilitate the development of this feeling of ownership. There is a need to establish a consultation framework in order to enable the coordination of the project activities and ensure the effective participation of different ministries and any relevant affiliated entities.



## SCALING STRATEGY & COSTS

Based on the experience and evidence for impact generated in phase I of the VGtS project, the Country Team has developed a plan for extending the school garden program to a larger number of schools. The plan includes a brief description of the scaling strategy and an estimation of the costs.

### Scaling Strategy

#### **Objectives**

To improve the nutritional status of schoolchildren aged 7 to 15 through the extension and promotion of school gardening programs in relation to the nutrition and WASH component

#### **Targets**

5 regions with 150 public primary schools targeted for scaling up for the period 2018-2020.

#### **Theory of Change**

Promoting nutrition and health through classroom teaching and good practices related to vegetable gardening in school gardens with raising awareness among students and in the community will drive students towards increased consumption of fruits and vegetables. The program will also result in impact on students' lives regarding the promotion of artistic and culinary culture, as well as in terms of school achievement.

With 150 schools implementing the school garden program, we expect at least 160 students from each school enrolled in the program. From these 160 students, at least 60% will establish home gardens with their families. Thus, the potential impacts include:

Target Level	Target and Scaling Estimation	Estimated Final Beneficiaries
School	150 schools	<b>150 school garden programs</b> established and sustained
Students	160 students (enrolled in the program in each school per year) x 150 schools	<b>24,000 students</b> impacted by the school garden program
Household	160 students x 60% (who will establish home gardens) x 150 schools	<b>14,400 home gardens</b> established during the scaling period (2018-2020)
Community	2-3 parents day and promotion events per school per year for each community x 160 community members x 150 schools	<b>60,000 community members</b> from 150 communities impacted by school gardens demonstration and nutritional promotion

### **Intervention Design**

The school garden establishment will be carried out with the involvement of local communities, village chiefs, mayors of the communes, teachers, students and their parents. At the beginning of the year, each selected school will have a general assembly with the above stakeholders, to assign responsibilities for school garden establishment. An activity plan will be developed, including the assignment of stakeholders.

In Burkina Faso, the education program integrates nutrition and WASH aspects quality components of the curriculum. The school garden program will be divided into 32 weeks corresponding to the academic year. Teaching will be performed through subjects such as mathematics, civics and moral education, natural sciences, agriculture and the art of cooking.

Students' parents and communities will be involved in establishing the school garden, composting, taking care of the garden and growing seedlings. Taking part in the school garden will encourage parents to establish their own gardens at home.

To promote program activities, inter-garden visits (school garden visits between teachers of different schools to share program experiences), open days, nutrition days for agriculture fairs, and production of documentary films on school gardens will be considered. A prize-winning competition for 1) the best school garden and 2) best home garden of students' family will be organized yearly in each province.

### **Sustainability**

To sustain the program, the following activities are planned:

- Capacity building of stakeholders through refresher training sessions for teachers and communities every year
- Continuous awareness-raising for parents and communities on gardening, nutrition and WASH
- Provision of improved vegetables gardening seeds
- Regular provision of gardening tools, hygiene and kitchen equipment and teaching manuals

### **Scaling Approach**

5 regions with 150 public primary schools are targeted for scaling up for the period 2018-2020. Each year, 10 schools in each region will be selected to

implement the school garden program. A total of 150 schools (30 from each region) will implement the school garden in the three-year period from 2018-2020. The schools will be selected based on the following criteria:

- School must have 6 classes
- School must have a source of water (hand-pump)
- School must have willing attitude towards gardening activities
- School must be accessible for regular monitoring by the program team
- School must have an in-school functional canteen
- Community around the school must be organized and committed

MENA (Ministry of Basic Education and Literacy) will remain the lead organization to coordinate the program with cooperation from the Ministries of Agriculture, Health and Ministry of Water and Sanitation. At the regional level, DRENA (Regional Directorate for Education and Literacy) and DRAAH (Regional Directorate for Agriculture, Water and Fisheries) are responsible for coordinating activities. The Heads of District of Basic Education will conduct pedagogical monitoring of the school garden program in schools. The focal points of Education and Agriculture will be responsible for the technical monitoring of activities in schools. The school principal and teachers will be responsible for teaching students and mobilizing parents and the community.

### **Monitoring and Evaluation**

Monitoring and evaluation will be carried out through monitoring field visits to schools. Methods for monitoring and evaluation will include:

- Yearly technical and financial reports
- Mid-term and terminal evaluation reports
- Organizing campaign programming workshops at the beginning of each year
- Organizing a review workshop at the end of each year
- Assessment of project impact on students and communities

## **Program Costs**

The cost of establishing the school garden program in 150 schools in Burkina Faso for the 3-year period of 2018-2020 would be **USD 442,000**. The cost per school would be **USD 2952**.

This investment would establish 150 school garden programs and potentially impact 150 communities and benefit 24,000 students and 60,000 community members with gardening, nutrition and WASH education and practice, and establish 14,400 home gardens in Burkina Faso.

The purpose of the program is to improve students' nutrition and health through school gardening and home vegetable production and consumption. Costs of the program include program administration, training of teachers, development of teaching and promotional materials and cost of setting up and maintaining the school garden.

## **Cost Estimation**

The VGtS project estimated the costs of the implementing the school garden program in 150 schools in Burkina Faso (Table 1). Costs include both actual costs such as value of seed and garden tools, but also opportunity costs such as the value of land used for the garden, and the cost of time spent by teachers, children and parents.

Opportunity costs are defined as the loss of potential gain from other alternatives when one alternative is chosen. For instance, if children had not spent their time on gardening, they could have benefitted from learning other subjects. Valuing the opportunity costs is not always possible and assumptions must be made.



**Table 4. The annual cost of scaling the school garden program per project activity**

Activity (frequency)		Cost (USD)	Explanation
<b>Activities conducted for the program as whole in cost per year:</b>			
1.	Development of curriculum for training of school teachers	5000	Expenditures on developing/improving the training course for school teachers. Exclude the actual training, which is listed under [5] below.
2.	Development of training and promotional materials for school children	5000	Expenditures on developing/improving teaching materials and promotional activities for school children. Exclude the actual printing and dissemination, which is listed under [6] below.
3.	Project administration (annual)	21600	Expenditures on regular project management including report preparation, communication with stakeholders, project meetings, budget management, staff recruitment, etc.
<b>Activities conducted per school in average cost per school per year:<sup>1</sup></b>			
4.	School selection (once per school)	20000	Expenditures on selecting schools to be included in the project, screening them for suitability, informing them about the project and getting approval of principal

Activity (frequency)	Cost (USD)	Explanation
		and other stakeholders.
5. Training of school teachers and principals (first year and then every ... years)	15000	Expenditures on conducting the training course, including the preparation of training materials, transport, food and lodging.
6. Supply of garden inputs (every 1 year)	15000	Value of annual input expenses on seeds, water, electricity, and other inputs. Include land rental fees if paid. Also include the value of labor time spent on purchasing these inputs.
7. Investments in school garden and related facilities (first year and then every ... years)	18000	Expenditures on items used for more than one year, including hand hoes, watering buckets, fences, and other long-term improvements of the school garden or related facilities such as WASH infrastructure (washing basins, closed latrines, etc.).
8. Dissemination of training and promotional materials (every 1 year)	10000	Expenditures on printing and disseminating of training and promotional materials to the schools.
9. Project monitoring and evaluation (every 1 year)	33000	Expenditures on monitoring the progress by following up with teachers and principals by phone and through personal visits.

Activity (frequency)		Cost (USD)	Explanation
10.	Other activities	5000	Any other expenses not included in the above.
11.	Total	2952/school  147 600 (for 50 schools)/per year  442,000 for 2018-2020 (3-year period)	The sum of [1] to [10].

*Note:* 1 Multiplying this by the number of schools reached would give the total budget per year.

The estimated opportunity costs of this program are:

- Additional 5 hours of time would be spent on the school garden program each week for the focal teachers. In the program's duration of 32 weeks, each teacher would spend an additional of 160 hours on the school garden program.
- Students would spend 4 hours per week on the school garden program. In the program's duration of 32 weeks, each student would spend 128 hours on the school garden program.
- Each parent would spend an additional 10 hours a year in helping with school garden activities.

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