



Improving Food and Nutrition Security in the Philippines through School Interventions

Brief

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Background

Introduction

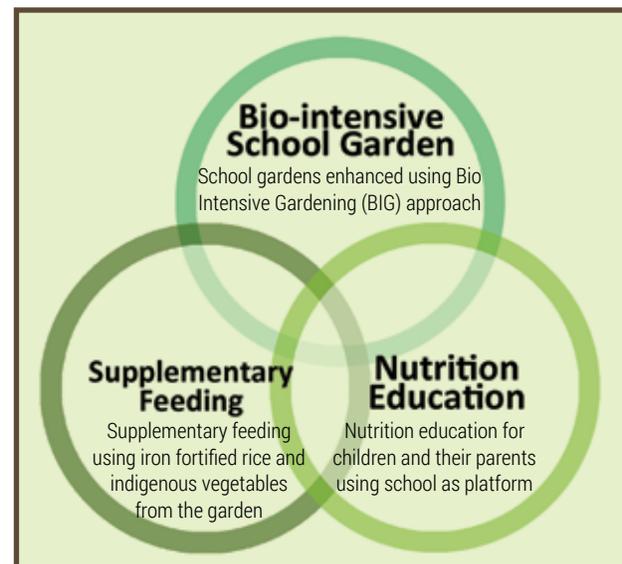
Schools provide strategic and targeted pathways for delivering nutrition interventions to children and, indirectly, to their families and communities. A 3-year action research project (Phase 1) funded by International Development Research Centre (IDRC) from 2012 to 2015 developed and tested an integrated nutrition model of gardening, supplementary feeding and nutrition education, for schoolchildren in Cavite province in the Philippines. Results showed that supplementary feeding of malnourished schoolchildren using iron-fortified rice and indigenous vegetables from school gardens significantly improved their nutritional status. Enhanced knowledge, attitude and practices on gardening and nutrition were recorded among parents. The project tested and successfully sustained bio-intensive nutrition gardens and crop museums that aimed to retrieve and conserve crop cultivars while improving year-round availability of a diverse range of climate-resilient, locally adapted, and nutritionally important vegetables.

Phase 2 of this project (2015-2018) deepens the understanding and operationalization of the integrated model by expanding the number of research schools. The potential of schools as platforms for nutritional and

environmental learning are also being investigated. Modalities by which local governments and private sectors can support school nutrition are also being explored.

This multi-scalar approach tests two pathways for scaling up. The first is directed towards public elementary schools at a subnational level. The second is directed at national agencies, policymakers and planners. Phase 2 intends to influence school health and nutrition programming, which currently is targeted towards 2 million malnourished schoolchildren (14% of total number of elementary students).¹

The Integrated School Nutrition Model



¹ Department of Education, School Health and Nutrition Unit, 2012–2013 data.

The innovation integrated three major components:

(i) **School gardens were enhanced using the bio-intensive gardening technology (BIG), an ecological gardening approach that addresses productivity and sustainability challenges of gardens.** Bio intensive school garden standard were developed to facilitate the implementation. BIG practices include deep-dug and raised plots followed by minimum tillage, diversification by growing various indigenous vegetables, use of green tree fertilizers like kakawate (*Gliricidia sepium*) to sustain soil fertility and cover cropping using legumes during the summer season, to protect soil health and conserve fertility. Decentralized school crop museums helped conserve and propagate seeds of local vegetables to support the needs of schools and household gardens.

(ii) **Supplementary feeding of underweight children used iron-fortified rice and indigenous vegetables from school gardens.** Fifteen menus with indigenous vegetables were developed, lab-tested and implemented in schools, and are now made available by nutrition researchers for schools to use. Alternative snack menus were also developed and ready for wider use.

(iii) **Nutrition education was provided for students, parents / care providers / guardians and teachers to promote the importance of nutrient dense food and good eating habits.** School gardens and feeding activities were used as platforms to influence knowledge, attitude and practice of both children and parents. Information, education and communication materials were developed and are available to schools. This includes posters and two videos, aimed primarily in building awareness.



Important evidence about the value of integrating nutrition-related interventions has been generated. Anthropometric measurements, biochemical tests, and dietary intake studies with 80 underweight or anemic elementary schoolchildren demonstrated that the integrated approach reduced wasting from 17.8% to 13.7%, stunting from 11.0% to 4.1%, and underweight from 63.0% to 34.2%. In the school where iron-fortified rice was used, hemoglobin levels rose from 12.60±.96 to 13.09±.07 and anemia reduced from 20.8% to 4.2%. Serving vegetables produced in the school garden resulted in better nutrition while lowering feeding costs. Results from a study with 160 children showed improvements on nutrition knowledge, attitude and practices among children and parents.

Experience with the pilot implementation of the program underscored the important role of institutional mechanisms, partnership building, communication support and capacity-building strategies. Development/refinement and enforcement of implementation guidelines are warranted even before the potential of gardens to support school feeding program is maximized.

The integrated school nutrition model offers a way to achieve better nutritional outcomes which is linked to good educational outcomes. It also ensures sustainability of the gains in school nutrition program while optimizing benefits from limited resources. More information about the integrated school nutrition model during its pilot testing is provided at: <https://schoolnutritionphils.wordpress.com>.

Significance of Research

The Phase 2 of the project helps deepen the understanding and operationalization of the model being developed with a better understanding of structural and functional factors, processes and policies which influence the adoption and implementation of integrated school-based nutrition program, a second round of action research is being undertaken. The questions of scaling up of various elements are further studied at a regional level as basis for eventual outscaling and upscaling school level platforms for nutrition (see Annex 1).

Direct benefits are also expected from this research: more effective and low-cost school feeding programs, leading to significant reduction in number of malnourished school age children. The project builds on the extensive network of school infrastructure of DepEd. It operates under DepEd's favorable and responsive policy framework concerning school feeding legislation. The approach is consistent with, and supportive of the Department of Agriculture engagement in the Gulayan sa Paaralan Program (GPP) undertaken with DepEd. There is also

Objectives of the Research for Development Progress

General objective:

To institutionalize and scale up a sustainable, holistic, gender-sensitive, and integrated school nutrition model to improve nutritional awareness and status of school-age children in the Philippines.

Specific objectives:

1. To fine tune an integrated school nutrition model for better implementation and integration into the school system
2. To test a multi-scalar approach to scale up and sustain an integrated school nutrition model
3. To use schools as platforms for nutritional and environmental learning and sharing

potential for local governments and private/business sector to co-finance these field-tested models. The project directly engages with at least 600 teachers and multiple tiers of government officers.

Models that schools put in place to implement, sustain and scale up the previously tested nutrition model are studied and documented. The research will generate new knowledge on the multiple objectives of school gardens, including the need for addressing nutrition in the context of a changing climate. Research outputs will be shared to agencies the Department of Agriculture, National Nutrition Council and the Department of Social Welfare and Development.

Research Methodology

Conceptual and Theoretical Framework

This action research is a combination of qualitative and quantitative research deploying a complementing range of different methodologies for data gathering and analysis. The research attempts to answer questions about implementation of the integrated nutrition model, finding cost-effective ways of scaling it up using a multi-scalar approach. The research also investigates the potential of schools to serve as platforms for nutrition and environmental learning and sharing (see Annex 1).

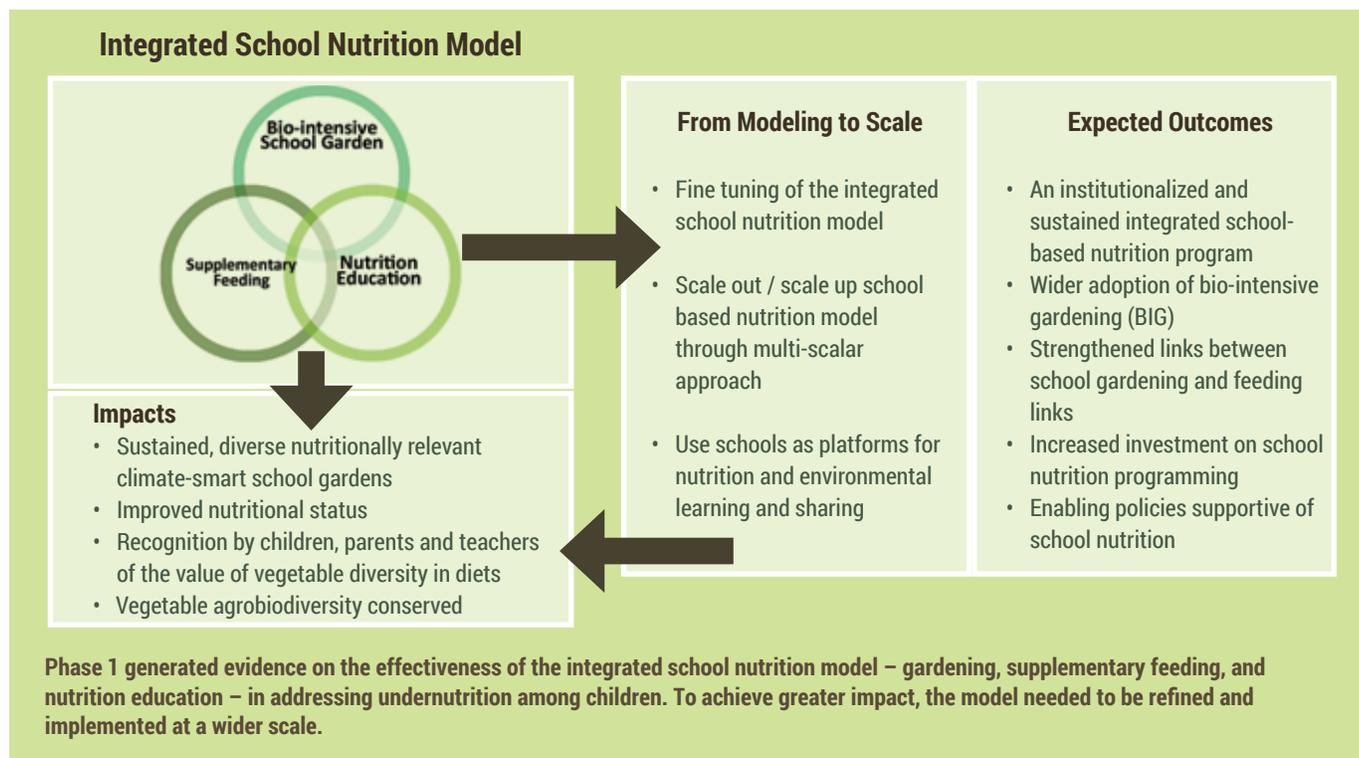


Figure 1. Conceptual and theoretical framework

Fine Tuning the Integrated Nutrition Model

The research project team put in place mechanisms to address different factors influencing the effective integration of school feeding with school gardens and nutrition education, its implementation and sustainability. A careful study of existing functional and structural challenges is being undertaken. The team developed implementation guidelines for the integrated model. These guidelines are being tested in selected schools in Region 4A (five provinces).



Bio-intensive Gardens (BIG) in the earlier 3-year project have evolved as being not only nutrition-smart, but also climate-smart (for more info, you may access BIG primer e-copy here: <https://schoolnutritionphils.files.wordpress.com/2015/11/big-primer.pdf>). Emphasis is on the climate smartness of BIG (e.g. water saving, carbon sequestering capacities, and improving soil health by lowering soil temperature) in response to climate-related challenges and its potential role in agrobiodiversity conservation. Instructional support materials will be developed highlighting new elements such as climate change, food systems, and agrobiodiversity. Building on the national interest and growing awareness of the value of gardens, this new phase of the project looks at ways to enhance the educational value of gardens.

A two-cycle feeding is being implemented in 3 schools to demonstrate the value of year round school feeding, to examine the effect of year round feeding on the nutritional status of school children. It will also address implementation issues and to study how gardens can contribute to dietary diversification in the



feeding program. Alternative options for schools that do not have access to iron-fortified rice will be explored. Different modalities for fundraising to generate support for school feeding are developed and tested within the targeted schools in Cavite, in partnership with local authorities from DepEd. This is to ensure that school feeding is a regular feature and is sustained. The ultimate goal of this effort is to reduce reliance of schools on external procurements. Outputs will be used by schools since there are currently no available reference materials on resource mobilization.

To support nutrition education, teachers are provided with simplified reference materials and teaching aids to help them better integrate nutrition topics into their daily lesson plans and to hold short sessions with parents during their regular parent-teacher meetings. Reference materials have new aspects such as food culture and food safety to strengthen the nutrition and

garden link. The project explores ways and partnerships for outreach activities to be held during the annual national nutrition awareness month.

Research on implementation models can help inform policy at the regional and national levels to facilitate sustainability and scaling up of school-based nutrition programs. A study on how to improve the performance, implementation, and functioning of holistic and integrated approaches to school feeding is of relevance to key agencies like the Department of Education, the National Nutrition Council, and the Department of Social Welfare and Development in the Philippines. The global agriculture and nutrition community could also benefit from these research findings.



Scaling up the Model: Multi-scalar Approach

A multi-scalar approach has been deployed to bring to scale the previously tested integrated nutrition model (See figure 2). The first pathway involves public elementary schools within Region 4A. It relies on a human capital pool built up during the earlier pilot phase in Cavite province. The Phase 2 research project establishes lighthouse schools– selected schools that serve as action research and learning sites. This network of 58 lighthouse schools (40 in Cavite province and 18 in other provinces of Region 4A) have been established from which other public elementary schools in Cavite and Region 4A can learn.

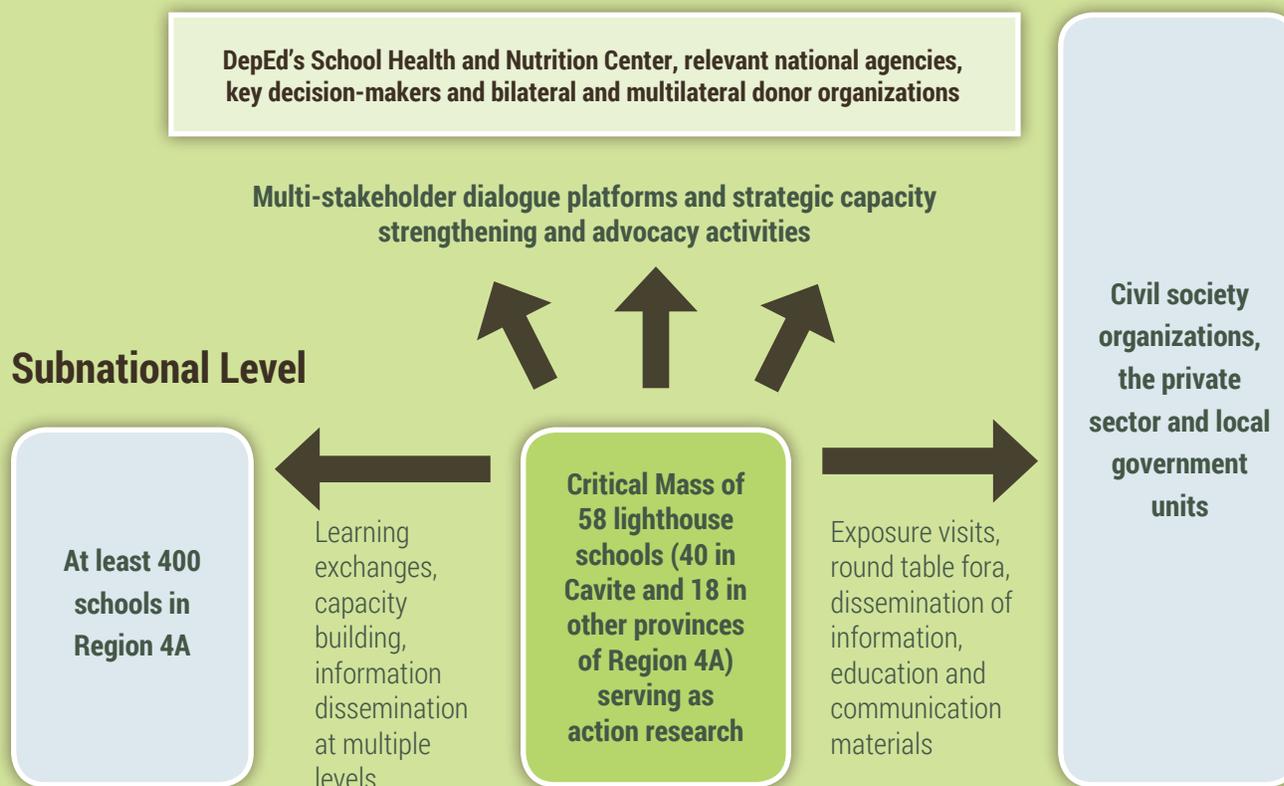
Lighthouse schools also serve as crop museums receiving seed diversity kits and guidance on seed retrieval, propagation, storage and exchanges (see Annex 3). The crop museum concept receives special attention because of its relevance in reintroducing agrobiodiversity of nutritional importance to schools and surrounding communities. (for more info, please visit: <https://schoolnutritionphils.wordpress.com/2015/03/16/agro-biodiversity-conservation-in-schools-a-role-for-crop-museums/>). The research project team studies

the role of crop museums in promoting the use of indigenous vegetables and its conservation. Seed diversity kits are prepared for distribution to lighthouse schools and eventually to surrounding communities.

The research project team also partnered with the DepEd to formulate a training of trainers' strategy for integrated nutrition. This included the development of communication/education materials. The first round of training interventions was to target 40 lighthouse schools in Cavite province. The second round of training was conducted by lighthouse schools to other schools



National Level



A scalable self-sustaining and effective program for integrated nutrition programming for Philippines schools has the following attributes: (1) the program is supported by administrators, students and parents at all relevant levels. For this to happen, it will have an appropriate level of subsidiary, with responsibility devolved to the lowest effective level; (2) The program is consistent with governments' education and nutrition objectives and policies; (3) It is supported by appropriate educational resources including garden space, learning resources, linkages to curricula for different subjects; (4) It is supported financially, including contributions from school budgets, NGOs, local governments, and the private sector; and (5) It generates strong synergies among the different elements, including nutrition, agricultural and environmental education.

Figure 2. Multi-scalar approach for scaling the integrated school nutrition model.

within their respective district. These activities characterize the out scaling efforts within one province – Cavite – thus generating knowledge on how to bring to scale a nutrition effort primarily driven entirely by DepEd staff with their own budget resources Future interventions (2017) will be directed towards better engagement of the private sector and local governments. This will be accomplished through dialogues, forums, and exposure visits. Research into the role of public-private partnerships in nutrition and food security will provide policy makers a better understanding of emerging opportunities. Policy briefs will be generated from these events. Media coverage is planned.

The second scaling up pathway is aimed at the national level, influencing relevant national agencies, policymakers, and decision makers through theme presentations and related dialogue processes. Multi-stakeholder dialogue and advocacy events each targeting different segmented audiences are key elements of this approach. These activities are envisioned to increase awareness, improve coordination, and foster better convergence of various

stakeholders. Smaller roundtable events targeting legislators and their teams is also planned. The conduct of desk studies in preparation for the national dialogue events can provide a corpus of scientific evidence-based knowledge to support policy-relevant dialogues.

Mechanisms to engage international organizations and private sectors will be deployed. Network building – including communities of practice – is already being pursued. Exposure visits to schools in Cavite province are held targeting the wider nutrition community represented by NGOs and international donors. Participation in these platforms will translate into a substantial widening of interest, increased uptake of approaches, and investment from the private (corporate social responsibility pathways) and public sectors and donor community. The platforms and associated knowledge products will be used to influence national government policy and planning processes to generate impact at national level.



Using Schools as Platforms to Promote Nutrition and Environmental Learning and Sharing

A study on how nutrition education activities are currently undertaken will be conducted to identify ways by which schools can influence surrounding

communities and other key stakeholders. Instructional and educational support materials will be developed and will be made available to assist schools in conducting school-wide nutrition and climate awareness activities targeted at children, teachers, parents and local communities (e.g. participatory recipe development featuring indigenous vegetables).



ANNEX I:

Research Questions

Fine tuning of the integrated model

1. What are the requirements to bring about effective integration of gardening, supplementary feeding, and nutrition education?
2. What are the educational, communication strategies and follow-up mechanisms needed to enhance institutionalization and sustainability of integrated school nutrition programs into the school system?

Scaling up the model

1. How effective is the multi-scalar approach in promoting the adoption and scaling of school nutrition model at sub-national level?
2. What are the modalities to effectively engage the private sector and local government units to support school based nutrition interventions?
3. What is the role of school crop museums in supporting school and community nutrition programs?
4. In what ways can constructive dialogue platforms foster better information and resource sharing and enhanced collaboration towards better gender-responsive food security and nutrition programming?
5. How can action research within lighthouse schools influence policies and plans at the sub-national and national level?

Using schools as platforms for nutritional and environmental learning and sharing

1. How can schools influence nutrition awareness of parents and communities?
2. What are the prerequisites and enabling factors for schools to serve as local level platforms for nutritional and environmental learning and sharing?



ANNEX II:

Data collection

The research will employ both quantitative and qualitative methods. Baseline data collection will be undertaken at the onset of the research.

Performance in terms of the integration of the three components will be assessed in 3 select sentinel sites – these are schools where the integrated models are implemented, supported, and closely monitored.

The following will be carefully studied:

Effective and efficient school based feeding activity

- Changes in nutritional status of school children using anthropometric measurements (monthly weight monitoring/ quarterly height monitoring- secondary data)
- Adherence to the SBFP standard
- Types and quantity of vegetables used from the garden
- Participation of stakeholder

Improvement in garden functionality and sustainability

- Adoption of the BIG standards for schools
- Types of crops grown year round
- Types and quantity of garden produce used in the SF
- Frequency of use of garden for nutrition education (children and parents)

Effective and sustained nutrition education activities

- Use of lesson plans
- Frequency of nutrition education during feeding time
- Integration of nutrition concepts in the curriculum and parent-teacher meetings
- Frequency and ways nutrition education is delivered to parents
- Number of schools with functional the learning resource center

Sustainability mechanisms

- Partners engaged by the schools
- Human and financial resources mobilized by schools (Internal and External)
- Types of support received from external stakeholders
- Integration of model into school's E-SIP as one of the priority improvement areas
- Number of memorandums issued and implemented
- No. of materials uploaded in the "http://myteachermommy.com/2015/02/13/learning-resources-management-and-development-system-lrmds-the-deped-learning-portal/" Learning Resources Management and Development System (LRMDS)

Success of the multiscale approach in expanding implementation of the integrated school nutrition model will be investigated. The following data will be gathered and analyzed in 58 lighthouse schools:

- Role of lighthouse schools
- Strategies employed to scale out within their own districts/divisions
- Learning exchanges and seed exchanges conducted
- Regional level memorandums issued in support of the model

Effectiveness of the scaling up strategy

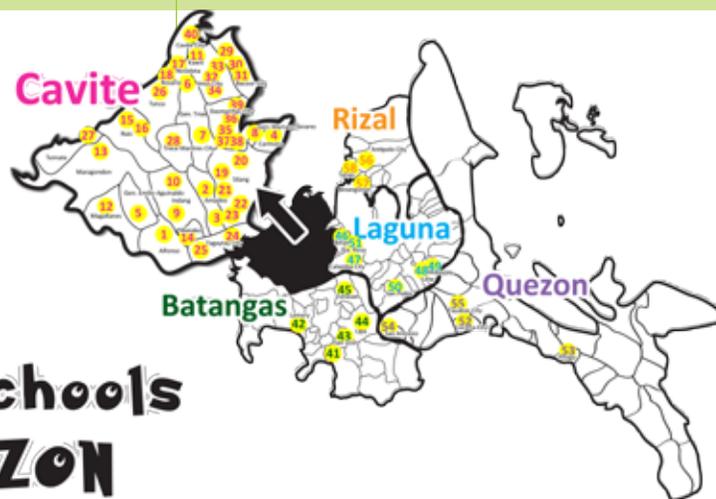
- Adoption of the 3 components or elements of the model (functional garden, functional feeding, nutrition education for parents during meetings and children)
- Level of participation and support of communities to school nutrition program
- Number of partnerships established

ANNEX III:

Lighthouse School (LS)

- A lighthouse school (LS) is a designated focal point for decentralized and location-specific action research sites on integrated school nutrition.
 - Every LS will feature a regular school feeding program, a well maintained/sustained bio intensive garden, and related school-based nutrition education activities. Lighthouse schools will make a special effort to undertake nutrition education interventions within the schools for teachers, parents, students and the local community.
 - LS will maintain data related to production of garden produce, document their utilization in feeding programs and school canteens or for school based income generation.
 - LS school thus serves as exemplary demonstration of what can be achieved when various school-based nutrition activities are integrated.
 - LS will serve as discovery, learning, sharing and dissemination of integrated school nutrition innovations within Region 4a.
- LS plays a central role in the out-scaling of such innovations at local (e. g school district) level. Locally initiated district level trainings can be organized at the lighthouses where they are located (ideally experiential). These schools are the most important element of the scaling out of the integrated model.
 - LS will establish a crop museum which undertakes collection and conservation local vegetable varieties throughout the year. Seed exchange events will be organized with other schools in their respective districts.
 - Lighthouse schools will aim to influence surrounding communities by organizing nutrition related activities during important school events (e.g. garden visits, food/ diversity fairs, sharing good nutrition practices) sharing planting materials and seeds for parents to bring home)
 - Lighthouse schools will also take the initiative to engage local governments, the private sector and CSO/ NGOs in attempts to seek wider local support for sustaining feeding programs .There will be 58 lighthouse schools in Region 4a serving as network for outscaling and upscaling within an entire administrative region.

Lighthouse Schools in CALABARZON





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