



What can the Agriculture sector do to reduce undernutrition in PNG?

This program guidance note discusses the need to invest in nutrition and the multisectoral response required to address undernutrition. Referring to PNG's National Nutrition Policy 2016-2026 and the role it outlines for the Agriculture sector, the note draws upon global knowledge and provides several suggestions for actions that the Department of Agriculture and Livestock could take to operationalize its role in the National Nutrition policy and contribute to achieving the full human potential of PNG's children.

Acronyms and abbreviations

BMI	Body Mass Index
DAL	Department of Agriculture and Livestock
DNPM	Department of National Planning and Monitoring
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
IYCF	infant and young child feeding
NCD	Non Communicable Disease
NDOH	Department of Health
NFSP	National Food Security Policy
NNP	National Nutrition Policy
NNS	National Nutrition Survey
NSAP	Nutrition Strategic Action Plan
MTDP	Medium Term Development Plan
PNG	Papua New Guinea
SAM	Severe acute malnutrition
SBCC	Social and behaviour change communication
SUN	Scaling Up Nutrition
UNICEF	United Nations Children's Fund
WASH	Water, sanitation and hygiene
WHO	World Health Organization

Section I: Undernutrition in PNG

I. Investing in nutrition is critical for human capital formation and economic growth

Undernutrition is the single largest factor contributing to the death of young children. It increases the mortality risk associated with the major killers of children (respiratory infections, diarrhoea, malaria, measles and other infectious diseases). Nearly one-half of all infant deaths are attributable to undernutrition (1). It holds back the development of full human potential and is responsible for more ill health than any other cause. Put simply, good health is not possible without good nutrition. The repercussions of child stunting are far-reaching — affecting educational attainment, workforce capacity and productivity, and adult wages — and culminate in decreased likelihood that children will escape poverty as adults. (2-6).

Box 1: Indicators of undernutrition

The three key indices of physical growth used as measures of child undernutrition are:

Stunting or low height-for-age representing chronic undernutrition;

Underweight or low-weight-for age representing a combination of long-term and immediate-term undernutrition; and

Wasting or low weight-for-height, representing acute under-nutrition.

Each of the above indicators is expressed in standard deviation units (Z-scores) from the median of the reference population (below two standard deviations of the mean for each respective measure)

The first 1,000 days from conception to age 2 years are the most critical to reduce stunting. This window of opportunity to improve nutrition is very short. Much of the impact of undernutrition occurs during pregnancy and in the first two years of a child's life. Without appropriate interventions, the damage to physical and cognitive development, future economic productivity and to human development is largely irreversible (4). Given practical difficulties with identifying pregnancies early, adolescence is another potential window of opportunity to improve women's pre-pregnancy health and nutrition as part of a lifecycle

approach.

The consequences of child stunting, or low height for age, are far-reaching and its costs to human and economic development are high. Stunting, the indicator of chronic undernutrition, is a measure of human capital. Beyond physical growth failure, stunting also affects brain development and cognition and has lifelong impacts. The linkages from nutrition status to long-term well-being are clear, and consequently stunting prevalence is regarded not only as a measure of long-term undernutrition but a marker for national economic growth potential. It affects educational attainment, workforce capacity and productivity and adult wages—and culminates in decreased likelihood that children will escape poverty as adults. The annual loss in GDP associated with malnutrition can be up to 12% in poor countries, primarily as a result of deficits in cognitive development (2-6). It is estimated that malnutrition in all its forms could cost society up to USD 3.5 trillion per year, with overweight and obesity alone costing USD 500 billion per year (7-8). Indirect losses are associated with deficits in cognitive development and schooling, and increased costs of health care. In terms of human development, malnutrition (stunting) in early years is linked to a 4.6cm loss of height in adolescence, 0.7 grade loss of schooling and 7-month delay in starting the school (9).

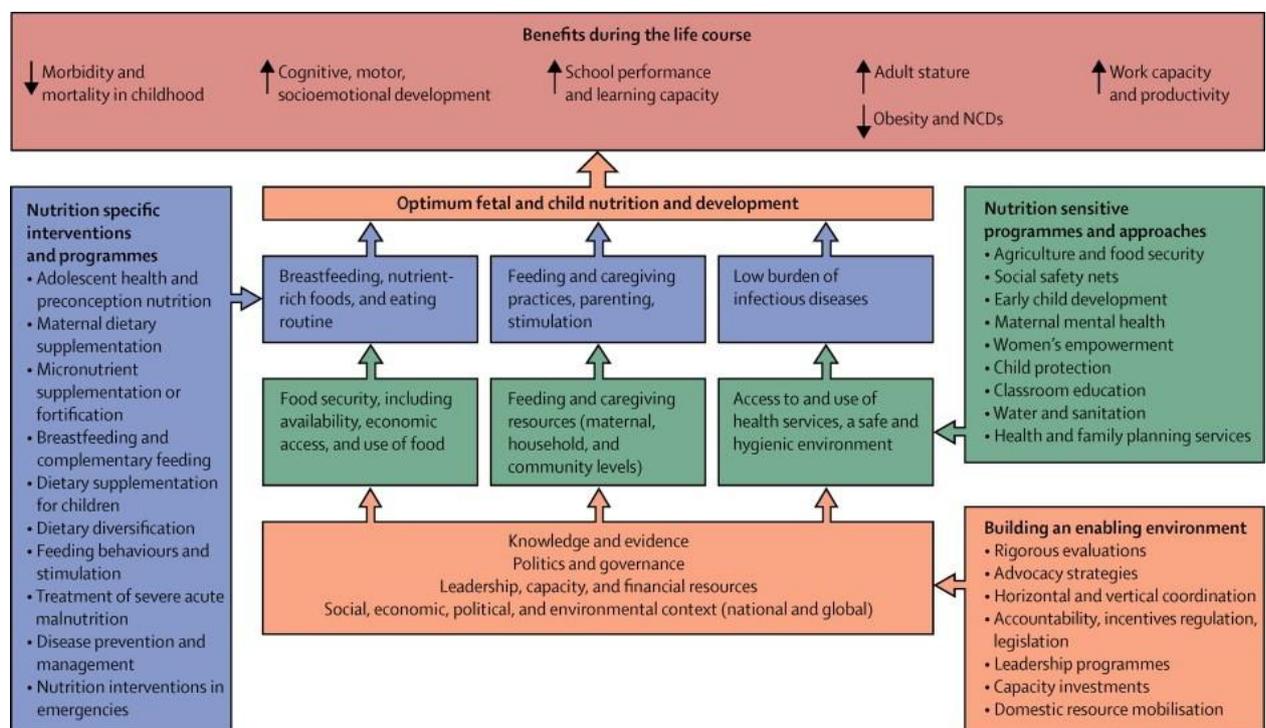
The returns on investing in reducing undernutrition are high. In 2015, 159 million children globally were stunted in their physical and cognitive development, yielding poor learning outcomes and, eventually, premature death and disability with significant long-term economic consequences. Nutrition investments support poverty reduction efforts and have the potential to augment GDP in developing

countries by at least 2-3 percent (10). One case of stunting averted 21 percent of GDP per capita based on estimates of the impact of childhood stunting on adult wages (11).

II. Multisectoral efforts are required to improve nutrition outcomes

The causes of child undernutrition are multiple and span many sectors. There are two immediate causes of child undernutrition: (i) Nutrient intake: not having enough, or the right kinds of, food intake; and (ii) Burden of infectious disease, which influences the body’s energy needs and ability to absorb and store nutrients. In turn, nutrient intake is influenced by several factors including child care and feeding practices, food availability and security, while the burden of infectious disease is affected by environmental factors, particularly water supply and sanitation, hygiene practices and the availability and utilization of health services. Underlying these are social and institutional factors including gender equity, and economic, institutional and political factors that contribute to economic growth, a key enabler of pro-nutrition interventions, and influence public policy, political willingness and institutional capacity to mount an effective response to undernutrition.

Figure 1: Pathways to reduce child undernutrition (1)



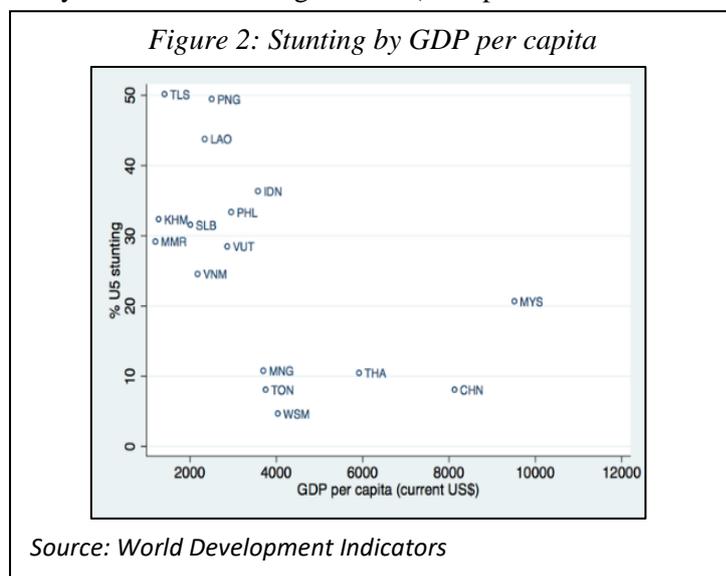
Since the determinants of undernutrition span many sectors a multisectoral response is required to address stunting. As the underlying drivers of nutrition status are multisectoral—spanning agriculture, social protection, health, WASH, and education—so too must be the interventions to address them. (12). There is strong evidence of a package of nutrition interventions that address the immediate determinants of foetal and child nutrition and development—spanning the first 1,000 days from pregnancy through the child’s first 24 months to improve nutrition outcomes. These interventions, termed nutrition-specific interventions, while effective would result in a decrease of only 20% in global stunting if implemented at 90 percent coverage. (13,14,4). Furthermore, faced by widespread structural, financial, and capacity constraints, most countries are nowhere near achieving 90% coverage of the package of essential nutrition services. Nutrition-specific interventions are simply not enough to reach global targets for stunting reduction.

To achieve ambitious nutrition and human development goals, nutrition specific interventions must be complemented by nutrition sensitive interventions. In order to get beyond the potential 20% reduction in stunting afforded by nutrition-specific intervention—we must increase our capacity to translate nutrition-sensitive principles into practice across all key sectors. Nutrition-sensitive interventions target the underlying determinants of undernutrition such as poverty, food insecurity, access to health care, water and sanitation services and call for applying a nutrition lens to existing sector interventions with a view to improving their impact on nutrition outcomes (15). These initiatives to address nutrition can strengthen nutritional outcomes in three ways: i) Accelerating action on determinants of malnutrition; ii) Integrating nutrition considerations into programs in other sectors, which may be substantially larger in scale; and iii) Increasing ‘policy coherence’ across sectors. (16)

Interventions in a number of key sectors can contribute to reduce stunting. Health, agriculture and food security, social protection (especially social safety nets), poverty reduction (although it is not a traditional “sector”), education (especially girls’ education), water and sanitation are the key sectors that can contribute to improved nutrition. Gender and governance issues are crosscutting across several of these traditional sectors and need special consideration. Factors of success common across all sectors include: an explicit design focus on making an impact on nutrition, being informed by an evidenced-based theory of change; high-quality implementation that is true to its design; addressing multiple pathways; and incorporating well-designed and well-implemented behaviour change communication (BCC) (12). Figure 1 depicts how nutrition-specific and nutrition -sensitive interventions effect nutrition outcomes.

III. Reducing stunting is an urgent priority in PNG

Stunting and other forms of child undernutrition are unacceptably high in PNG. With almost every second child being stunted (48.2 percent of children under five years of age are stunted), PNG



has the fourth highest child stunting rate in the world with a rate that is more than double the global average and the second highest prevalence of stunting in the East Asia Pacific region, double that of other countries with comparable GDP per capita. ‘Hidden hunger’ or micronutrient deficiencies are also rampant. 25 percent of children aged 6 to 59 months have vitamin A deficiency and 48 percent are deficient in iron (National Nutrition Survey 2005) (17).

While stunting rates are the highest among children from poor households, they are not insignificant among children from

wealthier households. Regional differences are also significant. Around 28 percent of the children in the country are underweight and 5-15 percent are wasted. The burden of stunting is highest amongst the poorest quintile (55 percent). However, stunting rates amongst the richest quintile are also high (36 percent) clearly indicating that stunting is a problem that spans wealth quintiles. The Highlands region has the highest prevalence of stunting (58 percent), while the Islands Region has the lowest rate of stunting at 38.1 percent.

Stunting and other forms of child undernutrition in PNG impose a high economic cost. The costs of undernutrition in PNG are now gaining increasing attention. A recent report estimated the economic

costs of undernutrition to PNG's economy at USD 508 million (2.81 percent of its annual GDP) in the financial year 2015-16 (18). These costs are inflicted through three main pathways: i) losses in productivity from a reduction in labor force due to increased childhood mortality, estimated at USD 46 million (0.26 percent of GDP); ii) losses in potential income and productivity from poor physical status and reduced cognitive function, estimated at USD 459 million (2.54 percent of GDP); and iii) losses from increased health care expenditure in treating diseases associated with childhood. This significantly exceeds PNG's budgeted expenditure for 2017 for both the health sector and education sector (USD 385 million and USD 366 million, respectively) (19).

Stunting is eroding PNG's growth, development and quality of life: A child born in PNG today will be only 38 percent as productive as she could be. Evidence shows that a child will suffer long-lasting cognitive and physical impairments if they are undernourished in the first 1000 days of life. Estimates suggest stunting contributes to as much as 76 percent of under-five deaths in PNG. Addressing stunting is therefore critical to build human capital and unleash the productive potential of PNG's young and growing population. Undernourished mothers are three times more likely to have stunted children, contributing to an intergenerational cycle of poverty and inequity. Furthermore, every dollar spent on nutrition in the first 1,000 days of a child's life can yield a saving of an average \$45 - \$166 over the course of a citizen's life (4).

A young and growing and population, high rate of poverty and high rates of under and unemployment underscore the importance of human capital to PNG's future. 53.8 percent of the population were 25 and under, (2011 census) 18 percent between the ages of 15-24. The youth bulge, and high population growth (3.1 percent per annum), has increased pressure on service delivery and will continue to do so as the population ages. Investing in PNG's young population will support future growth and development. Improvements in human capital will further assist the 38 percent of the population who live below the international poverty line of \$1.90 per day (20).

IV. PNG has committed to addressing its high burden of undernutrition and stunting

High-level commitment to nutrition in PNG, a Human Capital Project Early Adopter, has increased considerably in recent years, and PNG is committed to a multi-sectoral response. PNG is a member of the Scaling Up Nutrition movement. The recently adopted multisectoral National Nutrition Policy, 2016-2026, frames nutrition as a core development issue. Institutional responsibility for nutrition now rests with the Department for National Planning and Monitoring. As a central agency, the Department of National Planning and Monitoring has considerably greater leverage to lead and coordinate actions across sectors than a line Ministry. The recently launched Medium Term Development Plan III (MTDP III 2018-2022) includes an ambitious target to reduce stunting among children under 5 years from current levels of 48 percent to less than 30 percent by 2022. PNG is a Human Capital Project Early Adopter (16).

Despite this commitment, the current state of response to undernutrition in PNG needs to be strengthened considerably to meet the country's ambitious targets on stunting reduction. There are opportunities to improve policy coherence for nutrition. MTDP III clearly identifies the reduction of stunting as a policy priority. Undernutrition is positioned as a food security concern in MTDP III, however, although its causes in PNG extend well beyond food security. This points to the importance of advocacy to position nutrition appropriately as a core development issue with causes that extend across multiple sectors, and to sensitize key actors at national and sub-national levels. At the implementation level, a multi-sectoral response to address undernutrition is not yet in place, although the National Nutrition Policy presents clear guidance on this front.

Box 2: PNG's multisectoral approach to nutrition (17)

This National Nutrition Policy draws together a multi-sectoral response to address malnutrition in PNG. The objectives of this policy are:

Objective 1: Strengthen nutrition governance, coordination, communication, partnerships and research to effectively plan, implement, monitor and evaluate nutrition activities across sectors. For successful implementation of the policy all the members acknowledge and embrace their responsibility. Stakeholders at all levels from the community to the national level, including the public sector (sectoral ministries and institutions, regional secretariats and local government authorities), higher learning and training institutions, professional bodies, private sector, development partners, civil society, media and the community.

Objective 2: Improve nutrition capacity including pre-service training, cross sector in-service training, supportive supervision, work force development, career structures and operational resources. This would be achieved by developing national pre-service (including undergraduate and postgraduate) training in nutrition and dietetics, developing criteria for national registration of nutritionists and dietitians and ensuring that nutrition is adequately covered in existing health and other courses delivered by all training institutions/

Objective 3: Implement and strengthen interventions to prevent, control and treat under nutrition, including low birth weight, stunting, wasting and underweight across the lifecycle(focusing on adolescents and women of childbearing age, pregnant and lactating women, children under 5, pre-school and primary school children.

Objective 4: Strengthen interventions to prevent and control micronutrient deficiencies including iron, vitamin A, iodine, zinc and other micronutrient.

Objective 5: Implement interventions to prevent and control overweight and obesity to reduce the risk of diet related lifestyle diseases. To prevent, control and treat under nutrition, including low birth weight, stunting, wasting and underweight across the lifecycle(focusing on adolescents and women of childbearing age, pregnant and lactating women, children under 5, pre-school and primary school children). Health, Education, Agriculture & Livestock, Community Development sectors shall develop and implement comprehensive strategies to prevent and manage under nutrition, specifically stunting, wasting, low birth weight, and low BMI among women.

Objective 6: Strengthen interventions to prevent and control malnutrition among vulnerable groups, in particular, people living with HIV (PLHIV), TB, mental illness and disabilities, and people living in institutions.

Objective 7: Strengthen interventions that protect resilience and support recovery of households from the impact of nutrition emergencies and other vulnerabilities

Section II: Agriculture and Undernutrition in PNG

V. *Agriculture is important for nutrition and nutrition is important for agriculture*

Agriculture has a major impact on food production and consumption of nutritious foods. Physical and economic access to adequate and affordable nutritious food is primarily a function of the agriculture sector. Its unique role in food production and consumption makes it an indispensable enabler of nutritious diets.

The agriculture platform reaches a sizeable portion of the most nutritionally vulnerable population and most crucial change agents, i.e., women caregivers. Undernutrition is intimately linked with both poverty and smallholder farmer well-being. Nearly three-quarters of the world's poor people live in rural areas of low-income countries (21)—a large proportion of whom are employed in agriculture (22-26) More than a billion people—over a third of the workforce in low-and-middle-income countries—are employed in agriculture (27). Women account for over 40% of the agriculture workforce in some EAP countries (28). With its direct and ongoing contact with these groups agriculture provides a unique opportunity to reach these populations with food and nutrition messages.

Agricultural-led growth is more pro-poor than non-agricultural-led growth. Agricultural growth is at least twice as effective in reducing poverty as GDP growth originating outside agriculture and is therefore pro-poor. Agriculture-led growth has led to faster (though still insufficient) declines in undernutrition than non-agricultural growth (12).

Agriculture has a role to play in preventing unintended nutritional harm. Some agriculture projects could cause unintended nutritional harm. Nutritional status of household members is strongly influenced by clean water, disease occurrence, food quality, and child care practices. Several unintended but related consequences, such as reducing women's available time for child care, reduction in women's access to resources if projects shift production toward male-dominated crops, production increase/price reduction in calorie-dense foods may unfavorably alter dietary quality and may contribute to obesity and chronic diseases. have been documented as arising from some agricultural interventions. Applying a nutrition lens would help ensure that adequate mitigation measures are included.

Improving nutrition can benefit agriculture.

Improving nutrition can benefit agricultural sector goals and performance at least in the following four ways: i) Good nutrition contributes to the wellbeing of farmers including women farmers and their children; ii) Nutrition investments improve human capital and have a positive impact on agricultural productivity; iii) Nutrition knowledge may be an added incentive to transition to a diversified production model; iv) Adopting a nutrition lens is likely to improve women's participation and

Box 3: Nutrition sensitive agriculture (29)

Principles for Nutrition Sensitive Agriculture

1. **Invest in women:** safeguard and strengthen the capacity of women to provide for the food security, health, and nutrition of their families.
2. Increase access to and year-round availability of **high-nutrient content food**.
3. Improve nutrition knowledge among rural households to enhance **dietary diversity**.
4. Incorporate **explicit nutrition objectives and indicators** into agricultural project and policy design.

Examples of nutrition sensitive agriculture:

Dietary diversity promotion, e.g., backyard gardens, horticulture, pulses, livestock, dairy, fish, and healthy indigenous foods, with **nutrition/home economics extension services; biofortification, food fortification**, e.g., cereals, vegetable oils, milk, market-based food products; **women-focused agriculture**.

empowerment, with important effects on income and productivity, in addition to nutrition and gender equity (30).

VI. *Agriculture can apply a nutrition lens without detracting from its own goals*

‘Nutrition sensitive’ agriculture, i.e., agriculture with a nutrition lens does not detract from agricultural goals and maximizes benefits for agriculture as well as nutrition. By maximizing the impact of nutrition outcomes for the poor and minimizing the unintended negative nutritional consequences of agricultural interventions and policies on the poor, especially women and young children, nutrition-sensitive agriculture while pursuing its own business also benefits nutrition. The agriculture sector is best placed to influence food production and the consumption of nutritious foods necessary for healthy and active lives. It may also influence disease occurrence, food safety, and women’s time use (which, in turn, affects child care practices) – each of which are important for nutrition.

VII. *Agriculture influences nutrition through multiple and inter-connected pathways*

Agriculture and its pathways to nutrition are diverse and interconnected. There is global consensus on the pathways mediate agriculture’s impact on nutrition. Table 1 presents the strength of five key pathways to improve nutrition outcomes. Agriculture and food policy, yet another pathway exerts its influence through all five pathways (31-39).

Table 1: Evidence of impact for pathways linking agriculture and nutrition

Pathways linking agriculture to nutrition	Relative strength of agriculture nutrition pathways
1. Increase macroeconomic growth overall	Modest effect. Doubling per capita agricultural income is associated with an approximately 15-21% decline in stunting on average, which would result in very slow and uneven progress in reducing undernutrition.
2. Increase access to food by higher production and decreased food prices	Modest effect. Of the countries meeting the MDG1 target to halve hunger, fewer than one-third are on track to meet the MDG1 target to halve undernutrition, demonstrating the limited translation of national-level grain availability to nutritional improvements.
3. Increase household income through selling agricultural products	Variable effects. On average, income poverty and undernutrition are correlated, but increases in household income do not necessarily lead to improved nutritional status of its most vulnerable members. Increasing women’s income has stronger positive effects on nutritional status. Existing empirical evidence shows commercialization based on cash crops has limited nutritional effects on vulnerable individuals in producer households.
4. Increase nutrient dense food production for household consumption	Some evidence. The best evidence to date is found from increasing small-scale production of nutrient-dense foods. Nutrition education enhances dietary consumption and the potential for consumer demand.
5. Empower women through targeted agricultural interventions	Strong evidence. Over 50% of the reduction in child underweight from 1970-1995 is attributable to improvements in women’s status. In agricultural activities, increasing women’s discretionary income and reducing women’s time and labor constraints appear to be especially important to improve nutrition.

VIII. Nutrition sensitive agriculture program interventions work

The state of the evidence for nutrition sensitive agriculture while evolving is sufficient to recommend approaches and interventions. The most thorough review of the nutrition impact of agricultural projects, which explicitly target nutrition outputs, found only a small set of studies from which to summarize the evidence, because too few well-designed studies exist to draw any strong conclusions about agriculture’s impact on nutritional status. The review however did find that agriculture had an impact on intermediate outcomes, such as diet and incomes, which the studies were better powered to detect (40). Recent research provides further evidence that nutrition-sensitive agriculture interventions are more successful when implemented in conjunction with efforts to improve health and water, sanitation and hygiene practices, provision of micronutrient-fortified products, women (12).

IX. Recommendations for increasing the nutrition-sensitivity of the Agriculture sector in PNG

This section presents recommendations for the Department of Agriculture and Livestock (DAL) consideration.

PNG’s National Nutrition Policy (NNP 2016-26) outlines several key actions for the Department of Agriculture and Livestock in taking forward and operationalizing the policy. Some key agricultural activities are included in the Nutrition Strategic Action Plan (NSAP) 2018–2022 and these will be led by DAL. DAL has sole or shared responsibility for many of the relevant National Food Security Policy (NFSP) 2017–2027 outcomes that link to the NSAP (2018–2022). DAL is solely responsible for outcome 5 ‘Successful implementation of the food security policy and programs’. DAL also has shared responsibility for outcome 3, ‘Vulnerable households and individuals consuming a healthy balanced nutritious diet’ and Outcome 4, ‘Sustainable income-generating opportunities for women increased to enhance economic access to nutritious food for children and families’ (17).

Develop a sectoral strategy to combat malnutrition. One of the key actions outlined for DAL in the NNP and NSAP is to develop a nutrition strategy for Agriculture. DAL should ensure that the nutrition strategy is robust and enables DAL to incorporate all of the actions for the Agriculture sector outlined in the NNP (and beyond if required) and incorporates global best practices in nutrition-sensitive Agriculture. The key elements for action should, at a minimum include: capacity building for nutrition-sensitive agriculture at all levels – national, provincial and local; strengthening curriculum of agriculture functionaries to make it nutrition-sensitive; establish appropriate data collection, monitoring, reporting and evaluation systems. Finally, drawing up costed action plans, and allocating adequate resources are also key elements for action. The sector should consider this as an opportunity to strengthen the entire DAL system and programs.

Ensure that the new National Food Security Policy (NFSP) and Action Plan are fully supportive of and enable the adoption of all relevant principles of nutrition-sensitive agriculture.

Box 4: Suggested program interventions for nutrition-sensitive agriculture

- Promotion of timesaving and labor saving technologies, especially for women engaged in Agriculture
- Incorporation of a food security and nutrition dimension into the national agriculture systems, e.g., extension workers curriculum and job descriptions
- Support to increase productivity of small-scale nutritious food production, e.g., livestock, dairy, fish, legumes, fruits and vegetables;
- Enhancing capacity of national agricultural research institutions to promote the breeding for and dissemination of developed biofortified crop varieties;
- Marketing support to smallholders' to enhance their participation in the value-chain of nutritious foods, e.g., vegetables, fruits, dairy, livestock and fish;
- Promoting the production, marketing and consumption of nutritious indigenous foods
- Promotion of regional/national industrial food fortification which might need working with another department
- Broaden food security policy dialogue to include nutrition perspective
- Promotion of nutritional homestead garden plots with appropriate nutrition education
- Improve opportunities for off-farm laborers, especially women

The NFSP recognizes the linkages between agriculture, nutrition, women's empowerment, and maternal and child nutrition. This is indeed a step in the right direction and DAL's stewardship will be critical to fully incorporate all of the principles of nutrition-sensitive agriculture into the NFSP. Amongst others, this includes monitoring of key

indicators, building capacity of institutions at all levels, factor key considerations of sensitivity to nutrition into all policy decisions and in their operationalization through the action plans, and ensure active promotion of these principles while also applying the 'do no harm' lens.

Global experience and knowledge suggest some key guiding principles and considerations for the Agriculture sector for nutrition-sensitive agriculture in PNG.

Box 5: Suggested indicators in agriculture to monitor nutrition

Food consumption indicators are central measures of nutrition-relevant impact provides relevant information about nutrition-related impacts. Suggested food consumption indicators include:

- **Simple, project-specific indicators** based on project interventions, e.g., number of days the previous week when any amount of X (nutritious food) was consumed.
- **Dietary Diversity Scores** consist of a simple count of the different food groups that a household or an individual has consumed over a given period of time (usually 24 hours).
- **Food Consumption Score** is a composite score based on dietary diversity, food frequency, and the nutrient content of different food groups consumed by the household.
- **Months of Adequate Household Food Provisioning** indicator measures household food accessibility throughout the past year, and reflects the seasonality aspect of food security.
- **Household Hunger Scale** is a measure of the degree of household food insecurity over a recall period of four weeks.

Drawing upon these resources, this note has outlined some key interventions (Box 4), indicators (Box 5), guiding principles (Box 6) and other important considerations such as 'do no harm' (Box 7). It is suggested that DAL consider these and incorporate them in their strategy formulation, action plans and in the development of guidelines, training and other actions. In addition, DAL could encourage

development partners to align support to nutrition sensitive principles.

Box 6: Guiding principles for nutrition-sensitive agriculture programming (41)

These include focus points while planning on “best practice principles” should:

- (1) incorporate explicit nutrition objectives;
- (2) assess the context;
- (3) do no harm;
- (4) measure impact;
- (5) coordinate across sectors;
- (6) maximize household income;
- (7) increase equitable access to productive resources; and
- (8) target vulnerable groups

While performing the activities, all the approaches must:

- (9) empower women;
- (10) incorporate nutrition education;
- (11) manage natural resources for productivity, resilience, adaptation to climate change, equitable access, and biodiversity;
- (12) diversify production and livelihoods;
- (13) increase production of nutrient-dense foods, including horticulture crops, animal source foods, underutilized foods, legumes, and biofortified crops;
- (14) reduce post-harvest losses and improve processing;
- (15) increase market access and opportunities; and
- (16) reduce seasonality of food-insecurity.

Box 5: ‘Do no harm’ considerations

Agricultural productivity, focused primarily on staple grains, does not necessarily reduce undernutrition. During the design phase, assessing potential harms and developing mitigation strategies appropriate for the context are critical.

Monitoring for potential harmful impacts during project implementation also will provide information important for triggering mitigation strategies.

Policies that strongly favor staple grains over other crops or foods may skew the balance from nutritious foods, e.g., horticulture, pulses, livestock, dairy, fish, and healthy indigenous foods.

Observed negative impacts

Irrigation projects may increase hydrophilic vector-borne disease, e.g., malaria, schistosomiasis, and Japanese encephalitis

Animal husbandry projects may increase the risk of zoonotic diseases

Reduction in women’s access to resources if projects shift production toward male-dominated crops

Reduction in women’s time available for child care, impacting child health and nutritional status

Production increase/price reduction in calorie-dense foods may unfavorably alter dietary quality and contribute to obesity and chronic diseases

Possible mitigation measures

- Include analysis of hydrophilic vector-borne diseases in environmental safeguard analysis; ensure mitigation measures are established

- Strengthen mitigation measures and risk management framework for zoonotic infections in program design

- During project social or gender analysis, determine who is benefiting from intervention activities and develop strategies to ensure equitable intra-household access to resources

- Include women’s time use in project gender analysis to determine women’s labor time requirement

- Introduce timesaving technologies for tasks commonly performed by women

- Promote production and consumption of micronutrient-rich crops

- Include food consumption indicators in project’s Results Framework to monitor consumption trends which could affect likelihood of obesity and chronic disease

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