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Success stories with reducing stunting: Lessons for PNG

This policy brief examines the case of four countries, Peru, Thailand, Vietnam and Brazil, that have been successful in achieving large reductions in stunting. The brief outlines the key ingredients of their success and identifies lessons that could be applied in the Papua New Guinea context.

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Key Messages

Stunting, a measure of chronic undernutrition is one of the best indicators of human capital development. Caused by inadequate nutrient intake and frequent infections over a long period of time, stunting affects a child's physical growth, health, emotional development, brain development and cognitive ability.

The costs of stunting are very high. Stunting during the first two years of a child's life can have lifelong impacts - delayed schooling, lower educability, reduced adulthood earnings. Stunting erodes the human potential, productivity and economic growth of countries.

Almost every second child in PNG is stunted, costing the country an estimated USD 508 million (2.81 percent of its annual GDP) in 2015-16. Urgent action is required to address stunting.

Several countries have successfully reduced stunting over a short period of time, including Peru, Thailand, Brazil and Vietnam. In just 8 years from 2008 to 2016 Peru cut its stunting rate from 28 percent to 13 percent; Thailand reduced it from 25 percent in 1987 to about 10 percent in 2016; between 1974 and 2007, Brazil reduced the prevalence of stunting in children under five years of age from 37.1 percent to 7.1 percent; Vietnam cut child stunting by nearly 50 percent in a decade.

There was no 'one recipe' for their success with reducing stunting. Each country used its own context-appropriate strategy and approach. However, the critical elements underlying the varied approach and that contributed to the success are remarkably similar. Each country experience demonstrates that sustained political commitment, strong leadership and effective champions for nutrition, an enabling policy environment, multisectoral action, focus on evidence-based interventions delivered at scale with strong monitoring, adequate and well prioritized financing and community engagement were key success factors.

PNG's National Nutrition Policy (2016-2026) charts the country's direction to address undernutrition. The Medium Term Development Plan III (2018-2022) further reinforces PNG's policy interest in building human capital and tackling stunting with ambitious targets. These are steps in the right direction. Effective policy implementation could transform the face of human capital in the country. How PNG translates this clear policy intent into action at the national, provincial and local levels, applying the tested ingredients of success from other countries will remain critical to success and to PNG joining the list of successful countries to have reduced stunting and maximized the opportunities for their future generations to achieve their full human potential.

This brief was prepared by a team comprising Ashi Kohli Kathuria, Aneesa Arur and Edith Kariko

What is stunting and why does it matter in PNG?

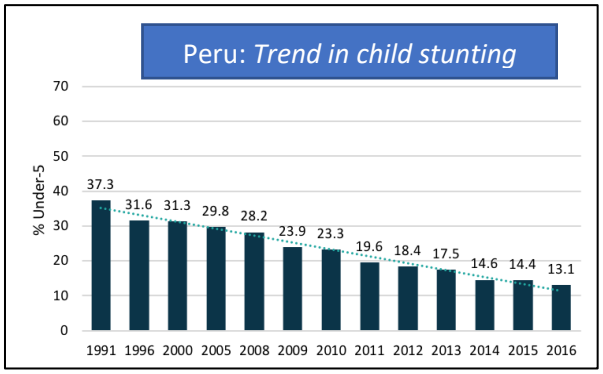
Stunting, or low height for age, is one of the best measures of human capital development and inflicts high costs on individuals and economies. An indicator of chronic malnutrition, stunting is caused by inadequate nutrient intake and frequent infections over a long period of time. It carries mortality risks as well as long-term developmental risks lasting into adulthood. Stunting affects a child's physical growth, health, emotional development, brain development and cognitive ability. This contributes to delayed schooling, lower educability, reduced adulthood earnings, and a lower likelihood of escaping poverty. In addition, stunted children face an increased risk of chronic disease in adulthood, such as diabetes, heart problems and obesity. Not only are the costs of stunting high for individuals affected, stunting also erodes the human potential, productivity and economic growth of nations. Micronutrient deficiencies, such as anemia, iodine deficiency, vitamin A deficiency also affect productivity and add to the economic costs of undernutrition (World Bank 2006; Horton & Steckel 2013; Hoddinott et al. 2008; Hoddinott et al. 2011)

Child undernutrition in PNG is high and it has large economic costs. 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. The costs of undernutrition in PNG are now gaining increasing attention. A recent report (Save the Children 2017) 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. 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). (World Bank 2017- Economic Update).

... and exacts a heavy human toll through increased mortality among PNG's children. Undernutrition makes children more vulnerable to illness and is estimated to be the underlying cause of 45 percent of global deaths among children under 5 years (Black R. E. et al. 2013). Hospital data in PNG suggest that about a third of under-five hospital deaths are attributable to undernutrition. However, these data are likely an underestimate of the true contribution of undernutrition to under-five deaths. Save the Children estimates that take into account community deaths attributable to undernutrition suggest that undernutrition could be responsible for as much as 76 percent of under-five deaths (Save the Children 2017).

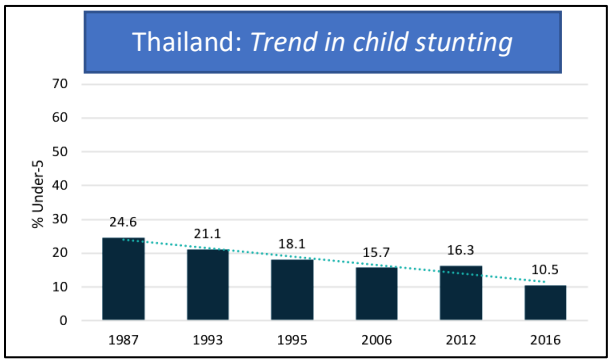
PNG must reduce stunting urgently if the country has to unlock the full potential of its young population and build human capital to unleash economic growth. PNG's population is young ─ about 40 percent is under 15 years ─ and is growing fast at about 3.1 percent each year. Investing in PNG's young population is critical for economic growth. A skilled workforce will be able to meet future labour demands across the economy and increase country and individual earnings. Reducing childhood stunting and micronutrient deficiencies is essential to unlocking the productive potential of PNG's children. As the window of opportunity to address stunting is very short, from conception to up to two years of age, delayed action can deprive millions of young

children the opportunity for optimum physical growth and cognitive development and reduce their odds of escaping poverty.

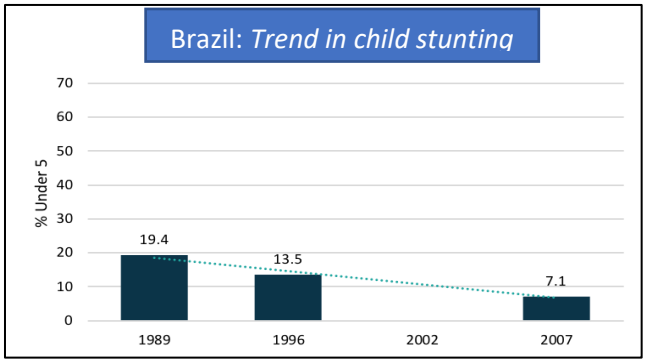


Is it possible to reduce stunting substantially?

Several countries have shown that it is possible to achieve substantial reductions in stunting. While reducing stunting is a challenging and complex task, particularly in resource constrained situations, several countries ─ from the early success of Thailand to the most recent star, Peru ─ have demonstrated that it is possible to reduce stunting, and others are on the trajectory to do so. Trends in stunting from the four countries presented here demonstrate that stunting can be addressed across a range of varied socio-economic and cultural contexts.



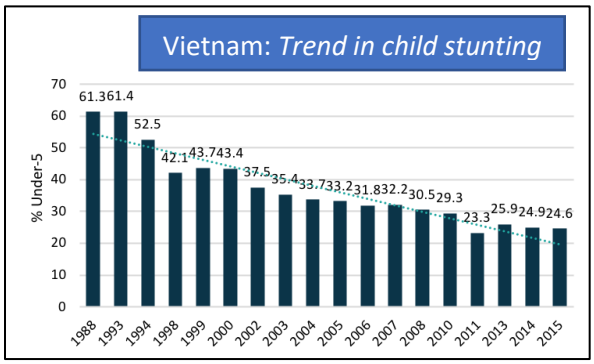
Peru reduced stunting by nearly half in less than a decade. Peru is a spectacular success story in bringing about sustained as well as rapid stunting reductions. While achieving sustained declines in stunting since 1991, Peru has made extra-ordinary progress recently. In just 8 years between 2008 and 2016 Peru cut its stunting rate from 28 percent to 13 percent.



Thailand is the earliest global success story of significant reductions in undernutrition. Stunting in Thailand decreased from nearly a quarter of all children under five years in 1987 to about 10 percent in 2016, and the prevalence of underweight children below five years of age declined sharply from 50 percent in 1982 to below 20 percent in 1991. Severe and moderate malnutrition was virtually eliminated. By 2006, the prevalence had declined to less than 10 percent (Richard, 2002 and Pittance , 2010).

Over about three decades Brazil achieved an 80 percent reduction in stunting among under-fives, particularly among the poor. In the 33-year period between 1974-2007, Brazil reduced the prevalence of stunting in children under five years of age from 37.1 percent to 7.1 percent. This marks a reduction of almost 80 percent (Monteiro et al.,2010; Sousa et al., 2011) and the greatest reductions were achieved in the poorest areas of Brazil and among the poorest quintile. In the poorest quintile, prevalence of stunting fell from 59 to 11.2 percent, whereas it declined from 12.1 to 3.3 percent in the wealthiest quintile. From 1999 to 2008 alone, the prevalence of exclusive breastfeeding in infants under six months of age increased from 26.7 percent to 41.0 percent. Brazil

achieved both Millennium Development Goal 1 (halve the proportions of people whose income is less than $1 a day and people who suffer from hunger) and Goal 4 (reducing by two-thirds the under-five mortality rate).



Vietnam cut child stunting by nearly 50 percent in a decade. In the decade from 1993 to 2003, Vietnam nearly cut in half child stunting, from 61 percent to 35 percent. Between 2000 and 2015, stunting prevalence fell from 36.5 percent to 24.6 percent, underweight fell from 33.8 percent to 14.1 percent, and wasting fell from 8.6 percent to 6.6 percent. And although Vietnam remains one of the countries with the lowest prevalence of exclusive breastfeeding in the region, between 2011 and 2014 the rate increased from 17 percent (where it had been stalled since 2006) to 24 percent (O'Dell et al., 2007; Khan et al., 2007).

What approaches did these countries adopt and what were the ingredients of their success?

The context of each country and the specific approach adopted by each varied. However, there were several underlying common ingredients in their recipes to success. There was no single approach that all countries followed. Rather, each country followed some basic principles within its own context, and in several cases a unique situation provided the push for action.

Peru - making 'invisible stunting' visible, focus on evidence, incentives and results

Peru's earliest efforts (in the 1970s and 1980s) to combat hunger and malnutrition were largely focused on food aid, coordinated primarily by nongovernmental organizations, and made little impact on stunting. Despite the millions pumped into food assistance programs, much of which went to children older that two years of age, and despite increased urbanization, and improved women's education and access to water, there was little reduction in stunting. Even though Peru's per capita income doubled and GDP tripled from 2002 to 2013, child stunting remained stagnant at about 30 percent between 1995 and 2005 and was among the highest in Latin America and the Caribbean. There were alarming disparities[i] in stunting prevalence as well.

Against this backdrop in 2007, Peru undertook serious food and nutrition policy reform and developed a strategic road map for reducing stunting rates. Stunting was regarded as a human development issue and – through increasingly ambitious targets of subsequent administrations – became a sustained political priority. Five successive governments have continued to show their commitment to addressing stunting and set for themselves a series of new and ambitious targets administrations. (Levinson 2013; Marini 2017). The government looked at the global evidence of what caused stunting and sought out proven ways to reduce stunting rates. The national nutrition strategy, CRECER (To Grow) helped to focus spending on the poorest communities to improve the health and nutrition of children in the first two years of life. While doubling the resources

devoted to the CRECER strategy, from USD 216 million to USD 495 million, the government and prioritized investments in areas of higher stunting, with a focus on results.

It also established a Results Based Budgeting (RBB) system for ensuring money was well-spent and produced the results that politicians had pledged to achieve. The incentive system contributed to improvements in the quality of health and nutrition services. Regional Governments were given monetary incentives, through the regional health directorates, encouraging them to provide more and better nutrition services (Marini 2017).

Cash incentives, through a Conditional Cash Transfer (CCT) program known as Juntos (Together), were a crucial part of the mix. Juntos, launched in 2005, provided cash to mothers while requiring them to take their young children regularly to health, growth monitoring and promotion check-ups at the health centers and for ensuring their older children attended school. This increased the demand for health and social services in poor and rural communities. (standing tall). In 2007, Juntos was redesigned to include nutrition-related conditionalities.

Central to improving child health and nutrition in Peru, was the Control of Growth & Development for Infants and Children in Peru (CRED) program. The program, delivered in health centers, supports parents in tracking a child's growth (both in terms of weight and height), health and nutrition, and provides counseling to foster behavioral changes. Through an innovative communication strategy Peru made the ‘invisible problem’ of stunting ‘visible’ to parents, using nudging techniques to encourage parents, local governments and providers to seek and provide better nutrition and health services (Marini 2017).

Over time, a new ministry, Ministry of Development and Social Inclusion was established to ensure Peru's poor shared in the country's economic growth. It had responsibility for social development and protection, inclusion, and equality, and was also charged with tackling chronic malnutrition, including oversight and coordination of other sectors’ contributions. Responsibility for the CRECER strategy – renamed Incluir para CRECER (Inclusion for Growth) – and five key social programs was moved to the Ministry of Development and Social Inclusion, including Juntos. (Marini et al. 2017; Levinson 2013)

Incluir para CRECER was restructured to follow a life-cycle approach and targeted five outcomes including the reduction of malnutrition and improvement of early childhood development. (Marini et al. 2017; Levinson 2013) The scope of Incluir para CRECER was expanded. The number of targeted districts was increased from 880 to 916, and increased emphasis was placed on: water, sanitation, and hygiene issues as contributors to malnutrition; psycho-social stimulation as a contributor to overall child development; and incorporation of health and nutrition into schools.

Peru made tackling chronic malnutrition everyone's business with national, regional and local governments, the private sector, Non-Governmental Organizations (NGOs), parents, prime ministers and presidents working in unison to give children the best start in life. The country's experience demonstrates that investing in nutrition in the first 1,000 days of a child's life is critical to ending the world's stunting crisis (Marini 2017).

<u>Thailand</u> - an integrated community-based approach backed by technical support, resources and sustained political commitment

It was during the period 1977-81 that Thailand took transformative action and nutrition was seriously addressed in Thailand's national development plans (Richard 2002; Tontisirin et al. 1995; Gillespie 2016).

Adopting a multisectoral approach, Thailand set out ambitious and comprehensive goals to improve the nutrition among rural infants, children under five years, and pregnant and lactating women through improved health care and hygiene, increased food availability, establishment of 1,200 child nutrition centres to combat malnutrition, nutrition education, and improved socioeconomic conditions of the vulnerable groups. These were embedded in the country's first Food and Nutrition Plan (Tontisirin et al. 1995; Gillespie 2016).

In the 1980s Thailand recognized malnutrition not only as a development issue but also as a symptom of poverty and reducing child malnutrition was made an explicit goal in the national policy for poverty alleviation. In line with this approach, the government initiated integrated community-based programs, of which nutrition was a part. Nutrition interventions were integrated not only with the existing primary health care activities but also with overall community development initiatives. There on, nutrition was an integral part of consecutive national socio-economic and health plans, and efforts to increase community ownership of nutrition service delivery began in earnest. (Tontisirin et al. 1995; Gillespie 2016).

Using a community-based approach that was rapidly scaled to reach vulnerable populations, Thailand created cadre of "mobilizers" (or village health volunteers, 80 percent of whom were women) who were trained to provide basic nutrition and health care, promote antenatal and postnatal care, immunizations, birth spacing, breastfeeding, and complementary feeding, administer oral rehydration therapy and deworming, as well as support the provision of potable water and sanitary latrines, promotion of agriculture and income generation activities. (Gillespie 2016). Although they were unpaid, mobilizers received free medical services for themselves and their families and public recognition of their work with awards and certificates. (Gillespie 2016). In a few years' time over half a million mobilizers had been trained. (Gillespie 2016) Effective engagement of community volunteers at such a large scale reduced costs, empowered communities, and enhanced self-reliance. (Gillespie 2016)

This community-based approach emphasized service providers teaming with community leaders and community volunteers, who were well-respected individuals selected by the community. The volunteers, each responsible for about 10 to 20 households, played a key role in mobilizing communities, providing regular counseling and support to caregivers to improve feeding, care and hygiene practices, and in the prevention and treatment of disease.

The community-based approach was a key element of the strategic program planning both at micro and macro levels that included clear goals with a clear set of responsibilities for representatives of health, agriculture, education and rural development sectors. The approach involved women in decision making, presence of community-based organizations and charismatic community leaders,

and parallel implementation of poverty alleviation programs that facilitated as well as supplemented the community-based approach (Jennings et al., 1989).

Thailand adopted a Basic Minimum Needs (BMN) approach to planning and monitoring. The BMN approach provided a common tool with a standard menu of actions for government officials and community members to identify priority areas for development, devise a set of actions to address them, monitor progress, and evaluate accomplishments. (Gillespie 2016). The BMN approach included both process and outcome indicators. While process indicators comprised immunization and antenatal service coverage and availability of potable water and sanitary services, the outcome indicators included rates for child malnutrition, low birth weight and micronutrient deficiencies. In less than a decade over 95% of all villages In Thailand were using BMN indicators to gauge their development status and achievements. (Tontisirin et al. 1995).

A sense of social accountability and competition was fostered by displaying in every village the list of community development indicators, which included at the top growth monitoring data. (Tontisirin et al. 1995). Community-level monitoring data ultimately fed into district-, province-, and ministry-level monitoring. (Gillespie 2016). One of the chief factors of success in Thailand has been the ability to generate a relatively high level of community participation by combining top-down and bottom-up planning and implementation. (Tontisirin et al. 1995)

Technical capacity of various stakeholders was strengthened for effective implementation of the program (Pittance, 2015). Volunteers were supported by regular visits from Facilitators every few months to provide on-the-spot training and problem-solving, and a strong technical support institution at the national level provided training and support. This institution was central to sustaining the commitment for nutrition and contributed to Thailand's success.

Thailand also built nutrition championship to generate and sustain momentum for nutrition action. The nutrition champions were crucial to convincing high level policy-makers in the finance and planning ministries that allocating money to improve nutrition was an *investment in the future* rather than *social welfare*, and that malnutrition is not a health problem but rather a result of social disparity. (Tontisirin et al. 1995) After securing commitment at the central level, seminars for provincial governors helped to engage regional policy-makers and generate buy-in. Making public the situation of nutrition in the country was also part of engaging communities in the effort to address undernutrition (Tontisirin et al. 1995)

Brazil: addressing the underlying determinants of undernutrition, policies oriented towards equity and universal access to education, healthcare and sanitation

Brazil chose to address the underlying socio-economic determinants of stunting in addition to a focus on the direct causes of stunting, i.e., illness and dietary intake (Ruel, 2008; Monteiro et al. 2010). Success is attributed to four factors: increased maternal schooling, improved purchasing power of families with equity oriented public policies, expansion in provision and quality of health care, and better sanitation. Coverage of potable water and sewerage increased to 80 and 50 percent respectively by 1980, and immunization coverage trebled between 1975 and 1988. Investments in both health and food programs also increased substantially (Ruel, 2008; Sousa et al. 2011).

In response to mounting civil society pressure, and a result of strong political will, 2000 onwards Brazil furthered its policy instruments to improve nutrition. It launched a set of policies and strategies that included the Zero Hunger Strategy, the Federal Law for Food and Nutrition Security, and the National Council on Food and Nutrition Security (CONSEA) reporting directly to the President of Brazil. The policy on Food and Nutrition Security was broad based and included strategies for improving family-owned agriculture, local food banks, community kitchens, school meals and promotion of healthy food habits (Sousa et al. 2011).It adopted the policy framework called Fome Zero (Zero Hunger) a framework that integrated economic and social policies to fight hunger and poverty using a multisectoral approach that targeted income redistribution and universal access to education, health, nutrition, and sanitation services.

To maximize synergies from joint promotion of education, health and nutrition, to avoid duplication, make delivery more efficient, subsequently under the Fome Zero umbrella, Brazil subsequently merged a number of Conditional Cash Transfer (CCT) programs into one program, the Bolsa Familia Program (BFP) with the objective of breaking the inter-generational cycle of poverty providing cash transfers to families with health and education conditionalities (Ruel, 2008; Monteiro et al. 2010; Sousa et al. 2011). It was innovative in making transfers conditional on all relevant family members complying with key human development conditionalities as part of an important policy shift towards focusing assistance on the family (rather than on individuals) (WBG PAD 2004).

To meet and capitalize on demand, investments were made to improve the supply and quality of health and education services. Additionally, initiatives such as the Family Health Strategy, Food and Nutrition Surveillance System, and distribution of micronutrients as a part of basic health services, were launched. Further, the CCT was supported by a robust monitoring and evaluation culture which strengthened the provision of incentives, supported correction of policy actions and helped in scaling up the program.

At the same time Brazil implemented policies to ensure universal access to primary education and to improve the quality of primary and secondary schools ─ the most important factor associated with the decline in child undernutrition in Brazil was women's education. The program made targeting more effective and targeted the poorest rural municipalities and peri-urban slums, establishing family healthcare teams of doctors, nurses, and community health workers poor families. Through these CCT programs, a combination of pathways comprising of increased income and access to food, enhanced maternal control on child care and feeding, improved sanitation and environment, as well as greater use of health services possibly influenced improvement in nutrition.

The success of this approach is demonstrated by the fact that children from families exposed to BFP were 26 percent more likely to have normal weight-for-age than those from non-exposed families.

Vietnam–addressing undernutrition as an integral component of socio-economic development

The experience of Vietnam from the 1990s presents a unique case study of reducing child undernutrition through policy interventions and changes in the health sector during a period

marked by rapid economic growth and transition to a market economy (O'Dell et al. 2007). Following major social and economic reforms in 1986, Vietnam experienced a period of rapid economic growth (Gillespie 2016). From one of the five poorest countries in the world in 1984, by 1999 Vietnam emerged to be among the fastest growing economies in the world. (Gillespie 2016) There was a huge drop in poverty from 75 percent in 1984 to 37 percent in 1998–and improvements in many health indicators, including the halving in the prevalence of child stunting.

Vietnam's key policy instruments that made this rapid reduction in undernutrition possible included the economic reforms introduced in 1986, and the well-structured child health and family planning programs that emphasized increased investments in nutrition activities. Nutrition goals were included in the country's Socio-economic Development Plan with almost one-fourth of the health budget being allocated to nutrition despite it being only one of the ten target programs. Vietnam launched the Hunger Eradication and Poverty Reduction program (HEPR) in 1992 and implemented its first national nutrition strategy in the form of the ratified National Plan of Action for Nutrition (NPAN1) during 1995-2000. The strategy not only raised awareness and built commitment of authorities at various levels, it also sought active participation of various groups such as women's and youth unions, and farmer associations in targeting mothers and children (Khan et al. 2007; Hop et al. 2007). Since 2006, a special focus on improving nutrition status of mothers was added to the policy. A Child Malnutrition Control Program, designed to educate every woman and newly married couple on proper nutrition, weight monitoring during pregnancy, importance of birth weights and infant/young child feeding practices, was implemented. In addition, the program also encouraged diversity in diets through production and apt usage of food at the household level.

The income growth and reduction in poverty coupled with progressive nutrition and health policy changes of 1990s, contributed to the decline in undernutrition rates. The successful family planning program helped reduce fertility rates from 3.1 percent in 1994 to 2.3 percent in 2002. This possibly improved investments of families in child nutrition and health care. Targeted maternal and child health programs resulting in improved immunization coverage, control of diarrheal diseases and respiratory infections, had a cumulative effect. Performance to meet the nutrition targets was monitored closely by a newly established National Institute of Nutrition (O'Dell et al. 2007).

Thereafter, reducing child malnutrition remained a high priority. The 10th Party Conference's Document testified to the government's commitment to reduction in child malnutrition. Government and local budgets were mobilized and each sector was assigned responsibility to take into consideration objective of improving nutrition status in their plans and inter-sectoral coordination and collaboration was promoted.

There is no 'single recipe' for success with reducing stunting, but several common ingredients are apparent. There was no single approach that all countries followed. Rather, each country followed some basic principles within its own context, and in several cases a unique situation provided the push for action. What is crystal clear though is that there are several common ingredients that went into their individual recipes for success. The following section highlights the common elements that were critical to achieving the major gains in stunting reduction that PNG

can draw upon as it embarks on its journey to reduce stunting and invest in its human capital formation.

What insights can PNG take from successful country experiences with reducing stunting?

Having begun its journey to reduce stunting there is much for PNG to draw upon from the elements of success of Peru, Thailand, Brazil and Vietnam. With the adoption of a multisectoral nutrition policy PNG has chosen the right direction for the country's route to reduce stunting. The country can draw upon the following elements synthesized from the four success stories described in this brief.

- **Sustained political commitment to reducing stunting is critical to success.** How nutrition is framed matters a great deal. Framing nutrition as a core development or human rights priority that is subsequently followed through in planning, prioritization including in the allocation of resources, and monitoring is a key element.

- **Leadership and champions for framing policies and for translating policy intent into policy implementation is vital.** The right policies and an enabling policy framework are important. Leadership at every level – national, sub-national and local - to ensure effective coordination and implementation on the ground and at scale, using effectively every opportunity or impetus to catalyze action, take it to scale and to sustain it is at least as important as creating an enabling environment. Building and committing to a sense of urgency for action, as opposed to 'business as usual' was a common factor across contexts.

- **Multisectoral actions are needed.** Interventions delivered through the health system alone will not suffice. Other sectors including education, sanitation, agriculture make an important contribution.

- **Focus on evidence-based interventions, reaching the last mile and attention to equity is important.** Each sector must focus on the most effective and proven interventions in the sector to reduce stunting, be adequately resourced to deliver on these results, measure and track progress and be held accountable to achieve these results. Focusing intensive efforts in areas and on populations with the highest stunting burden requires ensuring equitable access to quality service delivery at the last mile.

- **Institutional arrangements for implementing the multisectoral approach should be established at all levels.** Representation of all stakeholders is critical at all levels and the institutional arrangements should be clearly spelt out for each level with clearly defined roles and responsibilities for each stakeholder in planning, implementation, monitoring and problem solving and in the achievement of results. Provincial coordination is crucial in that provincial government sectors should work closely with the non-governmental organizations and other stakeholders that engage with the communities in the nutrition front. Taking stock of what's happening at the community level will hugely support a provincial oversight as well as a coordinated effort in addressing and improving nutrition outcomes.

- **Increasing access to quality health services matters.** Direct nutrition services are critical to reduce stunting. Across these success stories, different strategies have been used to expand

access to quality service delivery including measures to improve the availability and reach of quality health and nutrition service delivery and measures to increase demand and overcome financial barriers to accessing quality health and nutrition services.

- **Community mobilization and involvement remain critical to service delivery and uptake.** Success is not possible without the full engagement of communities. Different approaches have been demonstrated for mobilizing communities and enlisting their support and action, including for behavior change. Community Health Workers and Village Health Volunteers have played a key role in mobilizing communities and reaching the underserved in remote areas. The role of technical support and monitoring also appears to be important in enabling Community Health Workers to play their part effectively.

PNG has adopted the National Nutrition Policy (2016-2026) which charts the country's direction to address undernutrition. The Medium Term Development Plan III, 2018-2022, further reinforces PNG's policy interest in building human capital and tackling stunting with ambitious targets to reduce stunting. These are steps in the right direction. Effective implementation of the National Nutrition Policy could transform the face of nutrition in the country. How PNG translates this clear policy intent into action at the national, provincial and local levels, applying the tested ingredients of success from other countries will remain critical to success and to PNG joining the list of successful countries to have reduced stunting and maximized the opportunities for their future generations to achieve their full human potential.

References

1. Alessandra Marini, Claudia Rokx, and Paul Gallagher. 2017. “Standing Tall: Peru’s Success in Overcoming Its Stunting Crisis.” World Bank Group.
2. Alive & Thrive. 2013. “Overview of the Social Franchise Model for Delivering Counselling Services on Infant and Young Child Feeding.”
3. Black, Robert E, Cesar G Victora, Susan P Walker, Zulfiqar A Bhutta, Parul Christian, Mercedes de Onis, Majid Ezzati, et al. 2013. “Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries.” The Lancet 382 (9890): 427–51. https://doi.org/10.1016/S0140-6736(13)60937-X.
4. Gillespie, Stuart, Judith Hodge, Sivan Yosef and Rajul Pandya-Lorch. 2016. “Nourishing Millions: Stories of Change in Nutrition.” Washington, DC: International Food Policy Research Institute. https://doi.org/10.2499/9780896295889.
5. Hoddinotscrt, John, John A Maluccio, Jere R Behrman, Rafael Flores, and Reynaldo Martorell. 2008. “Effect of a Nutrition Intervention during Early Childhood on Economic Productivity in Guatemalan Adults.” The Lancet 371 (9610): 411–16. https://doi.org/16/S0140-6736(08)60205-6
6. Hoddinott, John, Harold Alderman, Jere R. Behrman, Lawrence Haddad, and Susan Horton. 2013. “The Economic Rationale for Investing in Stunting Reduction: Economic Rationale for Stunting Reduction.” Maternal & Child Nutrition 9 (September): 69–82. https://doi.org/10.1111/mcn.12080
7. Hop LH and Khan NC. Malnutrition and poverty alleviation in Vietnam during the last period. Asian pacific Journal of Clinical Nutr. 2007:11(Suppl):S331-S334.
8. Jennings J, Gellispie S, Mason J, Lotfi M, Scialfa T. Managing successful nutrition program–nutrition policy discussion paper No. 8. Based on an ACC/SCN workshop at 14th IUNS International Congress on Nutrition; 1989 Aug 20-25, Seoul, Korea.
9. Khan NC, Hop LH, Tuyen LD, Koi HH, Truong HS, Duong PH, Phuong HN. A national plan of action to accelerate stunting reduction in Vietnam. SCN News 36, 2007; 30-37.
10. Khan NC, Tuyen LD, Ngoc TX, Duong PH and Khoi HH. Reduction in childhood malnutrition in Vietnam from 1990-2004. Asia Pacific J Clin Nutrition 2007; 16(2): 274-278.
11. Levinson, F.J., 2013. Engaging development partners in efforts to reverse malnutrition trends in Pakistan. *IDS Bulletin*, *44*(3), pp.75-80.
12. Monteiro CA, Benicio MHD, Conde WL, Konno S, Lovadino AL, Barros AJD, Victoria CG. Narrowing socio-economic inequity in child stunting: the Brazilian experience, 1974-2007. Bulletin of WHO 2010; 88(4):305-311.
13. Nutrition at a glance–Vietnam. The World Bank produced with support of Japan trust Fund for Scale Up Nutrition.http:/sitesources.worldbank.org/Nutrition/Resources?281846-1271963823772/Vietnam.pdf.
14. O’Dell, O’Nicolas AL, Doorslaer EV. Growing richer and taller: Explaining change in distribution of Child nutritional status during Vietnam's economic boom. Tinbergen Institute Discussion Paper TI 2007-008/3. 2007.
15. Pittance W. Thailand experiences in improving maternal and child nutrition. Presented at seminar on Linking agriculture and health interventions to improve nutrition outcomes; 2010 Sept 15; Washington D.C.
16. Richard H. Thailand’s national nutrition program–lessons in management and capacity development. HNP Discussion paper. 2002 Jan.

17. Ruel MT. Addressing the underlying determinants of undernutrition: example of successful integration of nutrition in poverty reduction and agriculture strategies. SCN News 36, 2008; mid;21-29.
18. Save the Children. 2017. *Short Changed: The Human and Economic Cost of Child Undernutrition in Papua New Guinea.* June 2017. Downloaded from < https://www.savethechildren.org.au/getmedia/565e0352-6a4f-46c1-bea8-331acd1b4c8c/png-nutrition-report.pdf.aspx> .
19. Sousa RP, Santos LMP and Miazaki ES. Effects of conditional cash transfer program on child nutrition in Brazil. Bulletin of WHO 2011; Apr 29.
20. Spray, Andrea L. FORTHCOMING. "Evolution of Nutrition Policy in Senegal." Analysis & Perspective: 15 Years of Experience in the Development of Nutrition Policy in Senegal. World Bank, Washington, DC; CLM, Dakar, Sénégal. License: Creative Commons Attribution CC BY 3.0 IGO.
21. Tontisirin K, Gillespie S. Linking community based programs and service delivery for improving maternal and child nutrition. Asian Development Review, 1999; 17(1,2):33-65.
22. UNICEF, 2009. Tracking Progress on Child and Maternal Nutrition.
23. World Bank, 2006. "Repositioning nutrition as central to development: a strategy for large scale action."
24. World Bank, 2009. World Development Indicators (Database).
25. World Bank Multi-sectoral Nutrition Action Plan (2013-17). World Food Program (WFP). 2018. "Bridging the Gap: Engaging Adolescents for Nutrition, Health and Sustainable Development."