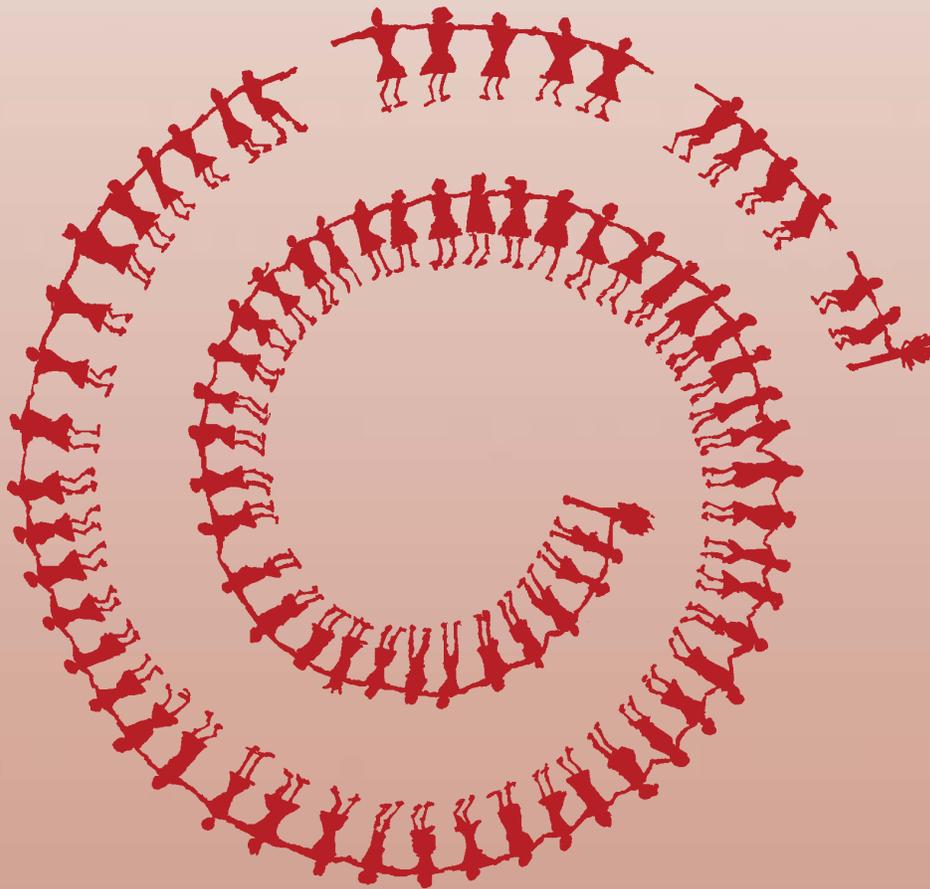


Report No. 71

South Asia Human Development Sector

School Health and Nutrition in Sri Lanka

June 2014



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**South Asia: Human Development Sector**

# **School Health and Nutrition in Sri Lanka**

June 2014

**Discussion Paper Series**

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## **ABBREVIATIONS AND ACRONYMS**

ADT	Adsorbed diphtheria and tetanus
AIDS	Acquired immune deficiency syndrome
CES-D	Center for Epidemiologic Studies Depression Scale
CRS	Congenital Rubella Syndrome
DALY	Disability-adjusted life year
EFA	Education for All
ESDFP	Education Sector Development Framework and Program
FRESH	Focusing Resources on Effective School Health
GCE	General Certificate of Education
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
HIV	Human immunodeficiency virus
LKR	Sri Lankan Rupees
NIE	National Institute of Education
MMR	Measles, Mumps and Rubella
MRI	Medical Research Institute
PCD	The Partnership for Child Development
SABER	Systems Approach for Better Education Results
SHN	School health and nutrition
SHPP	School Health Promotion Program
SHPPIMS	School Health Promotion Program Information Management System
TB	Tuberculosis
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USD	United States Dollar
WASH	Water, Sanitation and Hygiene
WFP	United Nations World Food Programme
WHO	World Health Organization

## **EXECUTIVE SUMMARY**

The health needs of school-age children in Sri Lanka are complex. A combination of unique demographics, recent conflict, and a nutrition and epidemiological transition has led to growing challenges. Obesity and diabetes are rising (particularly in urban areas such as Colombo) and undernutrition (including stunting, wasting, underweight, anemia, vitamin A and iodine deficiency) remains pervasive. While anthelmintics use has led to low worm prevalence across much of Sri Lanka, the plantation areas have higher worm prevalence due to favorable environmental conditions, poverty and poor sanitation. There is increasing recognition of children's stress and mental health problems across the country, particularly in relation to academic pressure. Psychosocial needs have been identified related to the impact of the conflict and the effects of the 2004 tsunami.

Sri Lanka has achieved commendable progress in responding to these issues through a comprehensive school health and nutrition (SHN) program, the 'School Health Promotion Program (SHPP)'. Beginning with a series of uncoordinated, but targeted initiatives as far back as 1918, school health in Sri Lanka has developed into an innovative, cohesive and strategic program which aims to mainstream SHN into policy planning of the education sector. The international benchmarking system developed by the World Bank, 'Systems Approach for Better Education Results (SABER)' has indicated that the SHPP is making clear progress towards international standards of good practice in school health. SABER has shown the SHPP to be a well-targeted and responsive program, addressing the complex health and demographic situation.

The SHPP has been designed within the internationally agreed framework for school health programming, the FRESH (Focusing Resources on Effective School Health) framework. The FRESH framework provides a common platform for interagency SHN initiatives (such as the Health Promoting School initiative of the World Health Organization and the Child-Friendly Schools initiative of the United Nations Children's Fund). The multi-stakeholder coordination aspect of the FRESH framework provides a much needed foundation for the SHPP which covers all the core elements outlined in the FRESH framework [Box 1.1.].

Through the SHPP, the Ministries of Education, Education Services and Health coordinate to manage the comprehensive and targeted SHN program within a strong policy framework. Sri Lanka's effort to mainstream SHN within larger policy objectives is reflected in its integration into national planning and monitoring structures of the education sector and the Finance Commission. This includes the integration of the SHPP indicators into the school census and the monitoring by the Finance Commission of provincial SHN performance.

The SHPP includes a number of SHN interventions: school medical inspections that systematically assess the health status and nutritional needs of school going children responding with healthcare referrals and interventions (including deworming, vitamin supplementations and vaccinations); school meals that prioritize smaller, rural, and poorer schools; psychosocial interventions that focus in the northern and eastern provinces where the need is greatest; health education and life skills that are increasingly being integrated into the general education curriculum; and water and sanitation facilities and hygiene practices that are being improved in schools. The SHN interventions are associated with different per unit cost to reach each child and

effectively target those in need. The SHPP demonstrates that evidence-based allocation of funds is critical for targeting the SHN interventions to meet local needs and at a scale required to effectively reach those in need.

In this paper, the policy platform is documented as well as the type, coverage and the effect of the SHN interventions, followed by the key areas identified for development and learning of the SHPP. Five priority areas have also been identified for the SHPP to invest in, so as to further integrate school health into national education policies and plans:

1. To build on and extend the platform of excellent collaboration between the Ministries of Education, Education Services and Health, so as to specifically improve data flows and to integrate monitoring activities – useful for institutionalizing and mainstreaming the SHPP within larger policy objectives.
2. For capacity building at all levels, to enable the maintenance of targeting in an increasingly complex and devolved program, so as to maximize the cost-effective and successful systems.
3. For a systematic and comprehensive data collection and information management system of reporting to and by all administrative levels, with sustained investment for modification and scale-up, so as to improve and overcome challenges of complex data flows.
4. To a complete establishment and maintenance of devolved implementation and management roles for the provincial and national ministries respectively, through effective fund disbursement mechanisms.
5. To expand and mainstream the SHPP to incorporate secondary schools, so as to maximize the educational achievement of adolescents and young adults.

Addressing these five priority areas will help to ensure that the SHPP is able to respond to the changing health needs of schoolchildren.

Although challenges persist, with ongoing mainstreaming and constructive monitoring, the SHPP will continue to develop in line with good practice and remain the gem of school health programs in South Asia.

## 1. INTRODUCTION

School health and nutrition (SHN) programs are critical for achieving Education for All (EFA) as research has shown that improvements in health status contribute to improvements in learning and academic outcomes [Whitman & Aldinger (2009)]. In recent years, SHN programs have gained attention as effective means of “levelling the playing field” for all children, with particularly notable benefits for the most vulnerable and poorest children, thereby working to address disparities [Jukes *et al.* (2008)].

Through programs targeted to address major health conditions that are highly prevalent among poor schoolchildren, (for example, iron deficiency anemia, hunger, worm infections, diarrheal disease and malaria) SHN programs can have a large impact on children’s education, increasing the time that they spend at school [Table 1.1.] and their ability to learn while at school [Bundy (2011); Grigorenko *et al.* (2006); Jukes *et al.* (2006); Pollitt (1993)].

**Table 1.1: Effectiveness of interventions on improving school attendance**

Study	Country	Intervention	Age (Years)	Increase in Attendance (%)
<b>Feeding:</b> Powell <i>et al.</i> (1998)	Jamaica	Daily breakfast for 1 year	Mean=9	2.3
van Stuijvenberg (1999)	South Africa	Fortified biscuits	6-11	15
<b>Deworming:</b> Simeon <i>et al.</i> (1995)	Jamaica	Deworming	7-10	6.7*
Miguel and Kremer (2004)	Kenya	Deworming	6-18	7
<b>Malaria Prevention:</b> Fernando <i>et al.</i> (2006)	Sri Lanka	Anti-malaria pills (chloroquine)	6-12	3.4

\* For children with poor nutritional status only. Source: Jukes *et al.* (2008).

As such, SHN programs are recognized as important educational policy initiatives to improve education outcomes. Furthermore, schools provide an excellent platform for the delivery of child health and nutrition services, where they can strengthen the cost-effectiveness of health interventions and deliver gains in participation and learning [Bundy (2006); J-PAL (2007); Kremer (2011)].

This is the push behind the FRESH (Focusing Resources on Effective School Health) framework, an internationally agreed framework for school health planning, and for programs based around supportive partnerships between the education and health sectors [World Bank (2000)]. The FRESH framework, first launched in 2000 as a multiagency initiative of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Children’s Fund (UNICEF), the World Health Organization (WHO), the World Bank and The

Partnership for Child Development (PCD) is used as the basis for planning SHN programs by many countries [Box 1.1.]. The FRESH framework provides a common platform into which agency-specific programs, such as the Health Promoting School initiative of the WHO and the Child-Friendly Schools initiative of UNICEF fit [Bundy (2011); UNICEF (2009); WHO (1998); World Bank (2000)]. Planning within this FRESH framework helps to initiate and maintain effective scaled and sustainable programs [see Table 3.1. for adoption of the FRESH framework within Sri Lanka's School Health Promotion Program (SHPP)].

### **Box 1.1: The FRESH framework**

The FRESH framework provides a consensus approach to the effective implementation of health and nutrition services within schools and allows different agencies to harmonize planning while retaining their individual priorities and policies and structures.

The four core components include:

1. **Policy:** Health and nutrition-related school policies that provide a nondiscriminatory, safe, and secure environment.
2. **School environment:** Includes access to safe water and the provision of separate sanitation facilities for girls and boys, and protection from bullying, among other things.
3. **Education:** Skills-based education that addresses health, nutrition, and hygiene issues and promotes positive behaviors.
4. **Services:** Simple, safe, and familiar health and nutrition services that can be delivered cost-effectively in schools (e.g. deworming, micronutrient supplements, and snacks to avoid hunger, screening and referral for various conditions) together with increased access to youth-friendly clinics.

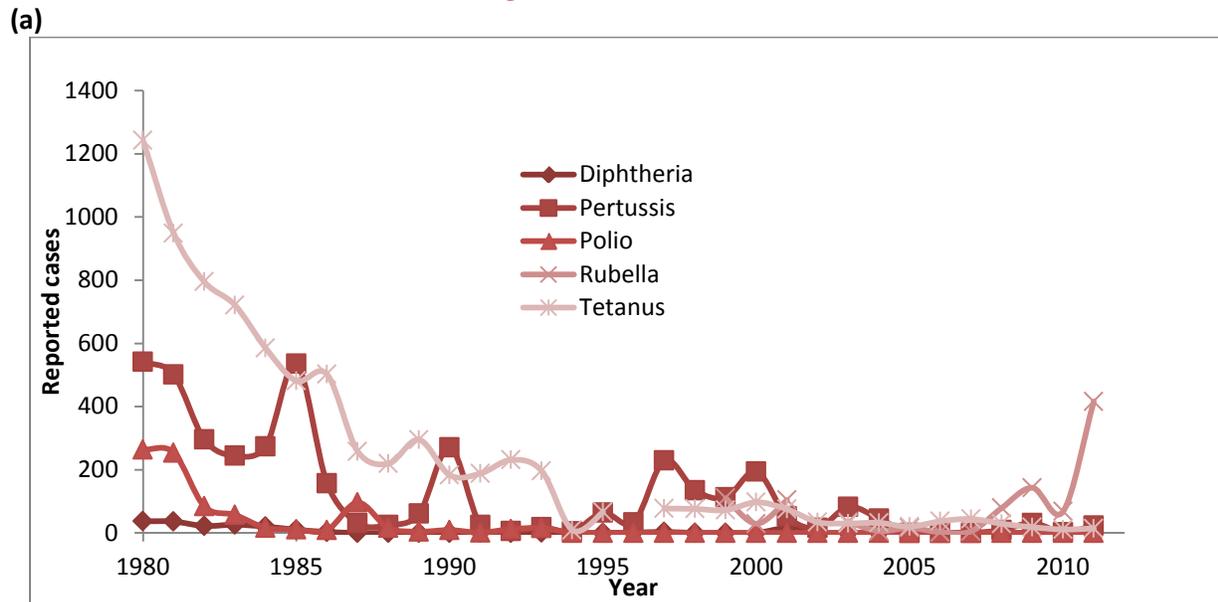
These four core components can be implemented effectively only if supported by strategic partnerships between: (i) the health and education sectors, especially teachers and health workers; (ii) schools and their respective communities; and (iii) pupils and others responsible for program implementation.

Source: World Bank (2000).

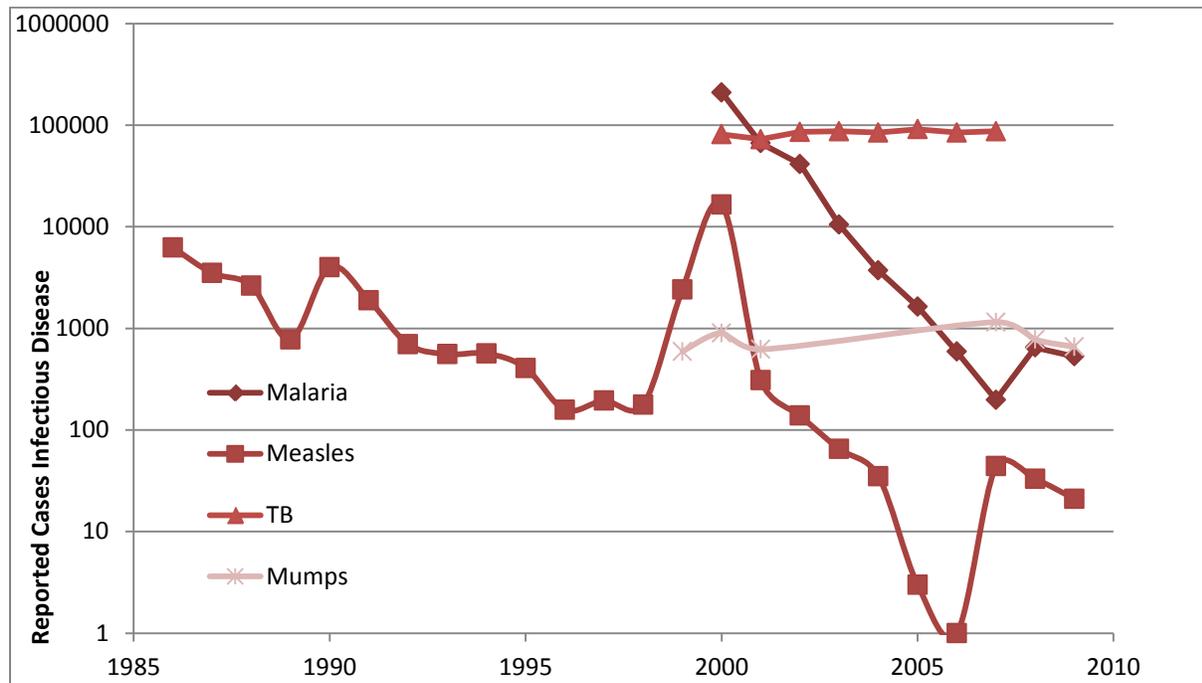
## 2. SCHOOL HEALTH AND NUTRITION IN SRI LANKA

2.1. **Health needs in Sri Lanka are complex with both an epidemiological transition and a nutrition transition occurring.** Significant progress has been made in controlling a number of communicable diseases [Figure 2.1a and Figure 2.1b], though these diseases have not yet been eliminated and sustained reduction relies on the maintenance of good practice. Furthermore, associated with increasingly sedentary lifestyles and lack of nutrition awareness, poor eating habits and stress, the risk of communicable diseases is being replaced by so called diseases of affluence, ‘non-communicable diseases’ such as obesity and diabetes, coronary heart disease and cancer [Figure 2.1c] [Engelgau *et al.* (2010)]. Combined with an aging population, non-communicable diseases contribute to over 50 percent of Sri Lanka’s disease burden (measured in disability-adjusted life years – DALYs) than compared to nutrition, maternal and infant deaths combined, which contributes less than 10 percent of the disease burden [Engelgau *et al.* (2010)]. The rise in obesity and diabetes, reflecting malnutrition by way of sufficient food intake, but of poor quality (high in sugar, salt and saturated fat) and over-nutrition is seen in Sri Lanka, alongside undernutrition from lack of food. However, 17.9 percent of children aged between 6 to 59 months are born underweight according to the National Nutrition and Micronutrient Survey 2012 [Jayatissa *et al.* (2013)]. This trend is commonly termed the ‘nutrition transition’ with both extremes of excess and deficiency present. The recently resolved civil war, population dispersal patterns, and the existence of different subpopulations also contribute to creating a diverse and dynamic health and nutrition picture.

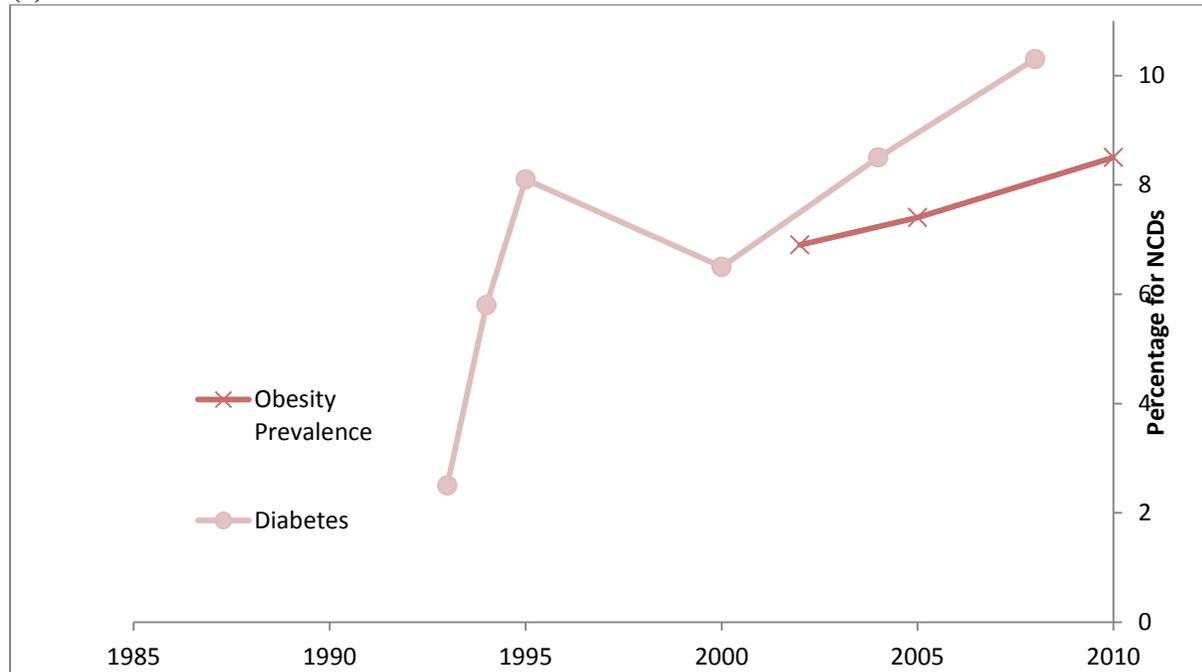
**Figure 2.1: Decreasing communicable diseases (a), Decreasing communicable diseases (b), and Increasing non-communicable diseases (c)**



(b)



(c)



Source: Diphtheria, measles, mumps, pertussis, polio, rubella, tetanus reported cases from WHO (2012). Tuberculosis (TB) cases from WHO (2010a), estimated incidence per year per 100,000 population (new and relapse cases) taken to cases and extrapolated using the World Bank population growth figures for Sri Lanka World Bank (2011a). Malaria cases are total indigenous cases of malaria from WHO (2010b). Obesity is from WHO (2010a). Diabetes cases are from Fernando (1994); Illangasekera *et al.* (2004); Katulanda *et al.* (2008); Malavige *et al.* (2002); Mendis *et al.* (1994); and Samarage (1995).

**2.2. Health of schoolchildren reflects these transition trends with obesity and diabetes rising while undernutrition remains pervasive.** Obesity and diabetes are an increasing problem among schoolchildren in Sri Lanka. In a 2005 survey across all regions for 9 to 10 year olds, the Medical Research Institute (MRI) reported obesity of 4.7 percent and 3.3 percent in northwestern and western provinces respectively [Pathmeswaran *et al.* (2005)]. This was a marked increase from 0.9 percent and 4.3 percent 3 years earlier for 5 to 9 year olds [MRI, Department of Healthcare and Nutrition (2006a)]. Recent data suggests diabetes prevalence in urban areas of Sri Lanka to be 16.4 percent and 8.7 percent in rural areas [Katulanda *et al.* (2008)]. Type-two diabetes is reportedly increasing in young people and the most recent standardized prevalence among under 20 year olds in Sri Lanka is 10.3 percent prompting research into risk factors in young people by the National Diabetes Centre [Diabetes Association of Sri Lanka (2011)]. One small school survey of 226 males in their final school year revealed a prevalence of 13.1 percent for diabetes<sup>1</sup> and a prevalence of 5.7 percent for hypertension<sup>2</sup>. However, this is seen alongside undernutrition, reflecting the nutrition transition. In Colombo (western province) where obesity is highest, for example, stunting is also above 10 percent [Pathmeswaran *et al.* (2005)].

Other areas of Sri Lanka demonstrate even higher rates of undernutrition indicated by stunting, wasting and underweight, as well as anemia, vitamin A and iodine deficiency [Family Health Bureau (2010), (2007); MRI, Sri Lanka (2009); MRI, Department of Healthcare and Nutrition (2006a), (2006b)]. Anemia is reportedly over 25 percent among children in the Northern province. Northwestern province was also high at 16 percent and the eastern province at 13.6 percent. The lowest seen was 6.3 percent in the central province. The levels of stunting in 2005 were the lowest in Northwestern and Western provinces, but still over 10 percent with Eastern and Northern provinces almost doubling these prevalence's at 20.2 percent and 18.2 percent [Pathmeswaran *et al.* (2005)]. Reflecting the complexity of health and nutrition in Sri Lanka, iodine nutrition is also shown to have extremes of both excess and deficiency within the country. For example, in 2005, 43.5 percent of children in the Northern province were observed having an excessive intake of iodine while 4.8 percent of children were observed having an iodine intake less than the recommended dose. Conversely in the Uva Province, 44.9 percent of children were either mildly or moderately iodine deficient while only 6.8 percent were having an excessive intake of iodine [MRI, Department of Healthcare and Nutrition (2006b)]. Recent nutritional assessments of those children very affected and/or displaced by the conflict revealed high levels of stunting (over 34 percent in all 3 districts surveyed) and some severe stunting (up to 9 percent) with similar levels of wasting and severe wasting [MRI, Sri Lanka (2009)]. No children were found to be overweight in this context, but there was a high prevalence of diarrhea among those displaced in Trincomalee and Vavuniya as well as high levels of respiratory illness [MRI, Sri Lanka (2009)].

Allergic or atopic health problems are also rising in Sri Lanka, a recent survey saw that prevalence of these conditions was similar to other areas of South Asia while asthma seems to have remained at similar levels over the past years, others, in particular allergic rhinitis, have increased [Amarasekera *et al.* (2010)].

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<sup>1</sup> Diagnosis criteria fasting capillary blood sugar  $\geq$  120 milligrams per deciliter.

<sup>2</sup> Either systolic blood pressure  $\geq$  140 millimeters of mercury; diastolic blood pressure  $\geq$  90 millimeters of mercury; or both pressures above the cut-off values.

**2.3. Prevalence of worms in Sri Lanka is focused around areas of lower socioeconomic status and poor sanitation.** Worms, in particular hookworm, roundworm and whipworm, are parasites that affect the health and education of children [Bleakley (2007)]. Worm prevalence is low across much of Sri Lanka where anthelmintics are in common use [de Silva *et al.* (2003)]. In the western province, surveys between 2003 and 2006 indicated a relatively stable low worm prevalence. In the eastern province prevalence is seen to be slightly higher (though not more than 12.3 percent) with high anemia correlated with higher hookworm and other worm infections. Higher worm prevalence has been seen in the plantation areas where favorable environmental conditions combine with poverty and poor sanitation [Sorensen *et al.* (1994), (1996)]. Prevalence of worms here are higher, including 41.6 percent in Kegalle and 38.2 percent in Nuwara Eliya though this is notably reduced from over 90 percent (in 1992) following 10 years of mass treatment [Gunawardena *et al.* (2011)].

**2.4. Mental health is an issue which is now being recognized alongside basic physical needs, with academic pressure cited as an important contributing factor to poor mental health in adolescents.** Mental health issues have not previously been recognized as a priority in Sri Lanka despite deliberate self-harm and suicide, self-inflicted injuries and poisoning being among the main causes of morbidity and mortality in the 15 to 24 age group [MoH (2007)] with a demonstrated increasing occurrence of deliberate self-harm<sup>3</sup> [Senadheera *et al.* (2010)]. The 2004 National Survey of Emerging Issues in Adolescents [UNICEF (2004)] showed that nearly 40 percent of adolescents found it stressful to cope with the academic pressures exerted on them by parents and teachers and 13 percent felt inhibited due to these pressures. Around the same time, a national survey of mental health in adolescents reported almost 1 in 5 adolescents (20 percent) in schools to have clinically relevant mental health problems with an extremely high proportion of these reporting symptoms classified as definite or severe and with educational performance reported as the most impacted area of life [Perera (2004)]. While these rates are comparable to other countries in the region, when restricted to those cases requiring treatment (reporting definite and severe symptoms), Sri Lanka remains at a much higher prevalence than comparable countries [Perera (2004)]. In 2008, the Global School-Based Health Survey [WHO (2008a)] demonstrated similar results where around 33 percent of adolescents reported symptoms of clinical depression<sup>4</sup> and about 10 percent admitted to seriously contemplating suicide. In this same survey, 33 percent of students reported being so worried about things that they could not sleep at night. In 2010, a further study<sup>5</sup> demonstrated similar rates of depression (36 percent) and severe anxiety (28 percent), with examinations being the most commonly cited cause [Rodrigo *et al.* (2010)]. A growing syllabus, changing socio-cultural pressures, high expectations from parents, and scholarship assessments are cited as factors that contribute to increased stress in schoolchildren. These factors are also associated with poor coping skills. Most schools now close around midday (approximately 13:30 p.m.), with schoolchildren having had only a short morning meal break, and of which a large proportion will go for private exam tuition in the afternoon. Parents, the public and the education sector are increasingly concerned about

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<sup>3</sup> Defined as self-inflicted injuries that may or may not cause death and includes self-poisoning, overdosing, burnings, hanging and jumping from buildings.

<sup>4</sup> Percentage of students who felt so sad or hopeless almost every day for 2 weeks or more in a row that they stopped their usual activities during the past 12 months.

<sup>5</sup> Using the questionnaires from Center for Epidemiologic Studies Depression Scale (CES-D), anxiety screening test of suicide and mental health association international [Rodrigo *et al.*(2010)].

the private exam tuition after school and the negative effects this is having on schoolchildren. As a result, a series of highly publicized talks were held during early 2011.

**2.5. Psychosocial needs have been identified and are related to the context-specific mental health issues in resettled areas.** The impact of the conflict on children's mental wellbeing in the northern and eastern provinces and the effects of the 2004 tsunami in affected communities have yet to be comprehensively assessed, though small-scale studies described below suggest that this is a significant problem. Among children surveyed in Sri Lanka's northern and eastern provinces, 82 percent had experienced at least one war-related event while 96 percent reported at least one negative experience out of the family violence spectrum. Levels of 30.4 percent for post-traumatic stress and a prevalence of 19.6 percent for major depression were reported in the fathers of the children surveyed (increasing post-traumatic stress disorder with higher numbers of stressful or traumatic experiences) and increased wartime experience of the fathers directly correlated with increased maltreatment of their children [Catani *et al.* (2008)]. Following the tsunami in 2004, post-traumatic stress reportedly ranged from 14 percent and 39 percent in 3 affected coastal communities, indicating high mental health needs related to this event [Neuner *et al.* (2006)]. Although international data on depression is scarce and comparison is hard, in a study of 9 European countries, Copeland *et al.* (1999) found an overall prevalence of 12.3 percent for depression with WHO estimating that 10 percent of adults have a mental health issue at any one time [WHO (2009)]. A recent needs assessment from GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH) [Marsha (2011)] identified three key programmatic areas of psychosocial support required by teachers and schools in recently resettled areas. These were:

1. Small activities are carried out in small spaces with schools often destroyed, or under construction, that are very small or very insecure, leading to many schoolchildren being in a single classroom, in a noisy and crowded environment that is not conducive to learning or not representing a child-friendly space. Strategies are needed to provide small-scale activities that can be carried out with small groups of children outside these classroom environments, but which remain safe and contained.
2. Displacement of teachers, who are often travelling very long distances (reportedly up to 4 hours per day) to reach schools. Support is needed to enable teachers to form a functional support network with each other in dealing with the difficult issues presented by children who have undergone trauma, the trauma the teachers themselves have undergone, and the resource scarce situations in which they work and live.
3. Finding acceptable mechanisms to provide any social or psychosocial support to students and each other in an open and information sharing way which does not raise security concerns or compromise the individuals' safety. There is a need to channel work clearly within the ministerial and existing social structures, and ensure the purpose of psychosocial interventions is fully understood and endorsed within existing structures.

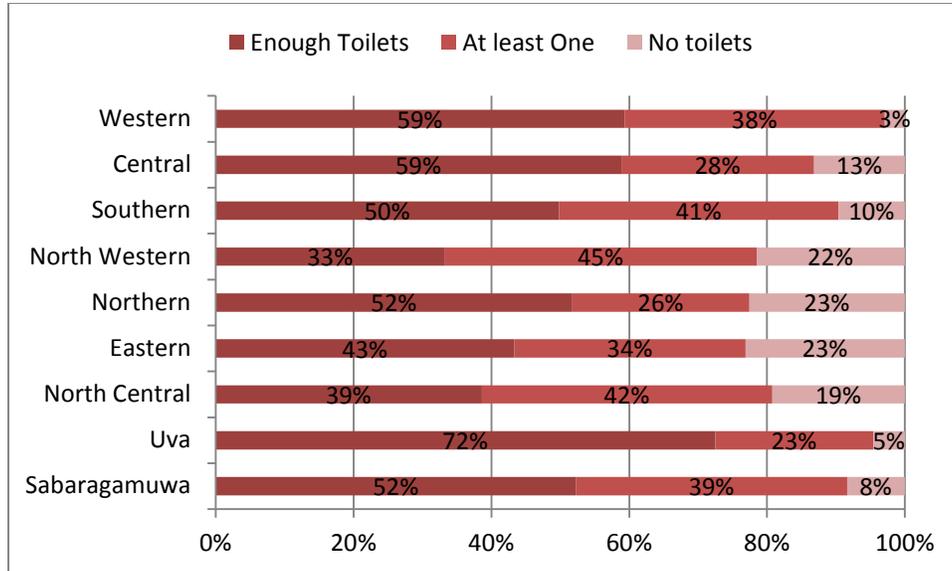
**2.6. Reproductive health is an increasing priority area.** In the 2004 National Survey of Emerging Issues in Adolescents [UNICEF (2004)], knowledge of reproductive health issues, sexually transmitted diseases, and human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) were reported as poor. In this survey, 70 percent of early adolescents (aged 10 to 14 years) were also unaware of the physiological changes and processes which were taking place in their own bodies [UNICEF (2004)]. Sexuality and sexual health are

both still relatively ‘taboo’ subjects in Sri Lanka, which has led to a poor flow of information in school settings and is reflected in the lack of knowledge on sex, sexual abuse, reproductive health, pregnancy, puberty, and HIV among Sri Lankan adolescents. Attempts to include reproductive health in the school syllabus have met resistance from some teachers, principals, parents and administrators on the grounds of cultural sensitivity or inhibitions. In a study of 854 adolescents aged 15 to 17 years, only 29.6 percent said that the school was a source of information for sexual and reproductive health with the television, radio and libraries emerging comfortably higher [de Silva (2008)]. These results were mirrored in the same study for 10 to 14 year olds. The global health survey reported less than 30 percent of 15 to 19 year olds ever having talked about HIV or AIDS with a parent or guardian and only 40 percent who had ever been taught in their school lessons on avoiding HIV and AIDS infection. However, with risk behaviors such as multiple sexual partners and unprotected sex increasing, along with the age of first sexual intercourse decreasing, sexual health has become a priority in Sri Lanka [de Silva (2008)]. As only 8 percent of 15 to 24 year olds who took part in the 2007 Demographic and Health Survey could correctly identify two methods of preventing sexual transmission of HIV and correctly reject two myths, ensuring excellent life skills and accurate related information should clearly be high on the agenda [DCS and MoH (2009)]. Recent literature has highlighted that parents are concerned about reproductive health issues, but are reluctant to discuss these issues with their children. Notably, awareness of HIV prevention was not significantly higher in older women or in the 40 to 49 year old age group which would include the mothers of adolescents, with knowledge of all forms of prevention being lower than the 15 to 24 year old age group [DCS and MoH (2009)]. This suggests parents, and specifically mothers themselves, lack accurate information on issues on reproductive health to impart upon their children. Furthermore, overwhelmingly parents suggest that schools and teachers would be their preferred method of ensuring that correct information on reproductive health issues was transferred to their children [Godamunne (2009)]. Given the reservations to address these issues in the home and the evident knowledge gaps in both age groups, there is a need to break intergenerational barriers in communication as well as improve both generations’ access to and understanding of information on reproductive health issues.

**2.7. Water and sanitation facilities which protect children’s right to health and facilitate good hygiene practices are inadequate in almost 50 percent of schools.** According to the 2006 School Census it was identified that 3,893 schools (41 percent) did not have adequate toilet facilities and 607 schools (6 percent) did not have a toilet at all [MoE, Census Branch (2006a)]. There were also serious issues regarding the supply of safe water which was not available in 2,563 schools (27 percent). In 2008, according to the census data [MoE, Census Branch (2008a)], the situation was worsening with 4,707 schools (49 percent) not having adequate toilet facilities and in 2012, 1,825 schools (19 percent) were without water supply [Figure 2.2. and Figure 2.3.]. By 2012, of the 9,731 schools, adequate toilet facilities increased in 7,763 schools (80 percent) while 7,028 schools still reported at least some need for improved water facilities according to national norms [MoE, Census Branch (2012)]. The provision of water has increased, but there are still 1,423 schools without the supply of safe drinking water. The improvement in sanitary facilities has been due to the advocacy programs conducted by the SHPP, funds provided by the Ministry of Economic Development and donor support from the World Bank, UNICEF and other donors. Table 2.1. presents the estimated number of toilets

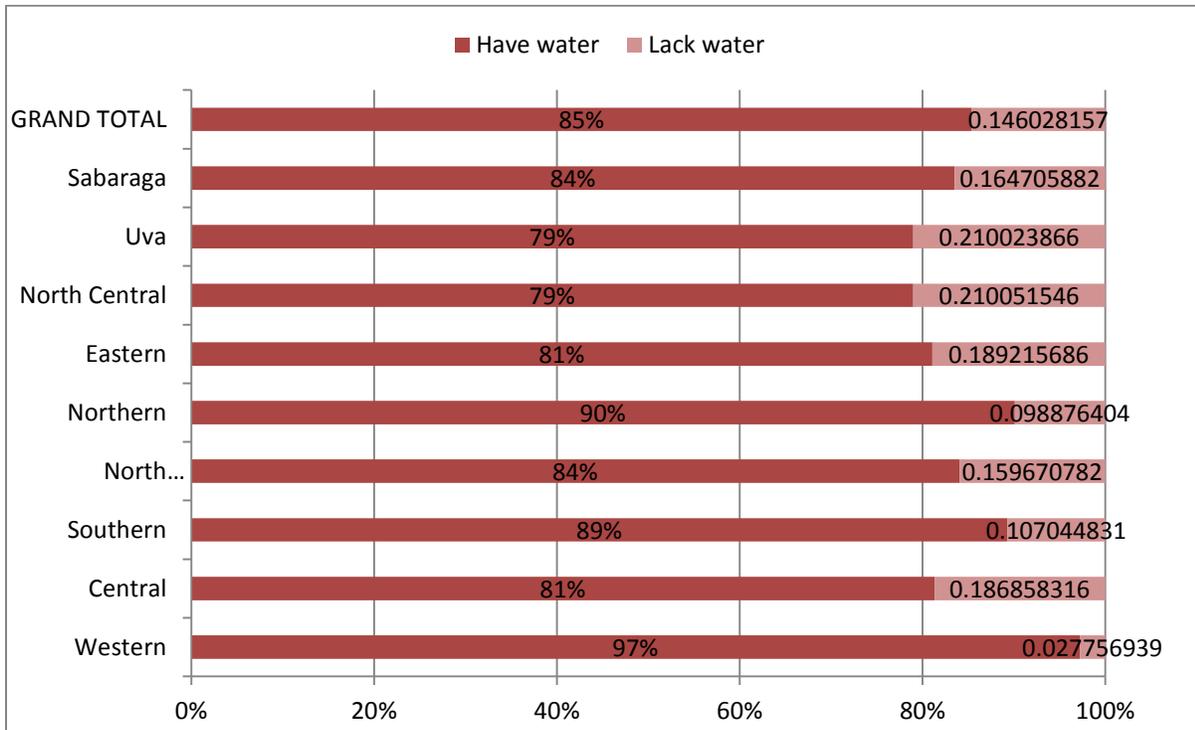
required for each province as well as the associated cost in Sri Lankan Rupees (LKR) as of 2012 [MoE, Census Branch (2012)].

**Figure 2.2: Summary of sanitation in schools by province**



Source: MoE, Census Branch (2008a), and Finance Commission (2011).

**Figure 2.3: Summary of water<sup>6</sup> in schools by province**



Source: MoE, Census Branch (2012), and Finance Commission (2011).

<sup>6</sup> Having or lacking an acceptable water supply as defined by the national norms.

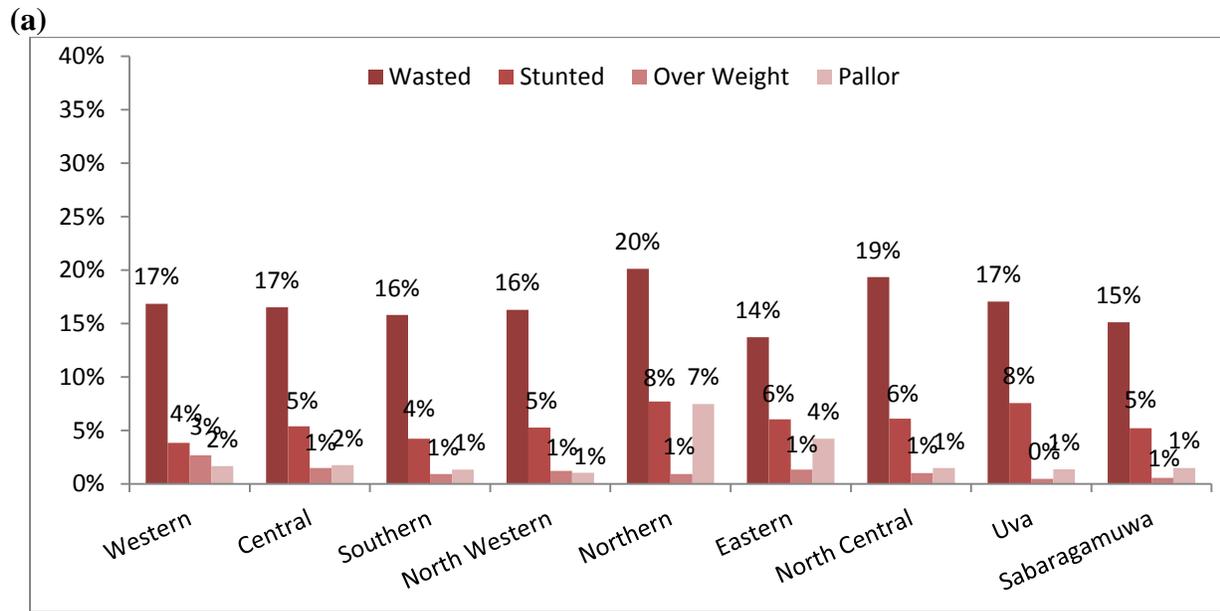
**Table 2.1: Sanitation requirements per province**

Summary Report – Sanitation Requirements		
Province	No. Toilets Required across Province	Total Cost (LKR)
Western	166	24,900,000
Central	694	104,100,000
Southern	654	98,100,000
Western	596	89,400,000
Eastern	922	138,300,000
Northwestern	1,150	172,500,000
North Central	882	132,300,000
Uva	269	40,350,000
Sabaragamua	601	90,150,000
<b>TOTAL</b>	<b>5,934</b>	<b>890,100,000</b>

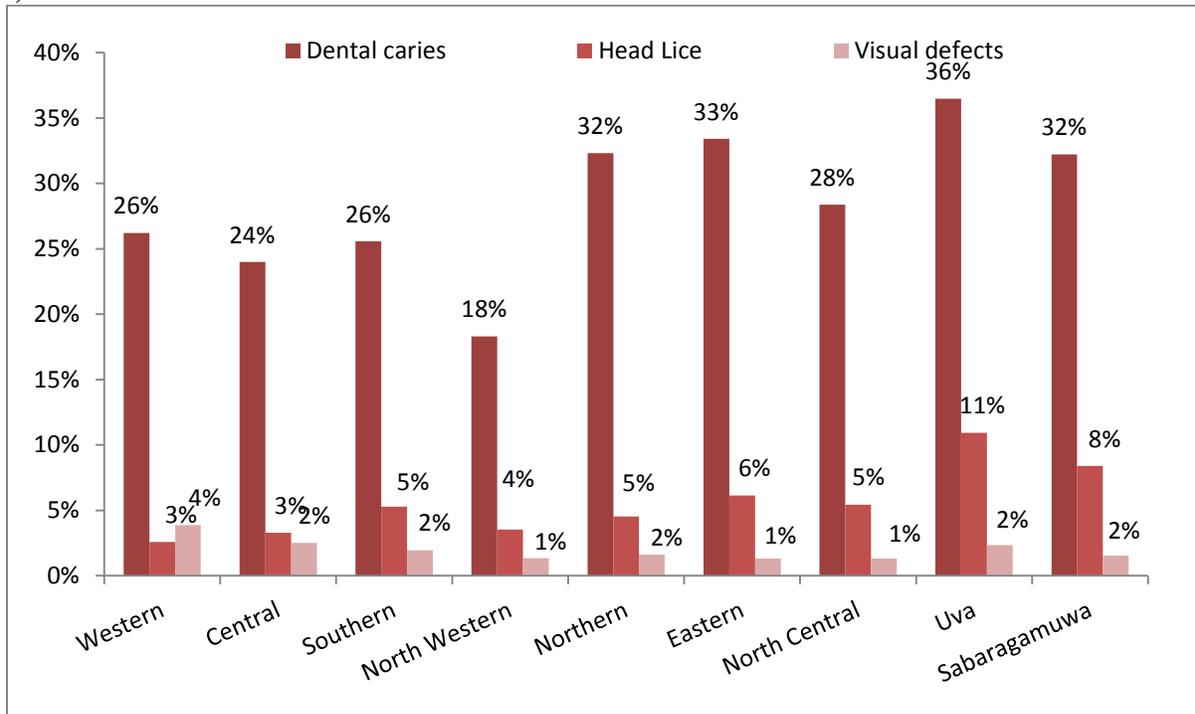
Source: MoE, Census Branch (2012).

2.8. **School medical inspections data provide a broad picture of school health across all ages.** Figure 2.4a and Figure 2.4b provide data from the 2010 inspections covering some 682,801 schoolchildren across all provinces. The data displays, as described above, that obesity (overweight) is a problem, especially in the western province and is seen alongside undernutrition (wasted/stunted) and pallor (used in the inspection as a proxy for anemia), which are both particular problems in the Northern province. Head lice and dental caries in particular are pervasive affecting large numbers of school-age children in Sri Lanka.

**Figure 2.4: Nutrition problems among schoolchildren in Sri Lanka (a), Common health problems among schoolchildren in Sri Lanka (b)**



(b)



Source: Data provided by the Family Health Bureau (2010) and represents the first three quarters of 2010. Note, that in the school medical inspection, pallor is taken as a proxy for anemia. This is not a quantitative or diagnostic test and as such is only indicative. While the graph bars represent exact numbers, decimal points have been excluded from the numerical display here so as to be clearly visible and displayed.

## 2.9. The health and nutrition status of children exerts an effect on education in Sri Lanka.

Poor early childhood nutrition as indicated by stunting, hearing deficiencies, and persistent illnesses that reduce school attendance, directly results in Sri Lankan primary school children performing worse in cognitive tests [Wisniewski (2010)]. In addition, there are indirect effects of poor health and nutrition on the education performance of children. For example, parents of children with helminth infections, myopia and iodine deficiencies were found to reduce their investment in children's education [Wisniewski (2010)] which in turn could lead to poorer education outcomes for these children.

### 3. INSTITUTIONAL SCHOOL HEALTH RESPONSES IN SRI LANKA

3.1. **Sri Lanka has established a comprehensive SHN program.** Beginning with a series of uncoordinated, but targeted initiatives as far back as 1918, school health in Sri Lanka has developed into a cohesive and strategic program [Medagama (2008)]. The nutritional and health priorities of Sri Lanka today have been shaped by an evolving socioeconomic environment as well as a long running community and school health interventions. As of 2013, the SHN program is a function of both the Ministries of Education, Education Services and Health, and is increasingly integrated into education sector policy and planning.

3.2. **Sri Lanka's school health program has been designed within the internationally agreed frameworks for school health programming.** The SHPP is based around the WHO (1998) 'Health Promoting School' initiative, which uses the FRESH framework as its guiding principle and is "*a setting where educational and health programs create a health promoting environment which in turn promotes learning*" [WHO (1998)].

The nature of the FRESH framework recognizes that a multi-sectoral approach to school health where both education and health and other stakeholders are part of the planning and implementation process prevents duplication and maximizes effective use of resources [World Bank (2000)]. Equally, the WHO Health Promoting School initiative [WHO (1998)], UNICEF's Child-Friendly Schools initiative [UNICEF (2009)] and EFA [UNESCO (2010)] have increasingly highlighted and promoted the educational benefits of SHN programs. This kind of multi-stakeholder coordination provides a much needed foundation for the SHPP in pursuit of its objectives which covers all the core elements outlined in the FRESH framework in its program [Family Health Bureau (2007)]. Table 3.1 illustrates how the SHPP objectives fit within the FRESH framework.

A marked increase in comprehensiveness and scale of SHN programs in South Asia supporting all four key components of the FRESH framework is well-documented in the Directory of Support to School-Based Health and Nutrition Programs [Drake *et al.* (2007)].

The objectives of the SHPP are:

- To develop a policy legal structure and partnerships among all stakeholders to promote the health of the school community.
- To ensure a safe, healthy environment, both physical and psychosocial, that facilitates learning.
- To provide skills-based health education for schoolchildren.
- To ensure access to health services for schoolchildren.
- To develop and implement plans at all levels for school health promotion empowering schoolchildren to be change agents to improve the health of their families and communities.

**Table 3.1: Integration of the SHPP objectives with the FRESH framework**

FRESH Framework	Sri Lanka	
	School Health Strategy	School Health Promotion Program
Policy	Development of policies and partnerships among all stakeholders to promote the health of the school community.	2007 Circular officially launching collaborative school health program [MoE (2007a)].
		Ministries of Health and Education policies on health promoting schools and National Working Group and steering committee in place.
		Clear implementation and reporting structures. National, provincial, zonal and school committees.
School Environment	Ensuring a safe, healthy environment, both physical and psychosocial, to facilitate learning.	Dissemination of guidelines for creating a health promoting school (including toilets, gardens, waste disposal, cleaning, classroom and building maintenance, and space) and an accreditation system for those schools achieving it.
	Provides adequate sanitary facilities and water supply.	Program of installation, restoration and improvement of toilets and water supplies in schools.
	Children are not abused and are free of threats.	Provision of trained school counselors.
	Provides opportunities for physical education and recreation.	Integration of sports and relaxation into the school day.
Education	Provision of skills-based health education for schoolchildren.	Expanded curriculum which includes health as a separate subject, life skills, and reproductive health.
		Training of teachers to implement syllabus changes effectively. Teacher learning resources developed and provided.
		School Health Club.
Services	Ensuring that schoolchildren have access to health services.	School medical inspections include: <ul style="list-style-type: none"> <li>➤ Vaccinations.</li> <li>➤ Deworming.</li> <li>➤ Nutrient and iron supplementation.</li> <li>➤ Screening.</li> <li>➤ Referral to medical services where necessary.</li> </ul>
		School meal program.
		Dental clinics.
		Adolescent Health Centers.
Supportive Partnerships	Empowering schoolchildren to be change agents to improve the health of their families and communities.	School Health Advisory Committees.
	To develop and implement plans at all levels for school health promotion.	School Health Clubs which network students, teachers and the community.

Source: Data sourced from Bundy *et al.* (2006).

**3.3. The Ministries of Education, Education Services and Health collaborate to provide a comprehensive and targeted program within a strong policy framework.** Following long collaboration in the provision of dental clinics, school medical inspections and school feeding, in 2007, the Ministries of Education and Health developed and released a joint policy circular [Annex 1], formally recognizing their cooperation in the current SHPP [MoE (2007a)] and setting out the objectives of the program launching a cohesive sustainable program, where schools could play a major role in overcoming health issues [Box 3.1.].

### **Box 3.1: Vision of the SHPP**

*“Create a sustainable health promoting school culture enabling the children to optimally benefit from educational opportunities provided, and promote healthy lifestyles among themselves, their families and the community.”*

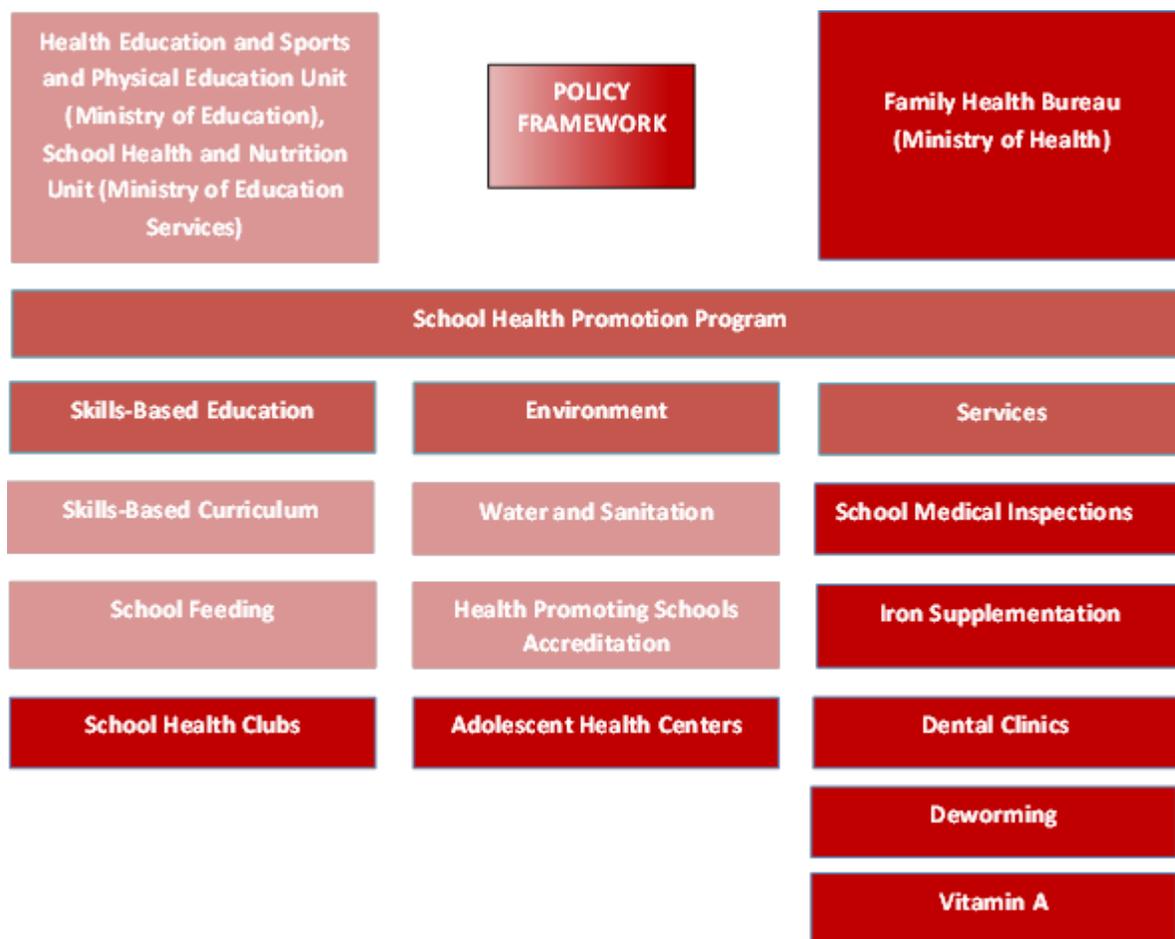
Source MoE (2007a).

The circulars form a strong and unifying policy platform allowing the SHPP to progress cohesively in program design and implementation. As of 2013, the administration of the SHPP is a joint responsibility of the Ministries of Education, Education Services and Health, with Focal Points at the Health Education and Sports and Physical Education Unit, SHN Unit and the Family Health Bureau<sup>7</sup> respectively [Figure 3.1.]. A central level National School Health Promotion Committee has been constituted as the steering committee of the program with the role of formulating national policies and evaluating and monitoring activities providing feedback to the program implementation team. This Committee is also charged with maintaining program awareness, advocacy and political support. The National Working Group on School Health functions as a coordinating body to ensure that the Ministries of Education, Education Services and Health and various stakeholders act in a non-duplicative way under the guidance of the national SHPP. The primary Focal Points within these three ministries are jointly responsible for program design and implementation. Strengthening of their coordination and collaboration has been crucial to the success of the program. However, as the school health needs of Sri Lanka are diverse and programs need to be tailored to suit provincial and lower level requirements, most health activities are devolved to the Provincial Councils, where the Provincial Ministries of Education, Education Services and Health are responsible for the implementation of programs. Accordingly, a Provincial School Health Promotion Committee has been established in each province to determine the provincial level school health promotion priorities in the framework of national policy, as well as to monitor and evaluate the implementation of activities. Such a devolved system also allows the SHPP to function in the broader political context of school-based management in the program for school improvement. In brief, deworming takes place in plantations, school feeding prioritizes smaller, rural, and poorer schools, psychosocial interventions focus in the northern and eastern provinces and water and sanitation is targeted to schools currently reporting zero facilities.

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<sup>7</sup> The Family Health Bureau is the Focal Point for the school health program of the Ministry of Health.

**Figure 3.1: SHPP components by ministry responsible**



Source: Designed by authors in consultation with the Ministries of Education, Education Services and Health.

Although the overall responsibility for the SHPP is with the Ministry of Education in the SHN Unit, there are several other units which support some aspects of the program. The National Institute of Education (NIE) formulates the national curriculum and assists in teacher training, the Education Publications Department prints and distributes textbooks, the Program for School Improvement strengthens school community relations, the Physical Education Unit promotes physical activities and sports and the proposed One Thousand Schools Development Program will form networks of school complexes around a secondary school affiliating four to five feeder primary schools to which necessary facilities including water and sanitation will be provided. Under the devolved system of education the management of schools is mainly the responsibility of Provincial Councils, except for 325 national schools which are under the central ministry.

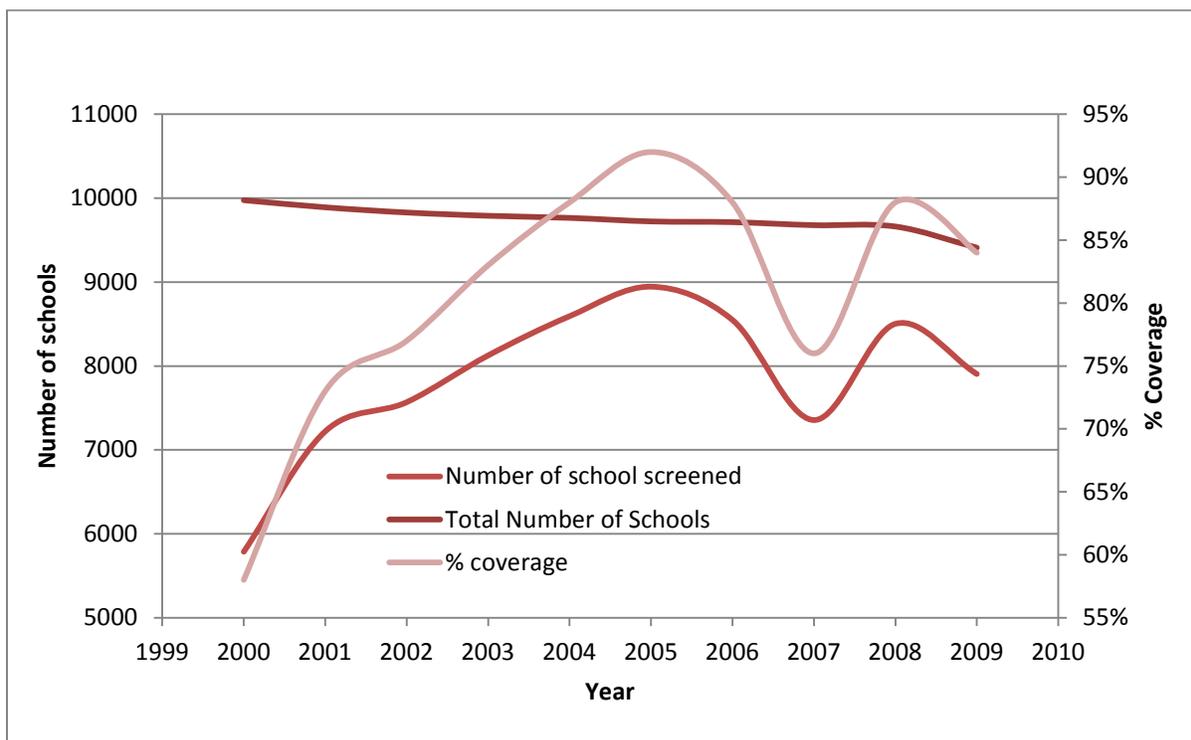
This mainstreaming of SHN within larger policy objectives is also increasingly reflected in its integration into national planning and monitoring structures such as the Finance Commission. The Finance Commission is responsible for disbursement of funds to the Provincial Councils and also monitors the implementation of provincial plans. It has a special unit for monitoring the education sector which covers the health education aspect as well. Thus, health and nutrition

objectives are integrated into the national planning process as well as into the monitoring strategies.

To support the school programs at provincial level, the Finance Commission integrated three key indicators into the education monitoring and evaluation tool: i) Water, Sanitation and Hygiene (WASH); ii) Health Education; and iii) Accreditation. Integrated into a performance base point system, these indicators monitor progress and provide the baseline information for funds allocation and the disbursement within the planned structure designed to increase efficiency in resource allocation and to enable monitoring of results from the government. This initiative has helped the provinces to identify vulnerable schools and allocate resources for equitable service delivery.

**3.4. School medical inspections systematically assess the health status and nutritional needs of school going children and respond with healthcare referrals and interventions.** The goal is to ensure that every school is visited annually by a Public Health Inspector and a medical doctor, and children are examined. In schools with more than 200 pupils, all children in Grades 1, 4, 7 and 10 are examined. In the case that a school has 200 or less pupils, all children in the school are examined. All health problems detected are recorded with the head teacher for referrals to medical services, a school health card is maintained for each child, and the referrals are followed up in a subsequent visit to the school by Public Health Inspectors from the Ministry of Health. Coverage of school medical inspections and the health data are collected and disseminated by the Ministry of Health and in Figure 3.2. appear to be high in terms of school coverage.

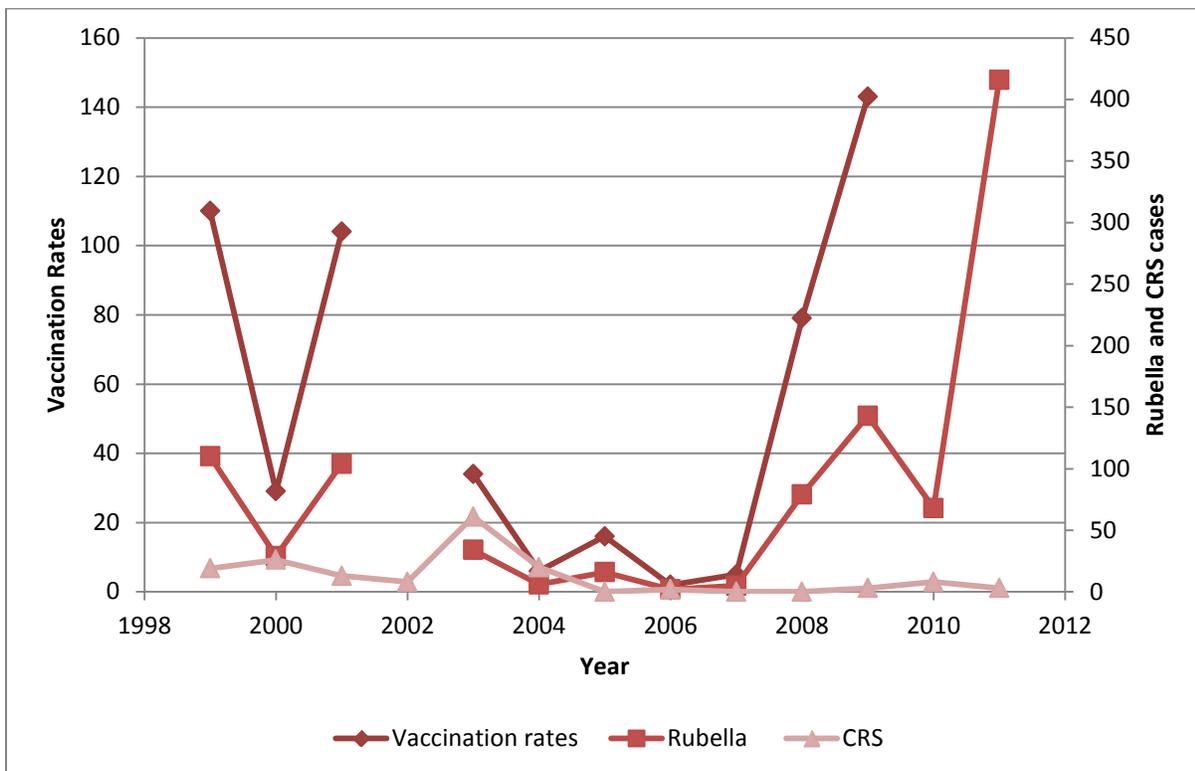
**Figure 3.2: Coverage of school medical inspections from 2000 to 2009**



Source: Family Health Bureau (2010); MoE, Census Branch (2002), (2003), (2005), (2006b), (2007), (2008b), (2009).

**3.5. School medical inspections include deworming, vitamin supplementation and vaccinations.** As part of the school medical inspection, an annual Vitamin A mega dose (100,000 International Units) is given to all children in Grades 1, 4, 7 and 10, along with vaccinations according to the national schedule and treatments for minor problems such as skin infections and suspected worms according to need. Deworming with mebendazole is provided once per year to all children from Grade 1 through to Grade 13. This is followed by once weekly iron folate and Vitamin C supplementation to all children in Grade 1 to 13 for a period of 24 weeks. Previously a single ‘school entry treatment’ reflected the low prevalence of soil-transmitted helminths in Sri Lanka, however, in light of recent survey data and recommendations from deworming and school health experts, the Ministry of Health reviewed the deworming strategy in Sri Lanka to adjust the frequency of deworming in those areas where transmission is occurring [Ebenezer *et al.* (2013)]. The island has been divided into a high-risk area (Uva, Sabaragamuwa and Central Provinces, where most tea and rubber plantations are situated) and a moderate-risk area (all other provinces) [MoH (2012)]. This guideline recommends a second yearly treatment with single dose mebendazole for all children in Grades 1 to 13 in high-risk areas, with the second treatment being given at the end of the 24-week iron folate and Vitamin C supplementation period. The twice-yearly treatment for all those in high-risk areas and once yearly treatment for all children in Grades 1 to 13 in other areas will continue for the period 2013 to 2016.

**Figure 3.3: Vaccination rates and reported cases of rubella and congenital rubella syndrome (CRS) in Sri Lanka**



Source: Data on vaccination rates obtained from Family Health Bureau (2010). Data on rubella and CRS obtained from WHO (2012).

Coverage of the school medical inspections and the health data are collected and disseminated by the Ministry of Health and in 2012 coverage was 87 percent in schools with 92 percent coverage in primary schools. Immunizations (tetanus, diphtheria and rubella) have traditionally been provided by school medical inspections with excellent results and in 2008 it was written up as a case study to advocate for school-based vaccines in other countries [WHO (2008b)]. However, in October 2008, an adverse reaction to the vaccine in one child caused a large negative media response. In 2008, school-based vaccinations had made up 66 percent of the national coverage, but their suspension along with the withdrawal of the vaccine (later shown to be the WHO standard) and the ongoing negative media response, which continued to fuel low vaccine uptake in clinics in the following year, caused the reduction in vaccine coverage. Unfortunately thereafter, reported cases of rubella appeared to be rising and following review, the MMR (measles, mumps and rubella) vaccine was reintroduced with delivery at 3 and 5 years in clinic and the ADT (adsorbed diphtheria and tetanus) vaccine<sup>8</sup> was given to school-age children. Vaccinations are no longer given through the school infrastructure, but through clinics, to alleviate parent and teacher concern. The Ministry of Health reports, as of 2013, coverage of vaccinations has rebounded and continues to improve, with support of increased outreach efforts for those not in school or accessing clinics, and very few cases of rubella are being reported.

**3.6. School meal programs target the poorest and food insecure areas to combat malnutrition and eradicate short-term hunger – known to maximize school attendance and increase educational outcomes.** The school feeding program responds to the needs of stunting and wasting as well as increasing attendance of the poorest/vulnerable children [Bundy *et al.* (2009); J-PAL (2005)]. A Circular (No. 209/01) formalized the Ministry of Education and the United Nations World Food Programme (WFP) Food for Education program as a joint initiative which WFP operates in the North and East of the country and the Ministry of Education covers other areas directly through its Provincial Department of Education [MoE (2009)]. Every year, the Ministry of Education issues an updated circular in consultation with the Ministry of Economic Development. In the case of the Ministry of Education, midday meal supply is entrusted to the Health Promotion Committees at provincial, zonal and school levels. At schools with less than 100 students, all students are provided with a meal, alternatively, if there are more than 100 students, then students from Grades 1 to 5 only are supplied with a meal. Samurdhi<sup>9</sup> beneficiaries (selected by the school principal) are utilized to provide meals and where not possible, parents of children are employed under agreement with zonal Health Promotion Committees. The menu is selected from a list of menus prepared by a team of health and nutrition specialists and the meals are prepared at home or by the school. The Public Health Inspector examines the hygiene status of where the meals are prepared and certifies the cleanliness. The person who supplies the meals is paid at the rate of 22.50 LKR per meal per child by the government.

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<sup>8</sup> A booster for diphtheria and tetanus.

<sup>9</sup> Government of Sri Lanka Poverty Relief Program.

In the WFP program, from 2013, students in Grades 1 to 9, from the Northern province only, are provided with meals of which rice, sugar, lentils, canned fish, dates and oil are supplied via the District Secretary's Office. This Office is also responsible for quality control, logistics and storing the food and an additional 2.50 LKR to 3.50 LKR per child per day is provided for purchase of additional foods (based on attendance of each child per day and the number of children at the school). Meals include two eggs per week, and fish or meat once per week, a local fruit and at least 20 grams of varied vegetable a day along with complex carbohydrates such as rice, gram and plantain.

In the government meal program under the SHPP, an allowance of 22.50 LKR is provided per child per day. The Mid-Morning Meal Program, run by the Ministries of Education and Education Services, has been providing food in schools as a morning meal between 07:30 a.m. and 08:30 a.m. to maximize the attendance for the morning meal and to improve learning outcomes in the following day's curriculum. Meals are prescribed for each day, though menu changes are permitted according to the supply of local foodstuffs [MoE (2010)]. The Glass of Milk Program provides 150 milliliters of milk daily to 223,000 schoolchildren in areas where milk is accessible [MoE (2012a)]. However, as supplies increase, this will also increase the coverage of recipients.

**3.7. Psychosocial care is also a growing component of the program.** The Government of Sri Lanka and the Education and Health Ministries with the technical assistance of development partners, have put in place strategic psychosocial interventions targeted particularly to conflict areas. Specifically designed to meet the demands identified during the post re-settlement needs assessment, this includes: provision of psychosocial activities for schools; indoor and outdoor games and activity kits; cascaded training of teachers on providing psychosocial support; the setting up of a peer-based teacher support system; and providing teachers with a network to effectively support both students and each other and to know in what instance and where to refer them. Initially beginning in the Northern province this program was expanded in 2011 to the eastern province. Strong relationships have developed between the ministries at national level and at the government zonal and provincial levels for ongoing logistical and technical support to the design and implementation of the psychosocial program to fit the existing administrative structures. This psychosocial program is targeted towards the displacement-affected zones. A similar model of support networks and counseling has also been developed for plantation areas, tailored to the needs of students and teachers identified by a needs assessment in that area.

Towards implementing the northern and eastern provincial programs, 80 trainers (4 groups of 20 trainers) have been trained in the Northern province, and a total of 36 trainers have been trained in the eastern province with 23 trainers in the Tamil language and 13 in the Sinhala language. These trainers have received tutoring on a range of skills including: advanced communication; the fundamentals of counseling; psychosocial wellbeing; and problem management.

From the northern and eastern provincial trainers (80 and 36 respectively), 800 teachers from the Northern province (including 2 teachers each from the 256 resettled schools) and 380 teachers from the eastern province have received training to enable them to support each other and students on managing problems faced during day-to-day functioning. Every school with more than 300 pupils is entitled to have a full-time teacher for counseling and career guidance [WHO

(2008c)]. In other schools, a part-time teacher is tasked with the counseling work. A UNICEF-assisted program was implemented from 2006 to 2011 and through this program 6,000 teachers had undergone training in counseling [MoE (2012b)]. In addition, the Ministry of Health conducts clinics on psychosocial counselling assisted by trained medical personnel and psychiatrists. Key to the success of the UNICEF-assisted program has been the training on facilitation skills for the trainers and incorporating methods of designing learning-outcome-based participatory activities in training. Trainers and resource persons are expected to continue to employ participatory methods of training for future use.

Further efforts to improve the psychosocial status of schoolchildren have been made at national level. As of 2013, the NIE, in collaboration with the Ministry of Health, trained over 400 provincial/zonal/school level staff on the psychosocial wellbeing of primary school children through three programs, with plans to continue rolling out training across the country. With regards to the curriculum, psychosocial components will now fall under Health Sciences as opposed to Life Skills. Informed by a nationally representative study indicating 50 percent prevalence of violence in schools and 48 percent prevalence of bullying, guidance is currently forthcoming addressing violence and bullying in schools particularly with respect to adolescent pupils. Additionally, out-of-school service models are being developed in collaboration between health and education sectors including non-formal education [MoH (2013)]. The Family Health Bureau and Non-Communicable Disease branch at the Ministry of Health have joined together to address issues on abuse among school-age children and adolescents. Booklets geared towards adolescents, teachers and parents on mental health promotion (based on WHO's mental health promotion tools) have been made available in the local languages Tamil and Sinhala and have been in such high demand by parents (11,000 copies), teachers (28,000 copies), students (32,000 copies) and others, that a re-print has been issued for dissemination. Finally, from 2014, policy changes agreed by the Ministries of Sports, Health and Education will take effect requiring an increase to at least two periods per school week being dedicated to non-competitive team games or activities to further promote participation and psychosocial skills of pupils [Lokubalasuriya (2013a)].

**3.8. Health education and life skills are increasingly integrated into the general education curriculum.** As with all subjects, the curriculum for health is prepared by the NIE with the support of medical officers from the Ministry of Health. Following the identification of low knowledge on reproductive and sexual health and problems with coping skills, particularly with stress [UNICEF (2004)] the curriculum was adapted to ensure their inclusion. Health as a subject has been expanded to include life skills, reproductive health, healthy living and health promotion. As physical exercise and sports are important for health and social development and given that opportunities for sports is limited, especially for girls, health and physical education is now a compulsory subject until Grade 9. Health Studies are also incorporated into Environmental Studies and Home Economics throughout all primary and secondary grades. The core life skills identified by WHO (i.e. self-awareness, empathy, effective communication, social skills, ability to cope with emotions, creativity, critical thinking, problem solving, and decision making) are all integrated into the syllabus which commenced in 2007 at Grade 6 with a 3-year rollout plan. An instruction manual on the syllabus has also been developed for teachers to assist with the teaching methods so as to build health and life skills, rather than just impart knowledge. In-service training for teachers to teach difficult and culturally sensitive topics is being enhanced by

enlisting the support of the Ministry of Health divisional medical personnel including public health midwives and nurse specialists. These medical personnel also conduct reproductive health lessons and seminars to older adolescents (where teachers have objected to this teaching); provide counseling as appropriate; and are present at all school medical inspections. By late 2010, 3,444 secondary school teachers and 3,050 primary school teachers had received training in the new syllabus and 8,000 books and posters had been distributed in Sinhala and Tamil as appropriate. The Family Health Bureau's Evaluation Unit reports that, as of 2012, 1,287 schools had conducted some life skills health program with 56,393 students participating [Lokubalasureya (2013b)].

**3.9. Sanitation norms are developed and the percentage of schools with adequate water and sanitation is increasing.** Among the key initiatives to improve the school environment are the efforts to ensure sufficient clean water and sanitation facilities. The School Works Branch of the Ministry of Education Services has developed and published guidelines on the number of toilets required in a school for teachers and the schoolchildren depending on the size of the school [MoE (2007a)]. These guidelines are known as the national norms. It equates to a rough guideline of 1 toilet for 50 students, but accurate calculation tables for requirements of schools with 1 to 1,800 students are available [MoE (2007a)]. There are also guidelines available about what constitutes safe water and this includes schemes under urban councils in urban areas, and in the case of well water (if it is a safe/protected well<sup>10</sup>) it must go via overhead tanks by electrified pumps for distribution to taps and toilets, etc. In 2008, the Ministry of Education conducted a situation analysis of the water and sanitation facilities in schools with the aim to develop a plan to ensure that all schools are provided with these facilities [MoE (2008)]. During the baseline study, schools were categorized according to the number of toilets per student and the percentage of toilets needed was calculated. In planning to meet the deficit, the program strategically prioritized schools that had no toilets or no water supply, followed by schools that had less than 25 percent of available toilets or a water supply, and then schools that had 25 percent to 50 percent of toilets or a water supply, etc. In this strategy, the neediest were targeted first with all schools gradually being brought up to standard. Under the Education Sector Development Framework and Program (ESDFP), progress has been made to increase this coverage [World Bank, Sri Lanka (2009)] and in 2011 recent figures from the Family Health Bureau showed that services had been provided to 54 percent of schools previously identified without a water supply, and the number of schools without a toilet had decreased by 50 percent [Family Health Bureau (2011)]. Minimum standards have been developed, known as national norms, for the provision of water and sanitation for schoolchildren [MoE (2007a)]. Schools have been assessed, and provisions are being made to meet these requirements. Between 2008 and 2010, of the 4,707 schools identified with inadequate number of toilets, 1,756 toilets were improved in line with the national norms. By 2012, a further 2,677 toilets were identified as being needed across the country with particular need concentrated in northwestern, north central and eastern provinces [MoE, Census Branch (2012)] [see Table 2.1. for more information].

**3.10. School Health Clubs contribute to creating a safe school environment.** In addition to national, provincial and zonal coordination, there are also school level initiatives guiding the school health programming. As part of creating a child-friendly safe school environment, the

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<sup>10</sup> An unsafe/unprotected well is too close to sewage pits or is over salinated due to its proximity to the sea and therefore, the water in the well is not considered drinkable.

school and teachers are responsible for general school maintenance such as cleaning bathrooms and urinals, the availability of drinking water, keeping vigilance on the health and nutritional status of schoolchildren, and canteen maintenance. School Health Clubs are one of the main initiatives at school level that are formed and managed by students under the guidance of teachers, local health personnel and the School Health Promotion Advisory Committee. This is a key initiative empowering schoolchildren to address their own health behaviors related to preventing non-communicable diseases and its risk factors (including alcohol, tobacco, obesity, asthma, heart disease, diabetes and cancer) and to building good health links with other community members. School Health Clubs organize various activities related to health such as school health days, building health promotion capacity in schools and communities. The 2007 Circular specifies that School Health Clubs should be developed in all schools and details the composition and responsibilities [MoE (2007a)]. They hold an annual school health day, as well as monthly meetings reviewing progress of all activities in their annual health promotion plan. During the mid-1990s there were approximately 800 School Health Clubs functioning in Sri Lanka across all districts (circa 10 percent of schools) and following the 2007 Circular the goal has been to increase coverage to 100 percent [MoE (2007a)].

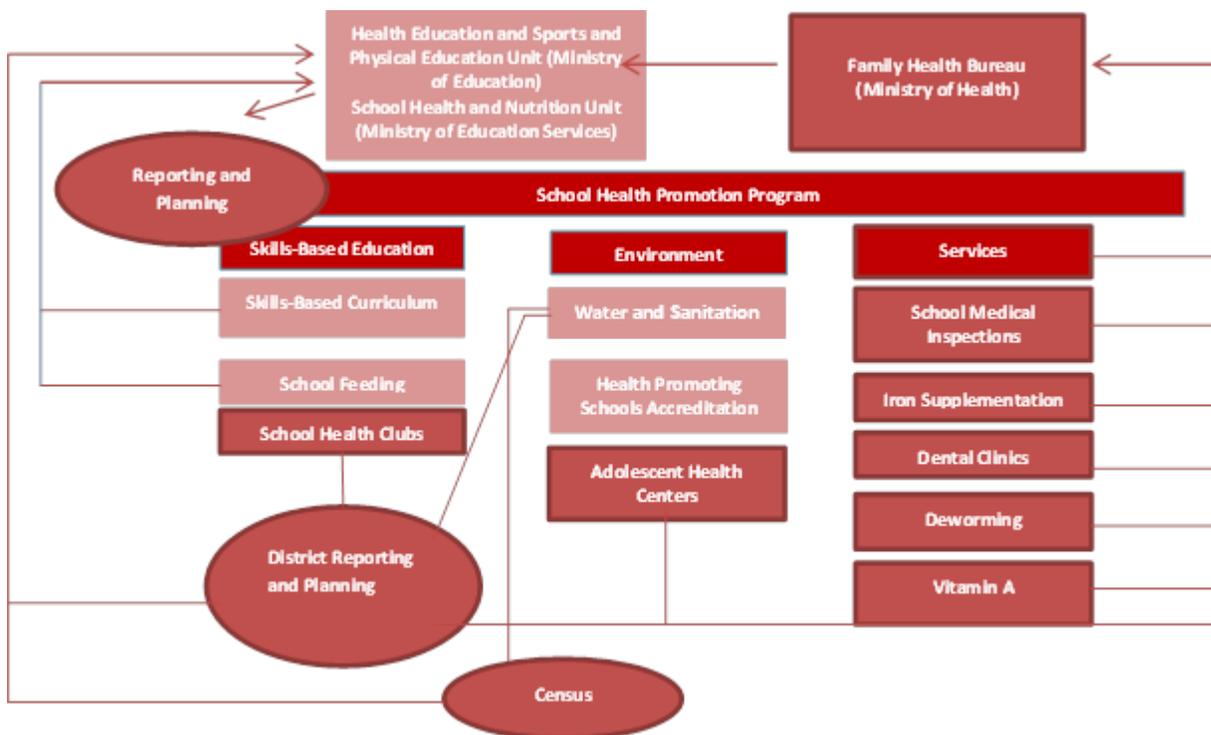
**3.11. Schools can be accredited as ‘health promoting schools’.** The SHPP has an accreditation scheme for schools based on the health promoting school criteria. Evaluations are carried out at zonal level and schools reaching specified standards are given bronze, silver or gold awards. The system is then utilized to advise schools on how they can progress up the rankings. It is thought that this will raise the profile of the ‘health promoting schools’ concept [WHO (1998)] and will encourage schools to try and participate to obtain accreditation. This system has been piloted in 19 divisions (reaching 442 schools of the 593 schools) and has expanded to 45 divisions in 2012. The system has been planned to gradually cover the entire island by 2016.

**3.12. The monitoring framework is structured to evaluate both health and educational outcomes.** The monitoring framework includes indicators of nutritional status, academic achievement and attendance at school. Ministry planning and divisional implementation role delineation is further confused by the SHPP monitoring being the responsibility of the Ministries of Health, Education and Education Services and, until recently, without any single unified data collection system [Figure 3.4.]. Currently, the Family Health Bureau collects information from the school medical inspections and the school sanitation survey while the Health Education Bureau collects information from School Health Clubs and the midday meal program. Information is available from a variety of sources including: the Department of Education statistics; MRI nutrition surveys; the Quarterly School Health Return; school sanitation survey; data at the Director/Special Education Ministry of Education; school census; school medical inspection data at the Family Health Bureau; the Finance Commission’s monitoring checklist; general Ministries of Health and Education records; and the school accreditation scheme. Many of these sources are not linked by a school identifying number and for some the data is not available for up to a year after collection. A lack of integrated data and complete timely implementation records has stilted the targeting mechanism and slowed the reactivity of the system. Program coverage data is maintained either via the Finance Commission at provincial level and in the relevant ministry nationally. It must be noted that the integration of the SHPP indicators into the school census and the monitoring by the Finance Commission of provincial performance represent significant steps in the mainstreaming of SHN and its positioning in other

large education sector projects. Any monitoring and evaluation of the SHPP should include the facility to contribute to the accreditation scheme, to provide a key mechanism to feedback information at school level, and to also support strengthening of the program at school level.

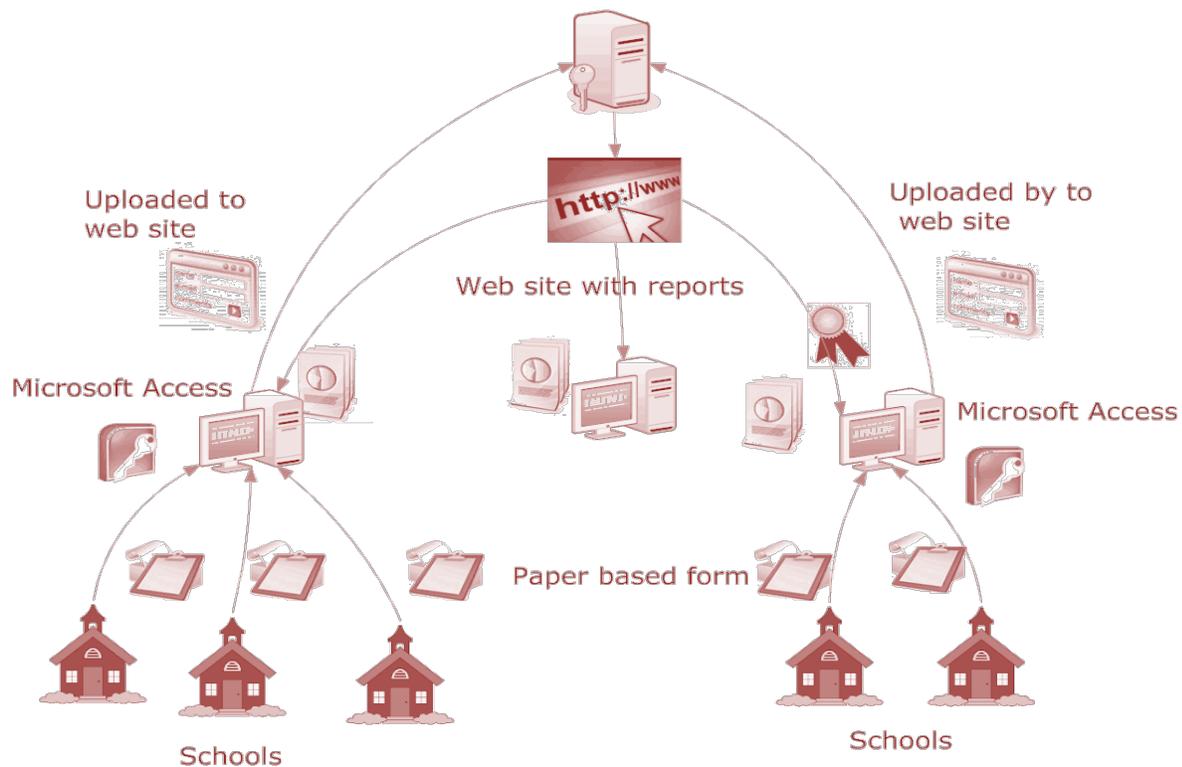
In an effort to address the complexities in data flows and the need for improved monitoring and evaluation, the SHN Unit, with technical development partners, has developed the School Health Promotion Program Information Management System (SHPPIMS) [SHPP (2011)] which supports the timely and accurate collection of much needed school level data on the status of SHN among Sri Lankan schoolchildren. The primary objective of the new system was to increase the efficiency of the data flow to make the decision making process easier, faster and more accurate. As of December 2012, the information management system was rolled out in 20 percent of zones across all 9 provinces. To ensure the sustainability, the system has been developed to meet the needs of the Ministry of Education and to build capacity to manage this system at ministry level, with plans for further modification and improvement and increased geographical coverage by 20 percent of zones each year for the next 4 years (2012–2016).

**Figure 3.4: Data flow of SHPP between Ministries of Education and Health**



Source: Developed by authors in consultation with the Ministries of Education, Education Services and Health.

**Figure 3.5: Schematic data flow of the SHPPIMS from school level to central server, which can be accessed by all authorized users at national, provincial and zonal levels**



Source: PCD (2012).

## 4. PROGRAM COSTS

4.1. As with all interventions, those in Sri Lanka are associated with different per unit cost to reach each child and scale required to effectively target those in need. [Table 4.1 and Annex 2]. Training of teachers and delivery of life skills, health education and health messages can be accomplished at the margins of overall education costs, but the provision of daily, weekly or annual services delivered to schools costs more. In 2011, the Ministry of Education trained 6,494 teachers country-wide costing 5,740,000 LKR and for the development and distribution of accompanying books costing 2,025,600 LKR. The provision of school feeding, costs at a minimum of 22.50 LKR per child per day (reaching some 1,014,901 children in 7,625 schools by 2012). An allowance is also given per school (400 LKR), zonal office (1,000 LKR), and provincial office (1,000 LKR). Occurring annually, the school medical inspections rely on vehicles and highly qualified personnel. By 2012, approximately 9,400 schools were reached in a year, with especially high coverage of primary schools, equating to at least 21 schools reached per day, and indicating the numbers of staff required.

**Table 4.1: Cost of intervention per child for Sri Lanka (a,b,c,d,e) or calculated for a similar intervention in a similar setting (f,g,h,i,j)**

Intervention	Cost (USD)/ Beneficiary Child / Year <sup>11</sup>	Targeted Scale (Number of Children)
a. Deworming (annual)	0.04	1,234,305
b. School feeding (daily)	30.00	800,000
c. School health: Life skills design and distribution of accompanying resources (in-service training every 3 years)	0.11	3,864,824
d. Toilets (completion over 4 years)	17.63	219,375
e. Water supply (completion over 4 years)	17.63	46,500
f. School medical inspection	11.50	3,864,824
g. Vitamin A supplementation	0.04	3,864,824
h. Iron folate supplementation	0.10	3,864,824
i. Iodine supplementation	0.30-0.40	3,864,824
j. Spectacles	2.50-3.50	Unknown

Source: f, g, h, i, j: Bundy (2011: p 166), Bundy *et al.* (2009).

Conversely, deworming with mebendazole reaching all children in Sri Lanka at least once in their primary schooling can be added to the school medical inspections for a few cents (0.04 USD) per child reached each year. The cost of iron folate which must take place weekly for a period of 24 weeks each year is more expensive (0.10 USD). Improving water and sanitation in schools is a significant investment and the Ministry of Education suggests the cost per unit of installing child-friendly toilets to be 100,000 LKR and for the development of water facilities to be 200,000 LKR. In order to reach the schools identified as requiring them (1,423 schools lack

<sup>11</sup> For additional details on calculations see Annex 2.

water facilities, 709 schools lack any toilets, with an estimated 2,677 toilets required across the country at an estimated cost of 890,000,000 LKR to reach national norms as of 2012) the country would require an investment of 1,755,000,000 LKR over 4 years.

## 5. PROGRAM IMPACT

### 5.1. **Both education and health indicators are included in the SHPP evaluation framework.**

As recommended by global frameworks [Bundy (2011)], the SHPP has included educational outcomes as a major part of their evaluation framework to monitor their goal achievements. The key indicators include:

1. Percentage increase in school attendance.
2. Percentage increase in Ordinary level and Advanced level results.
3. Percentage reduction in malnutrition.

Systematic data collection on these indicators is not yet taking place, however, a number of preliminary small evaluations have taken place and limited malnutrition data over time is available and discussed herein.

### 5.2. **The government evaluation in 2007 of the WFP Food for Education program indicated high acceptance by students, with a positive effect on child food-related hygiene practices.**

Teachers and principals believed that the WFP Food for Education program contributed to improving teaching and learning and led to an improvement in student attendance and achievement while also successfully highlighting to children the need to adopt a healthy lifestyle [MoE (2007b), (2007c)]. Many felt that the program should be widened to include Grades 10 and 11 students, however, 20 percent of principals felt that the added responsibility of the program was detrimentally affecting the management of the school. The ongoing challenges that were highlighted included ensuring the payments and food products were received on time, improving the quality and nutritional value of the meals, and improving cooperation with health authorities [MoE (2007b), (2007c)]. There is a clear need for a supply chain analysis with the aim of strengthening the design of this aspect in the Food for Education program of which WFP is already discussing with the government. As the government is also interested in exploring opportunities to transition to a locally sourced school feeding program, this type of model could be included in the analysis to be executed jointly with WFP.

### 5.3. **An impact study of the Sri Lankan Government school feeding program carried out by the SHPP on randomly selected schools returned similar results.**

The impact study showed an increase in active child participation and a substantial rise in the number of children who have an attendance rate of at least 80 percent [Peiris (2013)]. An improvement in health and eating habits was also noted and corresponded to a 5.3 percent decrease in malnutrition rates<sup>12</sup> and a 0.22 percent decrease in obesity rates among sampled schools [Peiris (2013)].

### 5.4. **Provisional case study data matching school feeding with student attendance and achievement over a 6-year period indicates that cohorts of children receiving school feeding did better than earlier cohorts that did not receive school feeding.**

Cohorts who had received school feeding gained on average 24 percent higher scores in the Grade 5 scholarship exam than those students who had not received school feeding. Although this could partially be attributed to

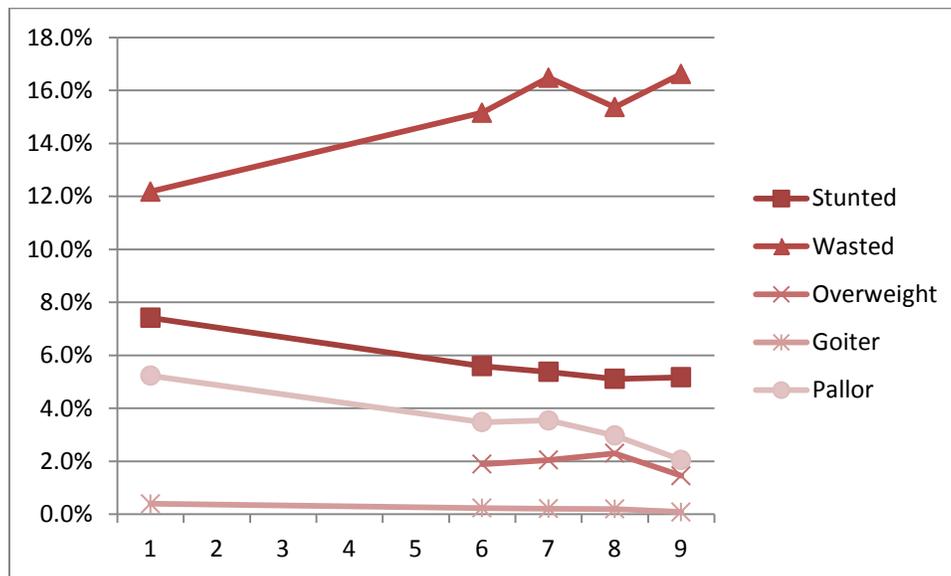
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<sup>12</sup> Defined weight-for-age.

higher or lower national achievement according to difficulty of exams in the feeding cohort, more than double the proportion of students qualified for the Grade 5 scholarship than in the non-feeding cohort [Peiris (2013)].

**5.5. School medical inspection data can be utilized to look for trends in malnutrition over time.** Regarding SHPP indicator 3 of reduced malnutrition, this indicator does not state by what index malnutrition should be measured [Family Health Bureau (2010)]. Additionally, lack of regular and recent nutritional surveys means the data is scarce though it is possible to review the annually collected school medical inspection data. Although the methodologies for data collection are rapid assessments and often proxy measures (e.g. pallor for anemia) and not clinical diagnoses, these methodologies are consistent throughout the years allowing trends over time to be visible – even if the empirical numbers may not be accurate compared with a rigorous survey. As with the other SHPP indicators, the lack of a randomized impact evaluation makes it impossible to confidently attribute any change directly to the school health program. It can be seen from Figure 5.1. that most indicators of malnutrition collected (i.e. pallor, goiter, and stunting) have all decreased, while wasting, however, has increased [see Figure 2.2. for breakdown by province] [Family Health Bureau (2010)].

**Figure 5.1: Sri Lanka school medical inspection indicators of malnutrition**



Source: Family Health Bureau (2010).

## 6. BENCHMARKING THE SRI LANKA PROGRAM

As systematic data collection on the health status of Sri Lankan schoolchildren continues to improve and become increasingly harmonized between lead ministries, regular and critical evaluation of the SHPP and complementary programs and interventions being delivered by partners will contribute to improvements in program delivery, efficiency, and ultimately in improved health and education outcomes for school-age children. Benchmarking Sri Lanka's policies and education system performance is key to identifying areas for improvement and achieving stronger results.

**6.1. International benchmarking systems are currently being developed to monitor progress in different areas of education.** To help countries systematically examine and strengthen the performance of education systems to achieve learning for all, the World Bank is undertaking an initiative known as Systems Approach for Better Education Results (SABER). With partners around the world, the World Bank has developed diagnostic tools that benchmark education policies according to evidence-based global standards and good practice. By leveraging global knowledge, SABER fills a gap on the availability of policy data and information and in the knowledge on what matters most to improve the quality of education. In determining priorities for the school health and school feeding sub-systems, framework rubrics have been developed, identifying key domains within a policy framework along with metrics for domains, performance drivers, and policy actions, including stages of development [World Bank (2011b)]. Drafts of these framework rubrics were used to assess the status and progress of the SHPP and are displayed in Figure 6.1. where movement from the centre outward can be interpreted as progress from latent towards being cutting-edge.

**6.2. Benchmarking the Sri Lanka program demonstrates clear progression highlighting a strong policy framework.** The strong structural and political positioning of the SHPP in Sri Lanka is reflected in Figure 6.1. as well as the establishment of school-based implementation which is targeted in an informed manner according to the results of the situation analysis<sup>13</sup> [World Bank, Sri Lanka (2010)].

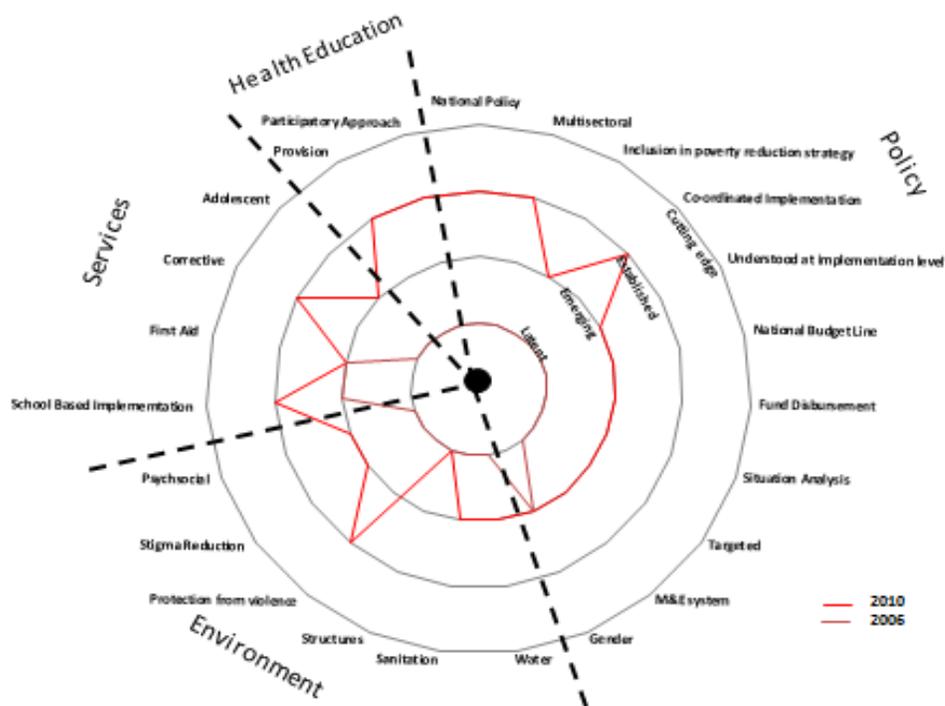
- A. The SHPP is well-targeted and responsive to a complex health and demographic situation. The policy framework is comprehensive with operationally effective coordination between health and education. Some issues of sustaining targeting and coverage exist often as functions of broader and more systematic issues including comprehensive monitoring, funding dispersal and capacity at all levels. By taking steps to address these wider issues, which have all been identified by the three ministries as crucial next steps for the SHPP, the program can be increasingly mainstreamed into ongoing educational policy, maintaining its leading status in school-based delivery of health interventions.
- B. Improvements in the fund disbursement mechanism, previously identified as a challenge, will positively impact on the program both directly and indirectly. In the initial instance, delays in fund disbursement cause immediate continuation problems for certain programs within schools, in particular school feeding which is managed at school level, but funded at zonal level. Complex fund disbursement mechanisms also seem to be contributing to

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<sup>13</sup> Benchmarking carried out by the SHPP and the Ministry of Education in Sri Lanka via a multi-stepped consultative process.

shifting delineation between the ministries and provincial roles which prevents full devolution of implementation to the provinces, causing ministry capacity to be directed very widely and to encompass implementation. This ultimately complicates monitoring and evaluation through creation of these multiple funding, implementing and reporting pathways which are hard to integrate. Taking steps to clarify or simplify fund disbursement will improve program delivery at all levels.

**Figure 6.1: Benchmarking summary by SHPP for 2006 and 2010 with program progress from latent towards cutting-edge**



Source: World Bank, Sri Lanka (2010).

- C. As previous evidence and the SABER benchmarking show, the Sri Lanka health picture and context is complex and the reactivity of the school health program through monitoring, coordinated planning, and targeted implementation is crucial to its success. Small impacts of the convoluted data reporting can already been seen in the program itself, with increasing numbers of large schools facing challenges in the logistics, capacity and resources to deliver the school medical inspections. It is obvious that additional planning and coordination between the three Ministries in utilizing an integrated data is essential. Currently, school medical inspections are overwhelmed by the demand in bigger schools as they do not have enough resources to inspect all pupils required, therefore, while school coverage remains high, pupil coverage remains low. Additional financial and capacity planning to respond to these changing patterns of need is required to maintain the service. The consolidation of schools, as well as resettlement after conflict and re-building after the tsunami, affects the school feeding programs which are targeted toward malnourished and small rural schools. This targeting becomes ever more important as food prices rise and feeding becomes more challenging. In light of WFP's changing position within Sri Lanka and the school feeding program, understanding the coverage and targeting of the government-led school feeding program will be even more critical to address.

It is clear that an excellent delivery system built around the school medical inspections is not maximized where devolution and targeting are not fully enabled, and implementation and capacity are not sufficient to monitor effectively. The Health Promoting Schools initiative accreditation scheme has taken positive steps to address the issues on monitoring and evaluation, largely generating coverage data collected at school level. This bypasses problems of implementation and the reporting pathway of integrating the data; however, it does not provide an adequate outcome or impact evaluation or a system which is accessible to the primary implementing level. Development of the SHPPIMS database has already improved the collection of joint health and education indicators in the initial zones utilizing the system, which can importantly be used at all levels for planning and decision making [SHPP (2011)]. The system has successfully captured timely data including attendance, screening and referral practices through SHN activities from 23 of the 26 trained zones resulting in 1,696 school level records [SHPP (2011)]. As the SHPPIMS scales up, additional zones will be trained to take up use of the system resulting in wider coverage capturing timely school level data on SHPP activities [SHPP (2011)]. Regular modifications to the system will ensure context-relevant data is captured for use at zonal, provincial and ultimately national levels at regular intervals. Coordinated efforts by lead ministries to harmonize monitoring and evaluation and repeat benchmarking to track progress and address the above mentioned challenges will only benefit the development of the SHPP.

## 7. AVENUES INTO THE FUTURE

**7.1. Building on and extending the platform of excellent collaboration between the Ministries of Education, Education Services and Health, so as to specifically improve data flows and to integrate monitoring activities – useful for institutionalizing and mainstreaming the SHPP within larger policy objectives.** This will increase the utility of monitoring for both parties, in terms of both health and educational outcomes related to the program and identifying points for program improvement. The recommendation of extending coordination, links and mainstreaming also stretches out to related activities such as psychosocial interventions and ensuring all implementing and planning parties are networked and sharing information. This will help prevent any duplication, allow each program to coordinate better with other programs and contribute to the ongoing mainstreaming of SHN.

**7.2. Capacity building at all levels, to enable the maintenance of targeting in an increasingly complex and devolved program, so as to maximize the cost-effective and successful systems.** These have been developed so far, and will increase the health and educational collaborations.

1. *At national level:* Improved capacity to monitor the national program as a whole in terms of management as well as data collection, storage, and evaluation will be critical in utilizing information and program data to effectively guide the program, advocate for change, and report effectively to all levels. The leading ministerial unit will require committed investment and support in both financial and human resources for this to be possible.
2. *At provincial level:* Increased planning and financial management capacity will allow fuller devolving of the system to provincial level so targeting can be developed and managed accordingly, and increased planning will reduce issues of funding delays and distribution.
3. *At zonal level:* Strengthened information technology and program monitoring capacity will be integral to the success of any monitoring and evaluation system as this will be the primary level of data collection from schools.
4. *At school level:* Strengthened capacity of teachers to monitor and report on the health of students in their schools. This would support the Public Health Inspector in the school medical inspections and would help to derive maximum referral utility, as well as health and educational gains in a system with exceptionally high school coverage. Enabling the inspection data to be made available to participating schools for their own records will support strengthened local level planning.

**7.3. A systematic and comprehensive data collection and information management system of reporting to and by all administrative levels, with sustained investment for modification and scale-up, to improve and overcome challenges of complex data flows.** Continuing to commit to one shared monitoring and evaluation system such as the SHPPIMS will require sustained investment for modification and scale-up to continue improving and overcoming challenges of complex data flows. Investment in such a system and its administration at national level with constructive use of results would enhance empowerment of provinces and zones for fully devolved implementation. At the same time, the national ministry level would also be empowered for improved program guidance, policy, and monitoring and evaluation. This would

also contribute to ensuring that both geographical and demographic targeting of interventions continues to be needs-driven and responsive.

**7.4. Complete establishment and maintenance of devolved implementation and management roles for the provincial and national ministries respectively, through effective fund disbursement mechanisms.** This would be supported by strengthened finance distribution systems. This should be considered in light of school-based management initiatives with assessments of which aspects of school-based health and nutrition could be successfully mainstreamed to the school level financing. This is particularly pertinent for aspects of the program such as the feeding element where continuity is vulnerable to short-term funding delays.

**7.5. Expanding and mainstreaming the SHPP to incorporate secondary schools, to maximize the educational achievements of adolescents and young adults.** This is an important next step for the SHPP. Many of the current SHN intervention priorities of the SHPP i.e. malnutrition, hunger, and deworming are targeted to poorer sections of the population which often constitutes Type 1<sup>14</sup> primary schools, though many of the emerging issues such as reproductive health, mental health and life skills are also related to older children in secondary schools. While some secondary schools have some aspects of school health, as Sri Lanka looks to extend the network of high quality secondary schools, basic health and nutrition should be clearly mainstreamed and integrated into what represents the gold standard of secondary education as well as their designated primary feeder schools. While this of course encompasses the provision of water and sanitation, and environmental safety to minimum government standards, it should also include interventions which are pertinent to the health of adolescents and young adults and the support they require in maximizing their educational achievement. This may include the provision for targeted iron supplementation for girls, trained school counselors, the establishment of peer support networks for students and teachers, ensuring increased awareness of issues such as reproductive health, appropriate referral pathways, facilities for adolescent health needs, and specific life skills teaching for age-appropriate issues.

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<sup>14</sup> The Sri Lankan national education system classifies schools into the following categories: Type 1AB schools with General Certificate of Education (GCE) (Advanced Level) classes; Type 1C schools with GCE (Advanced Level) Art and Commerce classes; Type 2 schools with classes up to Grade 11 (GCE Ordinary Level); and Type 3 Elementary schools with classes up to Grade 8 [MoE, Census Branch (2002)].

## 8. CONCLUSIONS

This paper has set out the strengths of the SHPP and has given an insight into its progress to date. It has shown how Sri Lanka has targeted and addressed key health concerns, but has also begun to address emerging issues such as mental health, psychosocial needs and reproductive health.

The progress of the SHPP has been measured using the international benchmarking system SABER, where the strong policy framework is evident. It has shown the Sri Lanka health scene and context to be complex and the reactivity of the SHPP through monitoring, coordinated planning, and targeted implementation as crucial to its success.

Significant efforts and progress are being made in five priority areas to enable mainstreaming of school health into national education policies and plans. These five priority areas include:

1. To build on and extend the platform of excellent collaboration between the Ministries of Education, Education Services and Health, so as to specifically improve data flows and to integrate monitoring activities – useful for institutionalizing and mainstreaming the SHPP within larger policy objectives.
2. For capacity building at all levels, to enable the maintenance of targeting in an increasingly complex and devolved program, so as to maximize the cost-effective and successful systems.
3. For a systematic and comprehensive data collection and information management system of reporting to and by all administrative levels, with sustained investment for modification and scale-up, so as to improve and overcome challenges of complex data flows.
4. To a complete establishment and maintenance of devolved implementation and management roles for the provincial and national ministries respectively, through effective fund disbursement mechanisms.
5. To expand and mainstream the SHPP to incorporate secondary schools, so as to maximize the educational achievement of adolescents and young adults.

Addressing these five priority areas will help to ensure that the SHPP is able to respond to the changing health needs of schoolchildren.

Although challenges persist, with ongoing mainstreaming and constructive monitoring, the SHPP will continue to develop in line with good practice and remain the gem of school health programs in South Asia.

# ANNEX 1: 2007 MINISTRY OF EDUCATION CIRCULAR

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கல்வி அமைச்சர்

Ministry of Education

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My No. } ED 1/21/1/2/2

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திகதி

Date } 2007.10.06

Translated Copy

This is an abridged copy of the 2007 Ministry of Education Circular, an eleven page document with 5 sections. This copy only includes sections one and two.

Circular No: 2007/21.

All Provincial Secretaries of Education  
 Provincial Directors of Education  
 Zonal Directors of Education  
 Principals of Schools.

### School Health Promotion Programme

Various research studies and reports published in the media have revealed that the health status of Sri Lankans especially the school children is not at a satisfactory level. As schools can play a major role in overcoming this problem. This circular has been issued for launching a sustainable programme with the corporation of the Ministry of Health for the promotion of Health of the school community including the students and teachers.

The main objective of this program is to lead the school to work for the health promotion of the school community including the students and teachers by utilizing its fully organizational capacity building. Principal should take action to obtain the highest cooperation from the school community including the students and teachers for the school health promotion program.

#### 2.0 Objectives:

In order to achieve the main objectives indicated above it is imperative that school fulfills the following requirements.

- 2.1 Formulation of health promotion school policies
- 2.2 Evaluate health promotion knowledge and skills among students.
- 2.3 Create a favorable environment within the school for health promotion
- 2.4 Obtain cooperation from the school community including students and teachers for school health promotion.
- 2.5 School health services conducted with assistance from Ministry of Health to be utilized for health promotion purposes.

## ANNEX 2: COST OF INTERVENTIONS IN SRI LANKA

Intervention	Cost USD/ Beneficiary Child/ Year <sup>15</sup>	Targeted Scale (Number of Children)
a. Deworming (annual)	0.04 <sup>16</sup>	1,234,305 <sup>17</sup>
b. School feeding (daily)	30 <sup>18</sup>	800,000 <sup>19</sup>
c. School health: Life skills design and distribution of accompanying resources (in-service training every 3 years)	0.11 <sup>20</sup>	3,864,824 <sup>21</sup>
d. Toilets (completion over 4 years)	17.63 <sup>22</sup>	219,375
e. Water supply (completion over 4 years)	17.63 <sup>23</sup>	46,500
f. School medical inspection <sup>24</sup>	11.50	3,864,824
g. Vitamin A supplementation	0.04	3,864,824 <sup>25</sup>
h. Iron folate supplementation	0.10	3,864,824
i. Iodine supplementation	0.30-0.40	3,864,824
j. Spectacles	2.50-3.50	Unknown

<sup>15</sup> All costs are based on the Sri Lanka 2010 budget reporting for school health and based on an exchange rate of 113.44666 LKR to 1 USD.

<sup>16</sup> Based on figures developed by the Deworm the World Initiative for deworming programs [Deworm the World, (2009)].

<sup>17</sup> Based on all Grade 1 students in 2009 [MoE, Census Branch (2009)] plus all students in other grades in central and northwestern provinces where plantations are.

<sup>18</sup> Cost per child per day x number of children x number of school days (20\*725,179\*170) + allowance per school x number of schools (400\*6,116) + zonal office allowance x zonal offices (20\*1,000) + provincial office allowance x provincial offices (10\*1,000) / number of children.

<sup>19</sup> Based on children reached in 2010 by all feeding programs where program is targeted to need.

<sup>20</sup> Cost 2010 training programs and development and publication health activity books / number of teachers trained (assuming 1 teacher per school) (7,765,600/6,494) / assumed 100 children per school.

<sup>21</sup> Estimate of all school-age children in Sri Lanka [MoE, Census Branch (2009)].

<sup>22</sup> Average number of toilets to be completed in 1 year x unit cost per toilet / number of children to benefit (4387.5\*100,000/219,375) where children benefitting is based on an average number of toilets completed per year of the 17,550 planned for 4 years with 50 children set to benefit from 1 toilet.

<sup>23</sup> Average number of water facilities completed per year x cost per unit/number of children to benefit (465\*200,000/46,500) where children benefitting is based on an average number of water facilities being completed per year of the targeted 1,860 schools with the assumption of 100 children per school.

<sup>24</sup> Based on 'Physical Medical Inspection' costs calculated by Bundy (2011: p 166) and Bundy *et al.* (2009).

<sup>25</sup> Estimate of all school-age children in Sri Lanka [MoE, Census Branch (2009)].

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