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COSTING ANALYSIS OF SCHOOL HEALTH AND NUTRITION INTERVENTIONS

The ESHI Case Study 2014

A collaboration between:

SNV · Ethiopian Public Health Institute · SCI Schistosomiasis Control Initiative · PCD The Partnership for Child Development · WFP wfp.org

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Chapter 1
BACKGROUND

The cost-effectiveness and optimal composition of school health and nutrition (SHN) programmes which integrate a number of different health interventions is an unknown to government decision makers. This makes it difficult for governments to be able to cost, design and implement SHN programmes which meet the multiple and diverse health and education needs of their target communities. To fill this evidence gap Imperial College London's Partnership for Child Development (PCD) in partnership with the Government of Ethiopia and in collaboration with the Ethiopian Public Health Institute (EPHI) is conducting a research programme to identify best practices in integrating multiple school health and nutrition interventions. The findings of this four year programme will be used to shape the design and implementation of future large scale SHN interventions. It is hoped that by evaluating in detail the delivery of different SHN services provided by different stakeholders the Government of Ethiopia will be better positioned to deliver cost- effective integrated SHN programmes.

With the support from Dubai Cares International, the Government of Ethiopia, Imperial College London's PCD and Schistosomiasis Control Initiative (SCI), the Netherlands Development Organization (SNV), and the United Nations World Food Programme (WFP) are piloting a contemporary cost-effective, nationally owned and sustainable school feeding and school health model in the Southern Nations, Nationalities, and Peoples' Region (SNNPR) of Ethiopia, to provide evidence for informed decision-making and scale-up in Ethiopia and beyond.

The **Enhanced School Health Initiative (ESHI)** is a programme that has three integrated SHN interventions: school feeding programmes which procure food grown by local farmers known as Home Grown School Feeding (HGSF), Water, Sanitation and Hygiene (WASH), and deworming. This integrated approach aims to maximise the benefits of each of the components when delivered jointly to schoolchildren, to realise the efficiencies in implementation, and to emphasise that schools can act as a platform for delivery.

This report presents **the overall costs of the integrated SHN interventions, a costing analysis of the efficiencies, and overall costs of the ESHI programme,** to provide a point of reference for policy and programme development. The overall aim of the analysis is to evaluate the cost and cost-efficiency of delivering different SHN packages within a pilot programme. The overview of these costs, combined with a completed regional situation analysis (conducted in early 2014), and a programme efficacy analysis, will provide substantive evidence suitable for government and partner planning. To the best of our knowledge, no previous analysis has addressed the combined cost-efficiencies arising from SHN programmes that simultaneously address HGSF, WASH, and deworming. The analysis, more specifically, provides an illustration of overall costs per child per year, and highlights the costing efficiencies that can be achieved through greater synergies in programming.

While there are a wide variety of implementation methodologies for the programming components of HGSF, WASH, and deworming, this analysis estimates the actual costs of the way the implementation occurred. A comprehensive analysis was used to take into account costs incurred by all involved, with actual expenditure and real costs placed on partners, government and the communities. The scale of the costs analysed from ESHI programming is for HGSF provision in 30 schools, WASH provision in 15 schools and deworming provision in 3,130 schools (by virtue of an ongoing parasite mapping exercise) within the SNNPR of Ethiopia. As shown in Figure 1, where ESHI is being implemented the schools overlap with 15 WASH schools receiving all three SHN interventions (HGSF, WASH, and deworming).

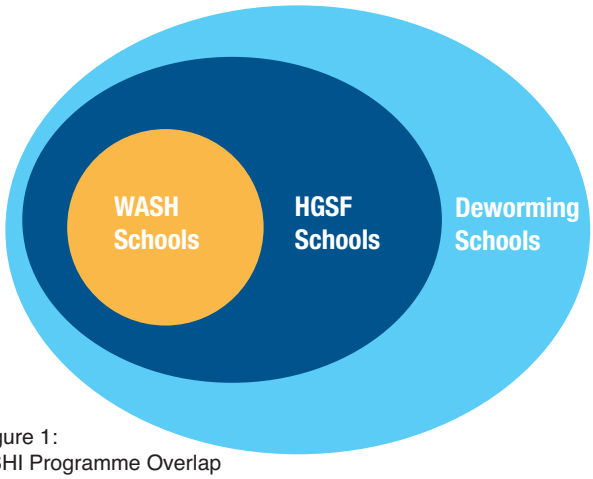

Figure 1:
ESHI Programme Overlap

Acknowledgements

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Chapter 2

METHODOLOGY

The analytic approach focuses on incurred monetary costs and excludes other costs such as time, unless they represent a real and substantial cash value. The findings are therefore, an underestimate of the true cost, but are appropriate for government decision-makers and for setting budgets.

In the case of community contributions 'gratis', only contributions that were recognised by the communities and schools as having a financial value were considered for the analysis. Therefore, some community labour costs and opportunity costs for time spent that were not equated to a monetary value were excluded. The analysis incorporates community contributions with real monetary value as well as the costs incurred by different administrative levels of government. These costs, in addition to real expenditure programme spending, provide an insight into SHN costing and cost-efficiencies in the SNNPR of Ethiopia.

Due to the focus on real expenditure the U.S. dollar was the currency for comparison with exchange rates accurate to August 2014. Discount rates were not used within the calculation of fixed assets.

Data collection

A methodology was developed to estimate the actual costs of an integrated SHN intervention. Note, the findings do not represent a 'best case' or forecast of expenditure, but a picture of *actual* implementation costs as observed by the three SHN interventions. The estimates are based on detailed accounting, with data sourced from implementing partners and field surveys (Table 1). Considering synergies between the partner organizations, budgeting and cost categorising, information was separated into cost categories (direct, indirect, transport, etc.) and programme area (Table 2). This provided a level of comparability between the HGSF, WASH and deworming components in totality and across cost areas.

Data was collected over three sources of information: first, through primary data on budget expenditure (budget data); second, through surveying of costs at schools (survey data); and third, through structured interviews with programme staff and relevant government bureaus (interview data).

1. **Budget data** utilised data directly from institutional budgets. Prevailing data gaps were identified and addressed through survey questionnaires and interviews with partners, administered as part of the ongoing analysis of the ESHI programme.
2. **Survey data** comprised of data collected through surveys completed in 25 pilot schools implementing the ESHI programme through questionnaires and focus group discussions. Cash and non-cash contributions to schools from communities and their frequency of payment were also determined.
3. **Interview data** was collected from structured interviews at regional- and woreda-level, with interviews from programme staff and relevant government bureau representatives providing further secondary data.

The use of different data sources ensures that any expense incurred by the government, communities, implementers and donors are captured conclusively and verified. Emphasis was given to non-recorded implementation costs, such as those of the community, which may not otherwise be captured.

Government cost contributions were considered at regional-, zonal- and woreda-level within the SNNPR of Ethiopia. Federal expenditure on programming was not considered in the analysis due to the decentralised nature of Ethiopia's ministries, it was therefore, assumed that the majority of per child expenditure occurs from within regional-level government budgets. The most recent expenditure data available for the three SHN interventions was used in the analysis.

Table 1: Costing Data Sources for the SHN Interventions

Data Source	HGSF	WASH	DEWORMING
1: Budget data	Expenditure reports of partners (May 2014)	Expenditure reports of partners (August 2014)	Fund utilisation report (May 2014).
2: Survey data	School surveys (25*) conducted in schools participating in ESHI programme (June 2014)	School surveys (25*) conducted in schools participating in ESHI programme (June 2014)	School surveys (25*) conducted and deworming provided in schools participating in ESHI programme (June 2014).
3: Interview data	• Interviews with education and agriculture bureaus at regional- and woreda-level (two woredas). • Interviews with cooperative unions that supply food (two cooperative unions). • Interview with implementer (June 2014).	• Interviews with the Water Bureau at regional- and woreda-level (June 2014). • Interview with Implementer (June 2014).	Secondary data provided by the Ethiopian Public Health Institute (EPHI) as part of the national deworming and prevalence mapping for schistosomiasis and soil-transmitted helminth covering 3,130 schools across five regions of Ethiopia.

**25 of the 30 ESHI implementation schools were surveyed.*

Table 2: Cost Categories of the SHN Interventions

SHN Interventions	Cost Category	Data Source	Details
HGSF	Food	WFP and Regional Bureau of Education expenditure reports (HGSF Focal Point).	Cost of commodities and cost of transport contractors for haulage from cooperative unions to schools.
	Transport	WFP and Regional Bureau of Education expenditure reports (HGSF Focal Point).	Cost of commodities and cost of transport contractors for haulage from cooperative unions to schools.
	Storage	School-level	Based on school/regional storage.
	Non-Food Direct	WFP budget	Cost provided externally (not from school) for non-food costs including standard cooking equipment such as pots and pans. Direct programme staffing costs and dissemination workshop/programme meeting costs.
	Monitoring and Evaluation	WFP expenditure	WFP programme monitoring.
	Training and Awareness	WFP expenditure	Training carried out by WFP provided to schools and partners.
	Indirect	WFP expenditure	Indirect programme costs – including head office overheads, accountancy costs, and management costs.

The data was collected from a wide range of schools within the SNNPR of Ethiopia providing a good insight and benchmark for SHN programme cost requirements in rural areas of Ethiopia. The costing analysis does not incorporate indirect programme start-up costs, including proposal writing, initial workshops and consultation. The costing data from schools who have received the full interventions was utilised as a reference point for all schools.

Table 2: Cost Categories of the SHN Interventions (continued)

SHN Interventions	Cost Category	Data Source	Details
HGSF	Depreciation (capital)	Interview with HGSF staff and WFP expenditure	Annual cost determined through fixed assets aged over average asset lifespan.
	Government	Woreda/regional survey/interviews	Direct government expenditure: 3 x mid-level employee salary + 1 motorbike for 25 schools.
	Community	School-level	All 'cash convertible' costs that the schools identified within the programme were included e.g. costs for hiring a cook, firewood, and materials for construction, etc.
WASH	Transport	SNV expenditure reports	Transportation costs of WASH intervention.
	Monitoring	SNV Expenditure reports	SNV programme monitoring of interventions.
	Training/Awareness	SNV expenditure reports	Inclusive of capacity building and school-level education programmes and materials.
	Other Direct	SNV expenditure reports	Direct programme staffing costs and workshop/meeting costs.
	Indirect	SNV expenditure reports	Indirect programme costs including head office overheads, accountancy costs, and management costs.
	Depreciation (Capital)*	Interview with WASH contractor and SNV expenditure report	Annual cost determined through fixed assets (construction of pit latrines, incinerator pits, and so on) aged over average asset lifespan.
	Government	Interview with Water Bureau	Inclusive of government monitoring activities and staff time.
	Community	Surveying of SHN schools	Including all 'cash convertible' costs undertaken by the community for WASH interventions including soap, construction materials, and so on.
DEWORMING	Transport	EPHI fund utilisation report	Based on national prevalence mapping of schistosomiasis and soil-transmitted helminth. Includes staff, fuel and vehicle costs.
	Direct (Staff)	EPHI fund utilisation report	Staffing cost and teacher per diem.

** Capital costs are depreciated over the predicted lifespan of each specific asset such as incinerator pits for WASH are aged over only 3 years, whilst improved water points are aged over 10 years.

Chapter 3

RESULTS

The results are presented firstly, as a cost per child per year for each of the three SHN interventions (HGSF, WASH and deworming), and secondly by a combined total cost (US$) per child per year. The findings are given to provide comparison through standardised costing categories.

Home Grown School Feeding

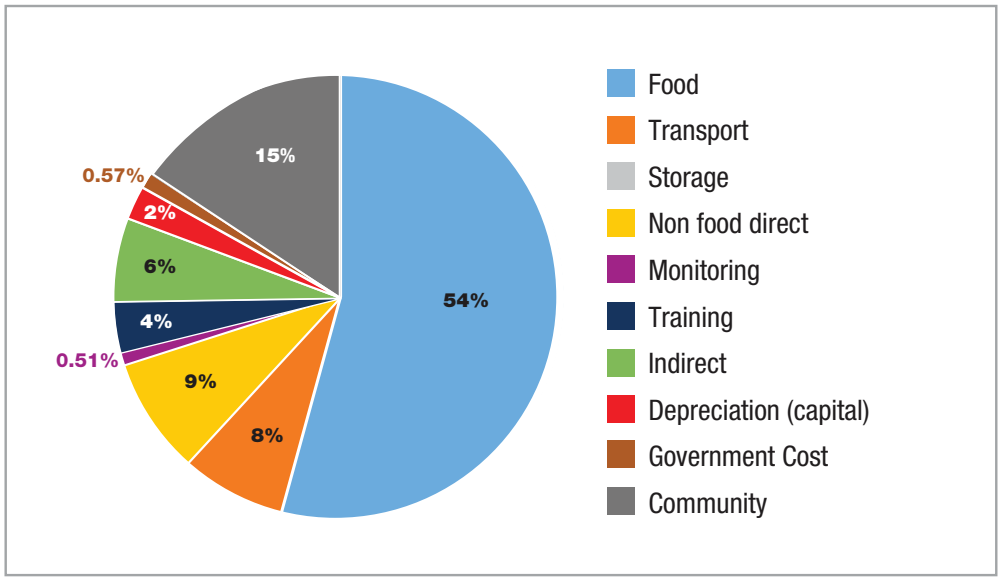

Figure 2: Cost Per Child Per Year – HGSF

Total = US$28.01 per child per year inclusive of US$4.16 in community contributions and US$0.57 in local government supervision costs. This equates to US$0.16 per child per day.[1]

1 Based on 176 feeding days – which is the number of school meal days achieved by the project and is accurate based on the Regional Bureau of Education information for the most recent semester. The standard school year is 180 days and the standard denominator used was therefore 180 for the other programme areas.

WASH

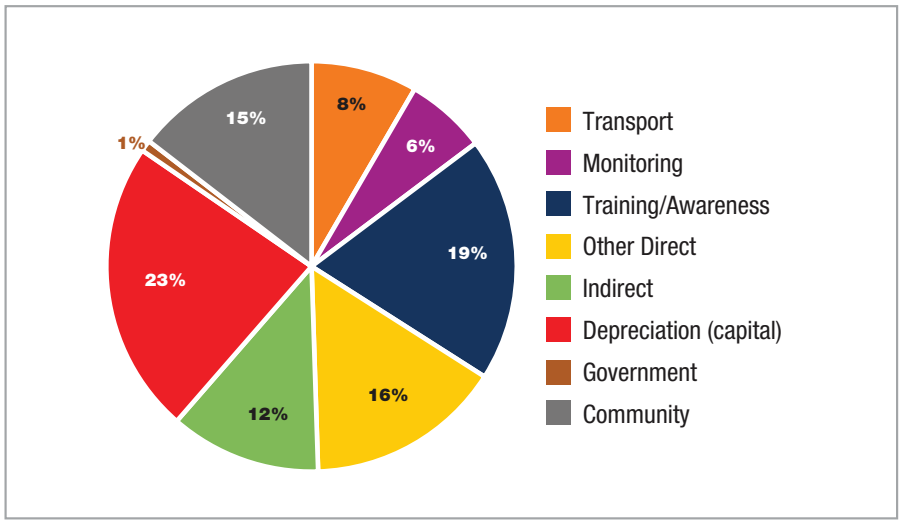

Figure 3: Cost Per Child Per Year – WASH

Total = US$7.35 per child per year inclusive of US$1.05 in community contributions and US$0.06 in government contributions. This equates to approximately US$0.04 per child per day (for a school year of 180 days).

Deworming

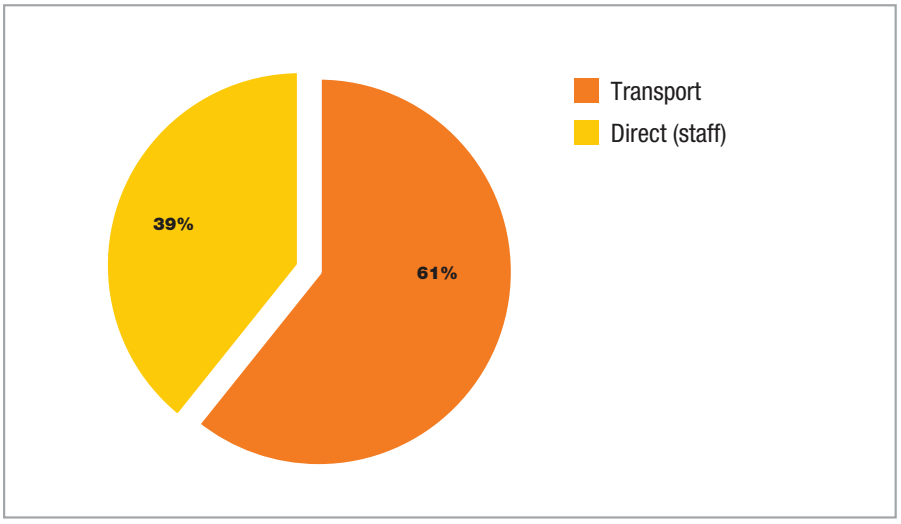

Figure 4: Cost Per Child Per Year – Deworming

Total (mapping and surveying with deworming excluding laboratory testing) = US$0.40 per child (with donated drugs).

Total SHN programming Costs

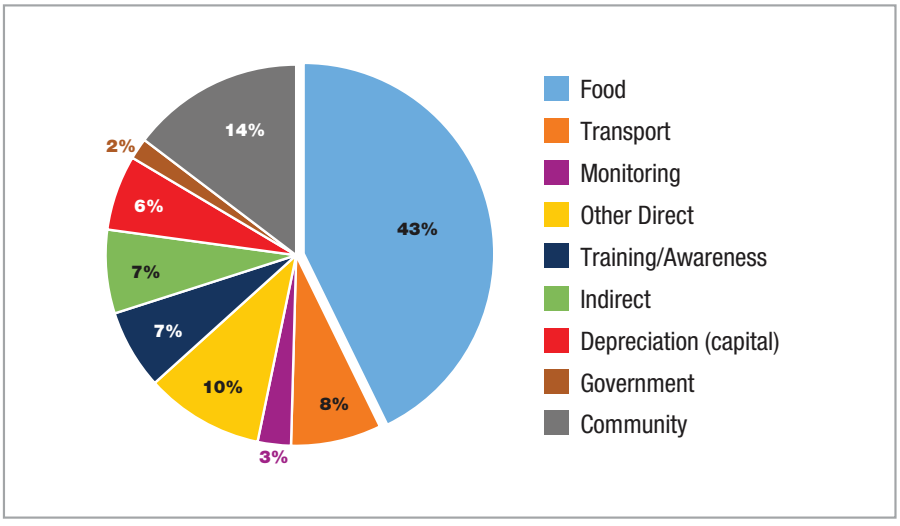

Figure 5: Cost Per Child Per Year – Combined Total

Total combined cost for the three SHN interventions is US$35.76 per child per year. This equates to approximately US$0.20 per child per day for a school year of 180 days.

Chapter 4

ANALYSIS

Cost differences in SHN programming

Capital versus Recurring

The three SHN interventions have very different cost characteristics. WASH programming involves larger capital expenditure at the start of programming, with a lower proportion of recurring direct costs. Recurring costs are those costs which are incurred repeatedly over set time periods to allow the programme to operate. HGSF programming is made up of almost solely direct recurring costs. This is illustrated by the fact that the cost of depreciation on fixed assets for HGSF is only 2% of total costs, whereas WASH incurs depreciation costs of 22%. Deworming programming is solely made up of recurrent costs.

To identify the potential synergies or efficiencies, costing the recurring elements of each budget was investigated. Synergising programming is unlikely to find significant efficiencies within the direct programme expenditure, for example, between food for HGSF and education materials for WASH. Therefore, indirect costs along with other cost categories such as transport, storage, and monitoring and evaluation were analysed.

Capital expenditure has been depreciated over the lifetime of the asset in the analysis. The lifetime of assets was provided by local experts familiar with the expected period each individual asset would likely last for, before needing replacement. This provides a real financial cost per year of fixed assets. The upfront expenditure on capital elements for the programme per child (cost at the start of the programme) is **US$13.96 per child** or approximately **US$14,250 per school.** The key fixed assets purchased include WASH infrastructure such as latrines, handwashing points and incinerator pits, and HGSF infrastructure such as storage units and kitchens.

Applying the cost-efficiencies in the SNNPR of Ethiopia

Currently, monitoring and transport make up 14% of the total programming costs. Efficiency savings of 40% in these areas would reduce the overall budget by 5.6% or a reduction in total cost per child from
$35.76 to $33.18.

Whilst these figures look small, the total budgetary savings in absolute terms are very large. Considering only the project area of 30 schools in the region, these savings equate to US$61,760. Extrapolated out to the whole region the potential efficiency savings of integrating transport and monitoring for primary school SHN programmes could be
$6,862,000

Potential programme efficiencies

Coordinated, integrated programming within SHN has the potential to show some cost-efficiencies. The cost categories of transport, storage, and monitoring and evaluation were captured within each programme area, and are therefore, considered as areas of potential cost-efficiencies.

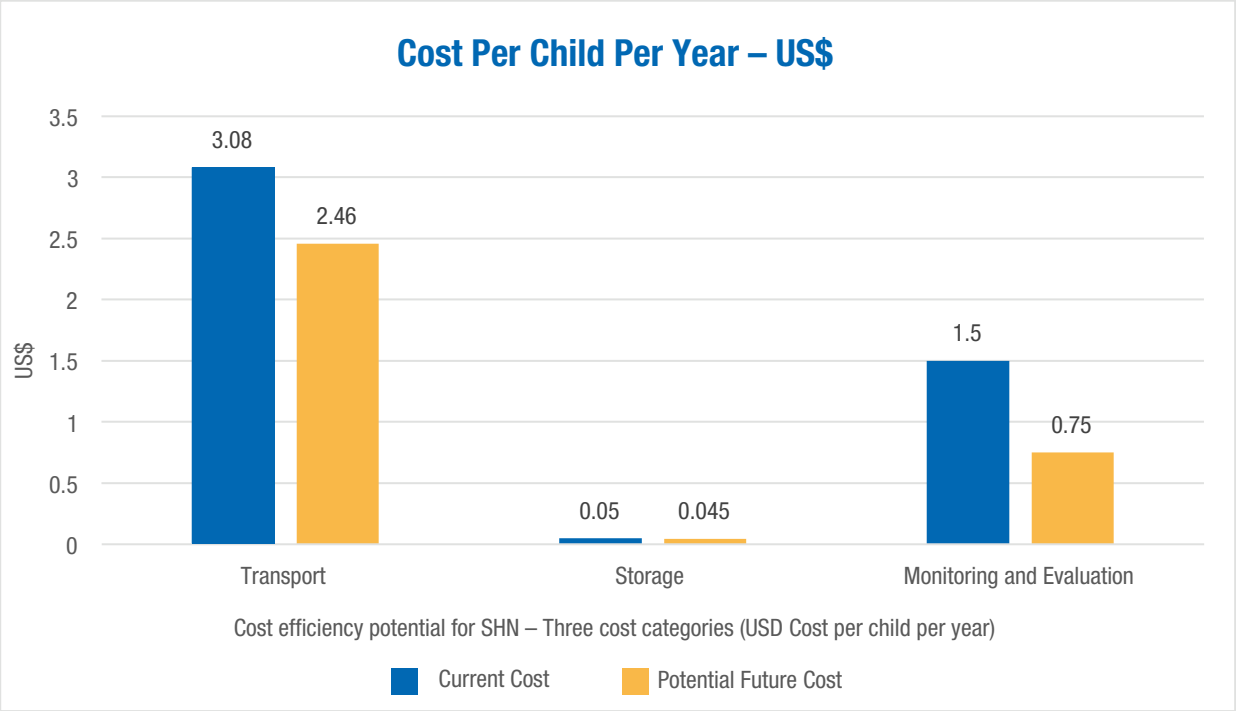

Figure 6: Potential Cost-Efficiencies by Increasing Programming Synergies for ESHI

Transport

The programming of HGSF, WASH and deworming all at distinct times in their projects requires the delivery or transportation of goods from the regional centre (in this case Hawassa) to the school. The delivery of food for HGSF, the construction, maintenance and education materials for WASH, and the drugs for deworming are all required at set times within each intervention cycle.

Analysis of the ESHI programme suggests the total cost of transportation (vehicle rental/purchase, fuel, and drivers) for HGSF, WASH and deworming is approximately **US$3.08 per child** (US$2.73 programme transport + US$0.35 monitoring transport).

HGSF transportation costs are the most frequent costs incurred by schools, consolidating transport activities of WASH and deworming into HGSF transportation, while considering the increased volumes of items that would need to be transported, could yield a potential saving of 20% to the total transport budget or US$0.62 per child.

Storage

Storage of food, WASH materials (such as education materials and soap) and deworming drugs could be shared at regional-, zonal- and school-levels. Currently, each SHN intervention passes storage costs onto the community at school-level, where in the case of HGSF the storage facility costs on average approximately US$385 per school. Considering the materials used and potential lifespan of the storage facilities, this equates to an approximate cost per child per year of about US$0.05 per child. Whilst, programmatically, efficiencies in storage could be useful, the potential cost-efficiency of alternative storage arrangements is very minimal at less than US$0.005 per child.

Monitoring and Evaluation

Currently, the three SHN interventions carry out mapping, monitoring and evaluation activities independently. For example, there is independent monitoring and evaluation activities at school-level for school feeding, whilst WASH and

deworming monitoring and evaluation activities take place from different government departments and ministries as well as from the different implementers.

The separate monitoring and evaluation activities and mapping, costs a total of **US$1.50 per child** (inclusive of capital costs).

By unifying monitoring and evaluation activities within a single framework, without duplication of staff, transport and communication costs, the maximum cost saving potential stands at 50% or **US$0.75 per child**. This is based on the maximum single monitoring and evaluation cost for a single programme component plus a 25% premium for the increased volume of indicators.

Communities

The community contribution to the entire ESHI programme is estimated to be about 14% of total programming cost (see figure 5). These costs include direct costs of either cash or non-cash commitments that are easily exchanged for cash. The level of community contributions is comparable between the HGSF and WASH interventions. The per child community contribution equates to approximately **US$5.20 per child per year.**

Efficiencies in scale

The analysis estimates the cost of an integrated SHN programme using the existing implementation methodologies that have been fully carried out in 15 schools. The findings within this report do not investigate potential efficiency savings in programme scale-up of interventions. Local sourcing of food for the HGSF intervention limits the potential efficiencies of scale If not accompanied by other development interventions such as improved access to agricultural inputs and markets. There are other potential efficiency savings in monitoring, government costs and indirect programme costs, which currently make up 15% of the total combined budget.

Chapter 5

CONCLUSIONS

The three SHN interventions (HGSF, WASH and deworming) offer quite different costs when considering capital and recurrent costs. When projected over time, whether as an assets lifespan or programme cycle, the costs presented here give a clearer indication of budgetary requirements in the short- and medium-term.

Significantly, the context in which SHN interventions are implemented requires serious consideration, and as stated previously these findings only provide an insight into the assortment of costs incurred across the SHN sphere and community of implementers. For instance, WFP costing analysis of school feeding programmes in Ghana, found that efficiencies can be made by improving staffing and office expenditure (WFP, 2013), while in Cambodia, WFP expenditure on direct food costs was between 38% and 39% depending on programme methodology (WFP, 2013a). This reflects favourably with the findings of 54% of the HGSF model implemented within the ESHI programme, possibly owing to the localised procurement modality. Consistencies with these findings is provided by Save the Children (2013), who when analysing SHN programmes – not inclusive of HGSF – identified direct government expenditure as 2%, the same as the ESHI programme.

Community contribution as understood through this exercise prevails at 14% of the total intervention cost. Throughout the process, communities presented a willingness to burden this cost in light of the value of such programmes. When considering the pro-poor origins of such social interventions and the current socioeconomic status of target groups, excess community costs could be easily incurred and counter-beneficial if left unmonitored.

There are significant differences in the types of cost associated with running the different components of a comprehensive SHN programme. WASH costs are often predominately fixed capital costs, whilst school feeding and deworming costs involve mainly recurring costs. Cost categories such as transport, storage, and monitoring and evaluation show the potential of cost savings for integrated programming. Making small programme changes to integrate these processes could save between 5-6% of total expenditure. When considering SHN programming on regional and national scales, these savings could be as significant as US$6.5 million for the SNNPR of Ethiopia alone.

Therefore, completed analysis does indicate that integrating even just three interventions into SHN programming has cost benefits and can be carried out efficiently. The addition of WASH and deworming programme components to school feeding only requires an additional budget increment of 25%. Such an additional cost stands to optimise the health and nutritional benefits of targeted school-age children.

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