

# Building a Stronger System for Tracking Nutrition Sensitive Spending: A methodology and estimate of global spending for nutrition sensitive foreign aid

*Scott B. Ickes, Rachel B. Trichler, Bradley C. Parks*

---

## **Abstract:**

There is growing awareness that the necessary solutions for improving nutrition outcomes are multi-sectoral. As such, investments are increasingly directed towards “nutrition sensitive” approaches that not only address an underlying or basic determinant of nutrition, but also seek to achieve an explicit nutrition goal or outcome. Understanding how and where official development assistance for nutrition is invested remains an important but complex challenge. Our objective was to develop a methodology for classifying and tracking nutrition sensitive official development assistance and to produce estimates of the amount of nutrition sensitive aid received by countries with a high burden of undernutrition. We analyzed all financial flows reported to the Organization for Economic Co-Operation and Development’s Development Assistance Committee Creditor Reporting Service in 2010 to estimate these investments. We assessed the relationships between national stunting prevalence, stunting burden, under-five mortality and the amount of nutrition specific and nutrition sensitive ODA. We estimate that, in 2010, a total of \$379.4 million (M) USD was committed to nutrition specific projects and programs, of which 25 designated beneficiaries accounted for nearly 85% (\$320 M). A total of \$1.79 billion (B) was committed to nutrition sensitive spending, of which the top 25 countries/regions accounted for \$1.4 B (82%). Nine categories of development activities accounted for 75% of nutrition sensitive spending, led by Reproductive Health Care (30.4%), Food Aid/Food Security Programs (14.1%), Emergency Food Aid (13.2%), and Basic Health Care (5.0%). Multivariate linear regression models indicate that the amount of nutrition sensitive ( $p=0.001$ ) and total nutrition ODA was significantly predicted by stunting prevalence ( $p = 0.001$ ). The size of the total population of stunted children significantly predicted the amount of nutrition specific ODA ( $p < 0.001$ ). A reliable estimate of nutrition spending is critical for effective planning by both donors and recipients, and a key for success as the global development community re-commits to a new round of goals to address the inter-related causes of undernutrition in low-income countries.


**Keywords:** Nutrition sensitive, multi-sectoral development, foreign aid, stunting

The views expressed in AidData Working Papers are those of the authors and should not be attributed to AidData, funders of AidData’s work, or to the institutions the authors represent.

# Building a Stronger System for Tracking Nutrition Sensitive Spending

---

## *Scott B. Ickes*

Correspondence to:  
sbickes@wm.edu 


Scott Ickes is a professor of international nutrition and epidemiology in the Department of Kinesiology and Health Sciences at the College of William and Mary. His research focuses on understanding the causes of poor nutrition, and in identifying and testing innovative methods for promoting maternal and child health. His past and current research projects have been located in Uganda, Malawi, and the Southeastern United States.

## *Rachel B. Trichler*

Correspondence to:  
rtrichler@aiddata.org 

Rachel Trichler is a Senior Program Manager and Monitoring and Evaluation Specialist at AidData. She oversees work with the Canadian Department of Foreign Affairs, Trade, and Development related to nutrition resource tracking, and provides leadership on monitoring and evaluation issues. Previously, Rachel supported monitoring and evaluation activities for the World Bank's Independent Evaluation Group, Social Impact, and the MCC.

## *Bradley C. Parks*

Correspondence to:  
bcpark@wm.edu 

Brad Parks is Co-Executive Director of AidData and Research Faculty at the College of William and Mary's Institute for the Theory and Practice of International Relations. He previously administered MCC's annual country selection process and managed anti-corruption and judicial reform programs in Indonesia and the Philippines. He has authored books and articles on aid allocation, aid effectiveness, and development theory and practice.

## Acknowledgments:

The authors wish to thank Taylor Hurst for her management of the data coding team at the College of William and Mary. We also thank Albert Decatur and Christian Peratsakis, for technical support on database development and management. We are indebted to Brian O'Donnell for substantial contributions to the initial methodology for this research. We thank our colleagues at the Government of Canada Department of Foreign Affairs, Trade, and Development (DFATD) Dr. Erin McLean, Elizabeth King, Paula Betuzzi for their contributions to the development of the methodology. Patrizia Fracassi, Secretariat of the Scaling Up Nutrition Movement provided helpful guidance in the development of the methodology and analytic strategy.


## Funding:

Funding for this work was provided through the “Scaling Up Nutrition (SUN) Resource Tracking” grant from the Government of Canada’s Department of Foreign Affairs, Trade, and Development (formerly Canadian International Development Agency) to AidData. Our colleagues at the Government of Canada Department of Foreign Affairs, Trade, and Development (DFATD) Dr. Erin McLean, Elizabeth King, Paula Betuzzi contributed to the development of the methodology for this study. The corresponding author had full access to all of the data in the study and had final responsibility to submit the manuscript for publication.

---

### ***AidData***

Correspondence to:

[info@aiddata.org](mailto:info@aiddata.org) 

[www.aiddata.org](http://www.aiddata.org) 

AidData – a joint venture of the College of William and Mary, Development Gateway and Brigham Young University – is a research and innovation lab that seeks to make development finance more transparent, accountable, and effective. Users can track over \$40 trillion in funding for development including remittances, foreign direct investment, aid, and most recently US private foundation flows all on a publicly accessible data portal on AidData.org. AidData’s work is made possible through funding from and partnerships with USAID, the World Bank, the Asian Development Bank, the African Development Bank, the Islamic Development Bank, the Open Aid Partnership, DFATD, the Hewlett Foundation, the Gates Foundation, Humanity United, and 20+ finance and planning ministries in Asia, Africa, and Latin America.

# Contents

Abstract.....	1
1. Introduction .....	5
2. Methods .....	6
2.1 Classification of the Category of Nutrition Impact .....	7
2.2 Step 1. Gather the Pool of Potentially nutrition Sensitive Project Records .....	7
2.3 Step 2. Apply AidData’s Double Blind and Arbitrated Activity Coded Scheme .....	7
2.4 Step 3. Identify Nutrition Sensitive Project Transactions Using Activity Codes .....	8
2.5 Step 4. Assign Nutrition Sensitive Sub-Classification and Calculate Weighted Commitment Amount .....	8
2.6 Step 5. Sum All Weighted Commitment Amounts to Estimate Category 2 Nutrition Sensitive Spending .....	9
2.7 Stunting Prevalence and Under-Five Mortality Estimates .....	9
3. Results .....	10
3.1 Category 1 Nutrition Spending .....	10
3.2 Category 2 Nutrition Spending .....	10
3.3 Predictions of Nutrition Spending .....	11
3.4 Sectoral Allocation of Nutrition Specific and Sensitive Spending .....	11
4. Discussion.....	13
5. Conclusion & Policy Implications .....	14
Appendix .....	15
References.....	23

# 1. Introduction

Improving nutrition may be the single most effective investment for saving child lives, with strong benefits to cost ratios that compete well with other investments in the global development agenda [1]. Effective interventions to reduce stunting and to promote healthy nutrition are well documented, and considerable progress has been made to improve the coordination of multi-sectoral efforts throughout the world, due to a series of technical conventions and the unprecedented Scaling Up Nutrition movement [2]. Considerable progress towards achieving nutrition-related millennium development goals (MDGs) has been made, with noteworthy advances in key focal countries. Chief among these achievements is a decline in the number of under-five deaths from 12 million in 1990 to 7.6 million in 2010 [3]. Over 95% of child deaths occur in 75 countries, and are almost all due to preventable causes for which effective interventions are available (WHO, 2015). As the deadline for the 2015 MDGs draws to a close, new global challenges have been set to achieve ambitious outcomes to improve nutrition and reduce mortality in poor countries. For example, the World Health Organization now aims to reduce by 40% the world's 171 million stunted children by 2025 [4].

With these nutrition specific goals and outcomes in view, direct nutrition interventions need to be liaised with nutrition-sensitive development actions to leverage new approaches that can address these more distal nutrition risk factors: health, family planning, water and sanitation, agriculture, and social safety nets [5-6].

The development community has recently applied a categorical approach to nutrition spending which broadly characterizes the level of nutrition determinants at which foreign aid is directed. “Category One” aid refers to investments or support to countries for programs or projects that deliver a “proven set” of effective interventions that are directly aimed at reducing undernutrition. Nutrition sensitive aid (“Category Two”) is that which is directed towards “interventions or programs that address the underlying determinants of fetal and child nutrition and development— food security, adequate care-giving resources at the maternal, household and community levels; and access to health services and a safe and hygienic environment—and that incorporates specific nutrition goals and actions [5].” Finally, “Category Three” spending addresses the remaining investments that contribute to nutrition outcomes with a wide range of activities with varying degrees of focus on nutrition outcomes [6]. Currently, only direct nutrition (“Category One”) projects can be tracked using the existing platform made possible by the Organization for Economic Co-Operation and Development’s Development Assistance Committee (OECD-DAC) reporting system for tracking official development assistance.

Thus, while substantial progress is needed to scale up and successfully implement novel approaches to improving nutrition, it is critical to understand how and where resources to develop and sustain these interventions are being spent, including at the level of the underlying and basic platforms that support nutrition actions.

This study builds on the definition of nutrition sensitive investments, programs and interventions to produce a global estimate of resources that have been committed to improving nutrition through multi-sectoral approaches that address underlying and basic determinants of nutrition. We developed and applied a novel methodology that tracks donor commitments for nutrition sensitive activity, globally and across development sectors, to understand the amount, location, and goals of nutrition sensitive development. We also examine how national and regional indicators of undernutrition influence nutrition investments.

## 2. Methods

The method for classifying and tracking nutrition sensitive aid flows was developed by AidData, in collaboration with nutrition advisors at the Government of Canada Department of Foreign Affairs and Development (DFATD) and colleagues within the Scaling Up Nutrition (SUN) Donor network. We identified four criteria necessary for a successful methodology. The tracking system needed to be able to 1) be standardized across donors, recipients, and sectors; 2) estimate the financial contribution of project components, rather than the project as a whole; 3) capture only nutrition sensitive commitments with sufficient granularity; and 4) extended to future tracking efforts.

Data source: We used the information that donors report to the Creditor Reporting System (CRS) of the OECD-DAC to initially filter all international commitments made in 2010, which was the most up-to-date data at the time of analysis [7]. The CRS is a transaction-level database, whereby donors may report a project as one or multiple entries. While the CRS includes transaction-level data on both commitments and disbursements, commitments are more systematically reported than disbursements. Donor reporting to the CRS includes: project descriptions, amounts, and the sector and purpose that the financial commitment supports. Prior to the present analysis, all other systematic efforts to track nutrition aid relied solely on purpose codes from the CRS database [8-10].

We used a purpose and activity-coding scheme developed by AidData to add granularity to the CRS data [11]. Trained analysts assigned one of approximately 200 possible purpose codes for each CRS record and then further represented the project's individual activities through assignment of as many of AidData's

544 activity codes as necessary [12]. Each project description was coded using a double-blind, arbitrated process whereby two analysts independently code each project and a third settles any disputes.

## 2.1 Classification of the Category for Nutrition Impact

We categorized the reported investments, using the following approach.

**Category 1 Nutrition Specific:** All financial commitments in the 2010 CRS database that were classified as purpose code “12240: Basic Nutrition” qualified as nutrition specific funding that provide direct nutrition in their approach. We compiled a database that summarized these commitments by amount in USD and the national or regional (multinational) recipient.

**Nutrition Sensitive:** To track resources for nutrition sensitive development assistance, we developed a novel approach that applies a multi-stage process. First, we gathered a pool of potentially nutrition sensitive project records using CRS purpose codes and a keyword search. Next, we applied AidData’s activity coding scheme to determine the project’s level of nutrition sensitivity. Finally, we weighted commitment amounts to determine the overall nutrition sensitive spending by donor and recipient country or region. These steps are expanded below.

## 2.2 Step 1. Gather the Pool of Potentially Nutrition Sensitive Project Records

We applied a two-pronged strategy of searching CRS purpose codes and nutrition relevant keywords to identify the universe of potentially nutrition sensitive projects. The list of relevant purpose codes and keywords was based on the updated version of the UNICEF framework of maternal and child undernutrition, published in the 2008 Lancet Series, and further informed through consultations with the Government of Canada’s DFATD [13]. All projects with at least one of the 32 relevant purpose codes (Supplementary Table 1) or nutrition relevant keywords (Supplemental Table 2) in the descriptive CRS information were included in the initial pool of potentially nutrition sensitive commitments. Using the 2010 database, 27,819 commitments met these inclusion criteria.

## 2.3 Step 2: Apply AidData’s Double Blind and Arbitrated Activity Coding Scheme

AidData double-blind activity coded and arbitrated the full corpus of potentially nutrition sensitive commitments. Coders were trained to apply the most specific activity codes possible to comprehensively

describe all project activities, and to avoid applying activity codes based on extraneous contextual information.

Within the CRS, donors often report multiple transactions with identical descriptive information, which may be due to multiple transactions for one project or a single program implemented in multiple countries. After detecting minor inconsistencies in some activity code assignments due to human coding variability, we undertook a final data quality assurance step to ensure that groups of matching transactions received an identical set of activity codes.

## 2.4 Step 3. Identify Nutrition Sensitive Project Transactions Using Activity Codes

Figure 1 provides a schematic of the method used for classifying CRS commitments as nutrition sensitive using each transaction's assigned set of activity codes. Any project transaction with at least one of the following six codes that represented direct nutrition activities qualified as "nutrition sensitive": basic nutrition, direct feeding programs, monitoring of nutrition status, provision of nutrients, nutrition and food hygiene education, and household food security. All transactions also underwent an additional manual mechanism for nutrition sensitive identification. During the activity coding process, coders immediately identified commitments as nutrition sensitive if they met one of the following criteria: 1) nutrition was the main or only stated objective or goal; 2) nutrition results or impact were explicit indicators of a project's success; or 3) the project explicitly cites improved nutrition outcomes or a functional equivalent, such as reducing undernutrition or malnutrition. This step was employed to ensure that obviously nutrition sensitive transactions were not excluded during the automated activity code-based analysis, but in fact it did not identify any nutrition sensitive transactions that were not also identified through the activity code-based analysis. Of all transactions that qualified as nutrition sensitive, only one quarter were identified through this manual mechanism.

## 2.5 Step 4. Assign Nutrition Sensitive Sub-Classification and Calculate Weighted Commitment Amount

There are varying levels of nutrition sensitivity among project transactions that include at least one direct nutrition code, or a potential nutrition code plus a keyword. To produce a more precise estimate of the nutrition sensitive commitment amount, a transaction's level of sensitivity was translated to a weight (100%, 75%, 50%, or 25%) that was multiplied by the record's total commitment amount to produce a "nutrition weighted" amount.



## 2.6: Step 5: Sum All Weighted Commitment Amounts to Estimate Category 2 Nutrition Sensitive Spending

The sum of all weighted commitment amounts from project transactions that qualified as nutrition sensitive yielded an estimate of Category 2 Nutrition Sensitive Spending.

Other activities were only considered nutrition sensitive in certain circumstances. Of 544 possible activity codes, 86 were selected as potentially nutrition sensitive. These potential nutrition codes were then categorized according to the general type of activity into the following domains: addressing inadequate health services; dietary insufficiencies; unhealthy household environments; gender inequalities; food security/agriculture/fisheries; improving dietary diversity through homestead food production; increasing household income (microcredit, social enterprise); and rural development. Records with one or more potential nutrition code were only determined to be nutrition sensitive if a nutrition relevant keyword was present. General nutrition keywords were eliminated to avoid references to nutrition as part of a broad strategy rather than specific activities; keywords for feeding activities were also added (See Supplemental Table 2).

## 2.7 Stunting prevalence and under-five mortality estimates

We used three separate multivariate linear regression models to assess the relationship between national stunting prevalence, total stunting burden, and under-five mortality rates and nutrition aid amounts. The three models examined the dependent variables of nutrition specific ODA, nutrition sensitive ODA, and total nutrition (nutrition sensitive plus nutrition specific) ODA, respectively. Individual country stunting prevalence and under-five mortality rates estimates were taken from UNData [14]. The pooled regional estimates of stunting and under-five mortality were taken from the 2010 values in the most recent global stunting estimation article [15]. Stunting prevalence was defined as the percent of children under-five with height-for-age Z scores 2 or more below the global reference median. Under-five mortality rate was defined as the number of children who die before age five per 1,000 live births. The regional prevalence for Sub-Saharan Africa was estimated by deriving the mean of the four African sub-region means, excluding North Africa (Eastern, Central, Southern, Western). For each model, we hypothesized that greater levels of poor nutrition and health indicators (e.g. higher stunting prevalence) would significantly predict the amount of nutrition-related ODA, since these indicators reflect chronic health conditions that would logically inform and drive nutrition-related ODA commitments.

## 3. Results

### 3.1: Category 1 Nutrition Specific Spending

A total of 125 countries received ODA for nutrition in 2010. Categorized by region, 20 were located in the Middle East/North Africa, 48 in Sub-Saharan Africa, 26 in Latin America/The Caribbean, 20 in South Asia, 11 in Europe/Central Asia, and six in East Asia/the Pacific.

Figures 2 and 3 present the top 50 country recipients for nutrition sensitive (category 2) spending, over the prevalence of stunting (height-for-age Z score < -2). In order to compare nutrition specific and sensitive commitments between countries, the included countries are identical for both figures.

A total of \$379.4 million (M) USD was committed to nutrition specific projects and programs. Of this amount, 25 designated beneficiaries (countries and regions) accounted for nearly 85% (\$320 M).

Figure 2 presents nutrition specific ODA to countries, excluding regions and unspecified bilateral commitments, over national stunting prevalence. There was a modest correlation ( $r^2 = 0.327$ ,  $p=0.0002$ ) of nutrition specific spending and national stunting prevalence.

### 3.2: Category 2 Nutrition Sensitive Spending

A total of \$1.79 billion (B) was committed to nutrition sensitive spending. Of this amount, the top 25 countries/regions accounted for \$1.4 B (82%). Eighteen of the top 25 country recipients of nutrition sensitive ODA had a total stunted population of over 1 million children. Nineteen of the top 25 recipients of nutrition sensitive spending had under-five child mortality rates of 70 deaths per 1,000 live births or higher. Unlike nutrition specific spending, Southeast Asian and Middle Eastern countries were leading recipients of nutrition sensitive ODA: six of the top 25 country recipients of nutrition sensitive commitments were from Southeast Asia, and two were from the Middle East (Afghanistan and Pakistan). Sixteen of the top 25 country recipients of nutrition sensitive ODA were from Sub-Saharan Africa. Figure 3 presents the top 50 recipient countries of nutrition sensitive spending over the prevalence of stunting (height-for-age Z score < -2). There was a modest correlation ( $r^2 = 0.4061$ ,  $p < 0.0001$ ) of nutrition sensitive spending and national stunting prevalence.

Table 1 summarizes the nutrition specific and nutrition sensitive ODA commitments that were specifically made at the regional (multi-country) level. For nutrition specific ODA, the leading recipient was the Sub-Saharan Africa region, which accounted for \$45.5 M (12%). Commitments to unspecified bilaterals recipients represented the second largest recipient of nutrition specific spending (\$44 M, 11%), and

constituted a diverse mix of global projects that support more than one region (e.g. support for scientific institutions in multiple regions pursuing nutrition research). Commitments made to Asia at the regional level accounted for \$25.5 M (6.4%) of nutrition specific spending. Excluding regional-level commitments, 18 of the top-25 country recipients of nutrition specific aid were from Sub-Saharan Africa. Twenty-one of the top-25 country recipients of nutrition specific aid had a stunting prevalence rate of over 30%, while nineteen had an under five mortality rate of over 70 deaths per 1,000 live births.

Unspecified bilateral nutrition sensitive commitments accounted for \$81.5M, or 2.7% of this spending category. Unlike nutrition specific spending, regional nutrition sensitive commitments were nearly equal for Sub-Saharan Africa and Asia, where the stunting prevalence is also equivalent. The difference in nutrition sensitive and nutrition specific ODA was most apparent for regional commitments to Africa (\$37.9 M versus 0.46 M) and Asia (\$28.0 M versus \$2.7M). Notably, central Asia receive no regional ODA for nutrition specific purposes, but \$1.6M for nutrition sensitive ODA.

### 3.3 Predictors of nutrition spending

Table 2-4 summarizes the multivariate regression models that assess the relationship between national/regional nutrition and health indicators and nutrition spending for 123 recipients of nutrition specific spending (excluding Samoa and Mayotte, where no anthropometric data is available). The model summarized in Table 2 indicates that the size of the total stunted population significantly predicts the nutrition specific ODA (b (95% CI)= 0.03 (0.02 – 0.036),  $p < 0.001$ ). Under-five mortality was marginally significant as a predictor of nutrition specific ODA (b (95% CI) = 2,071.3 (-49.9 – 4192.5),  $p < 0.001$ )

### 3.4 Sectoral Allocation of Nutrition Specific and Sensitive Spending

While we drew all nutrition specific spending from one purpose code (CRS code 12240), nutrition sensitive spending originated from more than 80 different donor-reported dominant purpose codes. Of these, only nine purpose codes accounted for 75% of spending: Reproductive Health Care (30.4%), Food Aid/Food Security Programs (14.1%), Emergency Food Aid (13.2%), Basic Health Care (5%), Material Relief (3.2%), STD Control, Including HIV/AIDs (3%), Urban Development (2.8%), Agricultural Development (2.6%), and Agricultural Research (2.5%).

The SUN Movement and the research community have identified three categories of nutrition sensitive interventions that seek to address the key determinants of adequate nutrition and development: increasing food availability, food accessibility, and food security; improving the care environment, including gender roles and women's empowerment; and improving public health, water, and sanitation [6,16,17]. Calculations of donor spending in these areas required 1) initial identification of nutrition

projects and 2) further sub-classification, both of which are challenging due to the lack of detail in donor-reported information. Funding for reproductive health care, basic health care, and urban development (all major contributors to nutrition sensitive spending) may include projects with components that simultaneously increase food availability, improve the care environment, and improve public health – and many projects that do none of the above. Thus, the use of a project’s single dominant purpose to complete this exercise both overestimates spending from certain sectors (e.g. basic health, food aid, water and sanitation) and completely ignores it in others (e.g. rural and urban development, agriculture, and social enterprises).

To calculate the amount of nutrition sensitive spending allocated to these three key areas, we mapped each of the 92 codes that identified a potential nutrition activity to one of the three areas. The use of activity codes rather than dominant purpose allows one project to contribute funding to any or all three areas, but no double counting occurs. For each project record, all activity codes were assigned an equal proportion of the total commitment amount. For example, for a transaction with a total value of \$1 million and 10 different activities, we assumed that each activity code received one-tenth of the total funding amount, or \$100,000.

Figure 4 presents the sum of all funded nutrition activities mapped to each of the three categories and their share of the total funding. While other scholars apply these three categories to nutrition sensitive funding, we found it useful to identify the distribution for both nutrition specific and sensitive spending [6,16,17]. The relative size of the two pie charts reflects the relative size of the two total spending amounts. Note that the total spending amount is less than the totals presented earlier in this section, as many nutrition projects also include activities that are not nutrition-related and were not included in the total sum. As such, the relative share of funding in each of the three areas may be more significant than the actual amount. Further, since it is impossible to determine the actual amount committed to each of a project’s activities from reported information, we relied on a working assumption of equal allocation of funding across all activities.

Commitments directed towards food availability and security constituted the greatest proportion of spending by key focal area, accounting for over half of all nutrition specific (59%) and sensitive spending (53%) spending.

Funding to improve the care environment accounted for only 16% of nutrition specific and 11% of nutrition sensitive spending. While this relative distribution of resources is likely accurate in a broad sense, it is perhaps also a reflection of the difficulty of identifying donor activities that improve the care environment.

Food aid and water and sanitation activities are often more discrete and measurable than efforts to address women's empowerment or the household environment.

## 4. Discussion

Nutrition sensitive interventions have great potential to accelerate progress in the reduction of maternal and child undernutrition [6]. It is clear that while the potential impact of nutrition sensitive interventions may vary by approach, these interventions will be more effective at improving nutrition if measurable nutrition goals and outcomes are articulated from the outset. The recent promotion of this concept will undoubtedly affect the way large-scale development projects are conceived and reported, and therefore it is critical that the global development community can accurately measure and track spending to improve nutrition across these categories.

This study represents a first-of-its kind effort to systematically classify and enumerate foreign aid flows for nutrition. Our findings, which rely on global spending data from 2010, indicate that, even before the publication of the 2013 Lancet Series on Maternal and Child, nutrition sensitive international aid flows far exceeded nutrition specific international aid flows. We hope that this work will provide a starting point for future discussions about how to define, classify, and track aid directed at improving nutrition outcomes.

Our results indicate the amount of nutrition-related spending is significantly predicted by the prevalence of stunting within countries and regions. The total burden of chronic undernutrition in countries and regions does not significantly predict nutrition aid amounts. Using visualizations and ranked comparisons, we identify the leading recipients of nutrition specific and nutrition sensitive aid.

Our methodology is limited in several ways, most of which relate to the current international system for tracking foreign aid for all purposes. First, donors vary widely in the amount of information provided to the Creditor Reporting System. Therefore, the classification process for nutrition sensitive commitments favors donors and projects that provide more information. It is possible that donors with more specialized nutrition capacity will be better at reporting commitments in ways that favor nutrition sensitive classification. It is also likely that these same donors are probably more engaged in nutrition sensitive activities given their stronger nutrition capacity. Second, some activities are easier to classify and more obviously relevant to nutrition goals and outcomes than others. This may introduce classification bias, whereby more obvious commitments are preferentially selected over others, even if both projects meet the definition of nutrition sensitive. Third, a large proportion of international aid for nutrition is committed at regional, multi-regional, and global levels, which makes predictions of aid targeting less precise as the

distribution of aid within regions will almost certainly be nonrandom. We cannot precisely understand aid allocation patterns when aid amounts are not disaggregated by country.

## **5. Conclusion and Policy Implications**

Tracking nutrition aid that is both specific to nutrition and sensitive to addressing the underlying determinants of nutrition is critical for achieving development goals. Each member country in the Scaling Up Nutrition movement has developed or will develop a “costed national plan” that itemizes necessary funds within strategic spending categories that are required over the next five-year period to achieve national nutrition goals. Presently, no consistently applied global method exists to capture all of the nutrition relevant aid that goes from donor countries to recipient countries. Nor is there a widely accepted standard for measuring nutrition relevant expenditure by developing country governments themselves. Our methodology provides a reliable process for estimating and comparing nutrition-related aid by different spending categories over time, and between countries.

Even development efforts that are specifically focused on nutrition are largely fragmented, and coordination across the relevant sectors is poor [18]. Providing a reliable estimate of nutrition spending is therefore critical for future planning by recipient countries and future targeting by donors as we aim towards the next set of global development goals to reduce the many inter-related causes of undernutrition in low-income countries.

## Appendix

**Table 1. Nutrition specific and nutrition sensitive spending for regional and bilateral unspecified recipients**

Recipient		Nutrition Specific Spending (2010 USD)	Nutrition Sensitive Spending (2010 USD)	Stunting Prevalence (height-for-age Z score < -2)	Total Stunted Population
Bilateral Unspecified		\$43,978,180	\$81,505,164	-	-
Region	South of Sahara	\$45,548,847	\$38,733,946	39.0	63,441,300
	Africa	\$459,593	\$37,877,615	38.2	62,139,940
	Asia	\$2,652,077	\$28,000,691	27.6	99,326,604
	North of Sahara	\$35,517	\$1,770,804	21.9	5,200,000
	Central Asia	\$0	\$1,624,472	36.4	69,000,000
	South & Central Asia	\$82,657	\$1,494,815	31.6	41,700,000
	Oceania	\$3,633	\$255,148	37.8	500,000
	Europe	\$42,746	\$0	12.0	4,748,400

**Table 2. Multivariate regression model of national demographic predictors of nutrition specific spending (n=123 countries)**

	Coefficient	Standard Error	t	P >  t	95% CI
Stunting prevalence	5119.9	3693.9	1.39	0.168	-2194 – 12,434
Total stunted population	0.0300	0.003	10.12	0.000	0.024 – 0.036
Under five mortality	2071.31	1071.3	1.93	0.056	-49.9 – 4192.5

**Table 3. Multivariate regression model of national demographic predictors of nutrition sensitive spending (n=123 countries)**

	<b>Coefficient</b>	<b>Standard Error</b>	<b>t</b>	<b>P &gt;  t </b>	<b>95% CI</b>
Stunting prevalence	823229.4	238,932.8	3.45	0.001	350,118 – 1,296,340
Total stunted population	0.273	0.192	1.42	0.158	-0.11 – 0.65
Under five mortality	508.2	69,291.3	0.01	0.994	-136,696 – 137,712

*The model summarized in Table 3 indicates that the prevalence of stunting (b (95% CI)= 823,229.4 (350,118 - 1,296,340), p = 0.001) and under-five mortality (b (95% CI) = 508.2 (-136,696 – 137,712), p=0.01) significant predict the amount of nutrition sensitive ODA.*

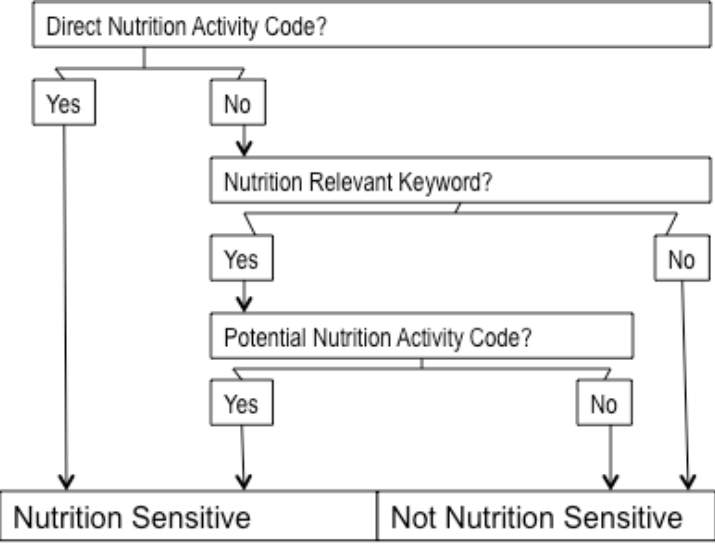
**Table 4. Multivariate regression model of national demographic predictors of total nutrition spending (n=123 countries)**

	<b>Coefficient</b>	<b>Standard Error</b>	<b>t</b>	<b>P &gt;  t </b>	<b>95% CI</b>
Stunting prevalence	828,349	239,863.7	3.45	0.001	353,395 – 1,303,304
Total stunted population	0.303	0.193	1.57	0.119	-0.079 – 0.68
Under five mortality	2,579.5	69561.3	0.04	0.970	-135,158 – 140,317

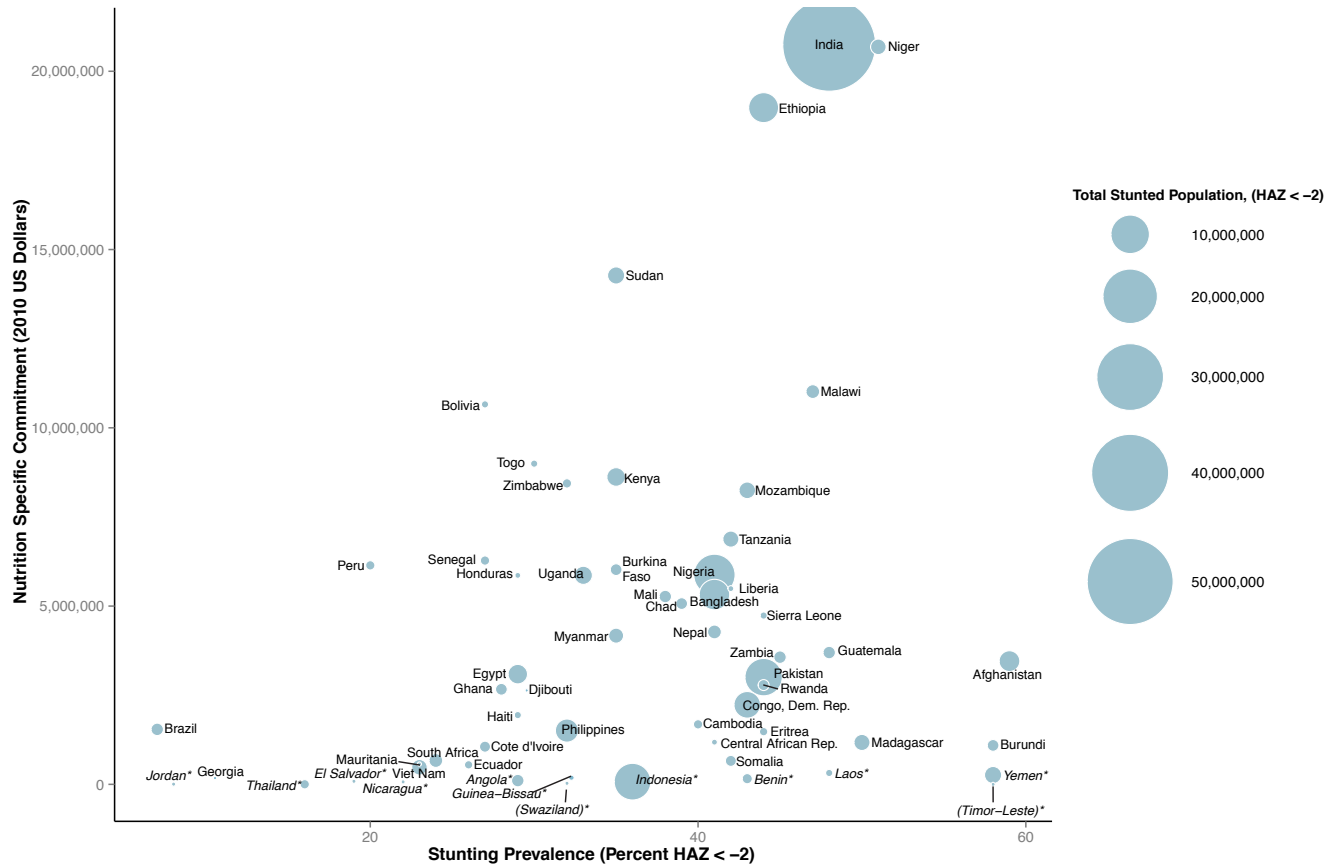
*National stunting prevalence was also a predictor of total nutrition related ODA (Table 4), (b (95% CI) = 828,349 (-353,395 – 1,303,304), p=0.001).*



**Figure 1. Identification of Nutrition Sensitive Commitments Using OECD CRS Data and AidData's Activity Coding Scheme**

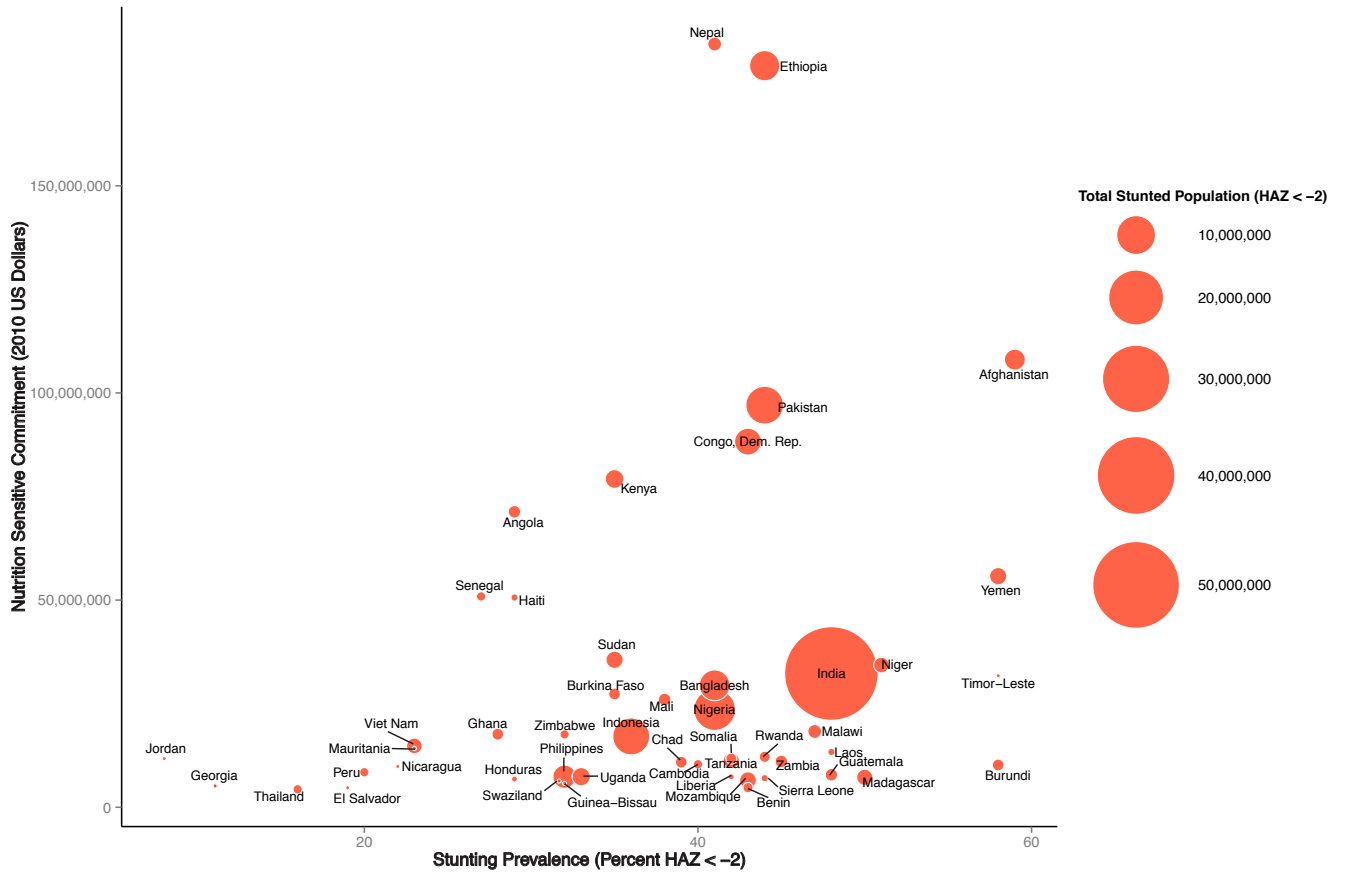


**Figure 2. Category 1 - Global totals of 2010 nutrition specific spending by recipient country, stunting prevalence, and total stunted population**



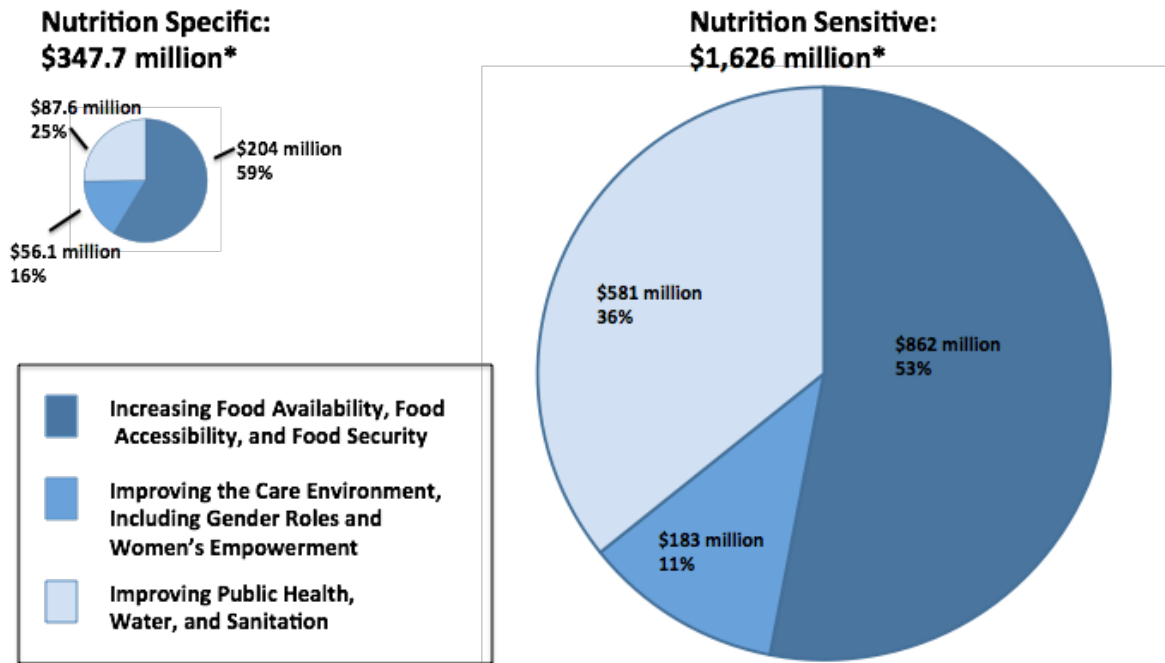
The size of each country plot represents the total number of stunted children, with benchmarks illustrated in the legend on the right of the figure. The two countries in parentheses had no nutrition specific (category one) commitments. Twelve of the top 50 country recipients for nutrition sensitive ODA were not in the top 50 recipients of nutrition specific ODA. Including these countries in Figure 2 displaced the following countries that ranked in the lower portion of category one commitments (in order of highest spending): Bolivia, Togo, Myanmar, Egypt, Djibouti, Brazil, Eritrea, Central African Republic, Cote d'Ivoire, Mayotte, South Africa, Ecuador, West Bank and Gaza Strip. The countries that were not in Category one top 50 but were included because they ranked in the top 50 of category 2 commitments (in order of highest spending) were: Laos, Yemen, Benin, Angola, El Salvador, Indonesia, Nicaragua, Guinea-Bissau, Jordan, Thailand, Timor-Leste (\$0), Swaziland (\$0).

**Figure 3: Category 2 - Global totals of 2010 nutrition sensitive spending by recipient, stunting prevalence, and stunted population**



*The size of each country plot represents the total number of stunted children, with benchmarks illustrated in the legend on the right of the figure*

**Figure 4. Share of Nutrition Specific and Sensitive Spending Allocated to 3 Key Categories of Underlying Determinants of Nutrition and Development**



*Total spending differs from Category 1 and Category 2 overall estimates. See text for explanation.*

**Supplemental Table 1: OECD-DAC CRS Purpose Codes used to identify universe of potentially nutrition sensitive projects**

<p><b>Security and Agriculture:</b></p> <p><i>Availability</i></p> <p>31110 agricultural policy and administrative management;</p> <p>31120 agricultural development;</p> <p>31150 agricultural inputs;</p> <p>31161 food crop production;</p> <p>31163 livestock;</p> <p>31166 agricultural extension;</p> <p>31181 agricultural education/training;</p> <p>31182 agricultural research;</p> <p>31191 agricultural services;</p> <p>31193 agricultural financial services;</p> <p>31194 agricultural co-operatives;</p> <p>31310 fishing policy and administrative management;</p> <p>31320 fishery development;</p> <p>31381 fishery education and training</p> <p>43040 rural development</p> <p><i>Accessibility</i></p> <p>16010 social welfare services;</p> <p>16011 social protection;</p> <p>52010 food aid/food security programs;</p> <p>72040 humanitarian/emergency relief</p>	<p><b>Health and Water and Sanitation</b></p> <p><i>Public Health (including reproductive health)</i></p> <p>12110 health policy and administrative management;</p> <p>12220 basic health care;</p> <p>12250 infectious disease control;</p> <p>12261 health education;</p> <p>12281 health personnel development;</p> <p>13020 reproductive health care;</p> <p>13022 maternal health including neonatal health</p> <p><i>Sanitation</i></p> <p>14030 basic drinking water supply and sanitation;</p> <p>14032 basic sanitation</p> <p><i>Drinking Water</i></p> <p>14030 basic drinking water supply and basic sanitation;</p> <p>14031 basic drinking water supply</p>
	<p><b>Care Environment</b></p> <p><i>Gender Empowerment</i></p> <p>15170 women's equality organizations and institutions</p>
	<p><b>Other</b></p> <p>51010 general budget support</p>

*AidData developed a list of nutrition-relevant purpose codes to filter all 2010 projects in the OECD-DAC CRS database. The justification for the inclusion of purpose codes on this list was based on the UNICEF framework, and updated in the 2008 lancet Series and through consultations among AidData, officials from Foreign Affairs, Trade and Development Canada, and their donor counterparts. A total of 31 purpose codes from the following categories were selected to build the pool of potentially nutrition sensitive projects: increasing food availability, increasing food accessibility, improving public health, water, and sanitation, improving the care environment and gender roles/empowerment of women, and general budget support. General budget support was included as much of the "nutrition governance" work that occurs under the aegis of the Scaling Up Nutrition Movement is given to recipient countries in this spending category.*

**Supplemental Table 2: Nutrition relevant keywords used to identify nutrition sensitive projects**

<p>Nutrition Relevant Keywords Used to Identify Universe of Potentially Nutrition Sensitive Projects (See Step 1)</p>	<p>aflatoxin; biofortification; breastfeeding; cash transfer; CMAM; community management of acute malnutrition; deworming; diarrheal disease; diet; dietary diversification; enteropathy; feeding; food intake; food security; food subsidy; food voucher; fortification; GAM; global acute malnutrition; garden; gastrointestinal illness; global nutrition coordination; growth monitoring; growth monitoring and promotion; handwashing; helminth; hunger; hygiene; IUGR; intrauterine growth restriction; iodine; iron-folic acid; iron folic acid; low birthweight; MAM; mineral; moderate acute malnutrition; malnutrition; micronutrient; nutrition; nutrition education; ready to use therapeutic food; ready-to-use therapeutic food; ready-to-use-therapeutic-food; RUTF; SAM; severe acute malnutrition; Scaling Up Nutrition; stunting; supplement; supplementation; under nutrition; undernutrition; under-nutrition; under weight ; underweight; under-weight; vitamin; wasting; zinc</p>
<p>Nutrition Relevant Keywords Used with Activity Codes to Identify Nutrition Sensitive Project Transactions (See Step 3.2)</p>	<p>aflatoxin; biofortification; breastfeeding; child feeding; CMAM; community management of acute malnutrition; deworming; diarrheal disease; diet; dietary diversification; direct feeding; enteropathy; feeding program; feeding programme food intake; fortification; GAM; global acute malnutrition; garden; gastrointestinal illness; global nutrition coordination; growth monitoring; growth monitoring and promotion; handwashing; helminth; IUGR; intrauterine growth restriction; iodine; iron-folic acid; iron folic acid; low birthweight; maternal feeding; MAM; moderate acute malnutrition; malnutrition; micronutrient; nutrition education; ready to use therapeutic food; ready-to-use therapeutic food; ready-to-use-therapeutic-food; RUTF; SAM; severe acute malnutrition; Scaling Up Nutrition; school feeding; stunting; supplementation; under nutrition; undernutrition; under-nutrition; under weight ; underweight; under-weight; vitamin; wasting; zinc</p>

*Given that the OECD-DAC CRS Purpose Code list was not exhaustive of all sectors and investments that could be nutrition sensitive, a keyword list was used to identify projects that had a reasonable likelihood of being classified as nutrition sensitive but fell outside of the selected list of purpose codes. Any additional projects identified through the keyword search were added to the existing pool of projects formed with the selected purpose codes. For all 2010 projects, the project titles, short descriptions, and long descriptions were queried for the keywords in the first row of the table below.*

*Records with one or more potential nutrition activity code were only determined to be nutrition sensitive if a nutrition relevant keyword was also present. General nutrition keywords were eliminated to avoid references to nutrition as part of a broad strategy rather than specific activities and keywords for feeding activities were also added.*

## References

- Action Against Hunger. (2013). *Aid for Nutrition: are we on track to meet the needs?* Action Against Hunger. London, UK.
- AidData. AidDataBeta [Internet]. 2015 [Updated January 5 2015; cited 2013 June 1]  
Available from [http://aiddata.org/sites/default/files/aiddata\\_coding\\_scheme\\_0.pdf](http://aiddata.org/sites/default/files/aiddata_coding_scheme_0.pdf)
- Black RE, Allen LH, Bhutta ZA, et al (2008). Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet* 2008; 371 (9608): 243-360.
- de Onis M, Dewey KG, Borghi E, et al. The World Health Organization's global target for reducing childhood stunting by 2025: rationale and proposed actions. *Matern and Child Nutr* 2014; 9 Suppl (2):6-26.
- de Onis M, Blossner M, and Borghi E. Prevalence and trends of stunting among pre school children, 1990–2020. *Public Health Nutrition* 2012; 15(1): 142-148.
- Development Initiatives. (2013) *The aid financing landscape for nutrition*. Development Initiatives. Wells, UK.
- Haddad L, Isenman P. Which aid spending categories have the greatest untapped potential to support the reduction of undernutrition? Some ideas on moving forward. *Food and Nutrition Bulletin* 2014; 35(2): 266-276.
- Hoddinott, J., Alderman, H., Behrman, J.R., Haddad, L., & Horton, S. The economic rationale for investing in stunting reduction. *Maternal & Child Nutrition* 2013; 9 (S2), 69-82.
- Morris S, Cogill B, & Uauy R. Effective international action against undernutrition: why has it proven so difficult and what can be done to accelerate progress? *Lancet* 2008; 371(9612): 608-621.
- Nabarro D. Global child and maternal nutrition--the SUN rises. *Lancet* 2013; 382 (9893): 666-667.

Organisation for Economic Cooperation and Development (OECD). OECDStatExtracts [Internet] 2015 [Cited June 2013]. Available at <http://stats.oecd.org/>

Pelletier D, Menon P, Ngo T, Frongillo E, Frongillo D. The nutrition policy process: the role of strategic capacity in advancing national nutrition agendas. *Food Nutr Bull* 2011; 32(2 Suppl). S59-S69.

Ruel M, & Alderman H. Maternal and Child Nutrition Study Group. Nutrition-sensitive interventions and programs: how can they help accelerate progress in improving maternal and child nutrition? *Lancet* 2013; 382(9891): 536-551.

Scaling Up Nutrition. (2011) Progress report from countries and their partners in the Movement to Scale Up Nutrition. UN, New York.

Shekar M, Ruel-Bergeron J, Herforth A. (2013) Improving nutrition through multisectoral approaches. International Bank for Reconstruction and Development, International Development Association of the World Bank, Washington, DC.

Tierney M, Nielson D, Hawkins D, Roberts J, Findley M, Powers R, Parks B, Wilson S, Hicks R. More dollars than sense: refining our knowledge of development finance using AidData. *World Development* 2011; 39(11): 1891-1906.

United Nations Statistics Division (UN). UN Data [Internet]. 2015 [Updated January 5 2015; cited 2014 15 Dec]. Available from <http://data.un.org/>

WHO. Countdown to 2015: building a future for women and children: the 2012 Report. WHO and UNICEF, Washington DC; 2012