Nutrition Situation in Senegal

Marc Nene
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Analysis & Perspective: 15 Years of Experience in the Development of Nutrition Policy in Senegal
This report was written by Marc Nene, Ph.D. Candidate, Tufts University Friedman School of Nutrition Science and Policy, with support from Andrea L. Spray (Consultant).

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The government of Senegal, through the Cellule de Lutte contre la Malnutrition (Nutrition Coordination Unit) (CLM) in the Prime Minister’s Office is embarking on the development of a new Plan Stratégique Multisectoriel de Nutrition (Multisectoral Strategic Nutrition Plan) (PSMN), which will have two broad focus areas: (1) expanding and improving nutrition services; and (2) a reform agenda for the sector. The reform agenda will include policy reorientation, governance, and financing of the PSMN. The PSMN will discuss the framework and timeline for the development of a nutrition financing strategy, which will require specific analysis of the sector spending and financial basis, linking it to the coverage and quality of nutrition services.

Senegal is known for having one of the most effective and far-reaching nutrition service delivery systems in Africa. Chronic malnutrition has dropped to less than 20 percent, one of the lowest in continental Sub-Saharan Africa. Government ownership of the nutrition program has grown from US$0.3 million a year in 2002 to US$5.7 million a year in 2015, increasing from approximately 0.02 percent to 0.12 percent of the national budget. Yet, these developments have not led to enhanced visibility of nutrition-sensitive interventions in relevant sectors such as agriculture, education, water and sanitation, social protection, and health. The absence of nutrition-sensitive interventions in the relevant sectors, combined with the recent series of external shocks, has favored continued fragmentation of approaches, discourse, and interventions that address nutrition. In addition, there is no overall framework for investment decision making around nutrition, which puts achievements made to date in jeopardy. Meanwhile, nutrition indicators are stagnating and other issues with major implications (such as low birth weight, iron deficiency anemia, maternal undernutrition, and acute malnutrition) have received little or no attention.

A review of policy effectiveness can help raise the importance of these issues, including household and community resilience to food and nutrition insecurity shocks, as a new priority in nutrition policy development. This series of analytical and advisory activities, collectively entitled *Analysis & Perspective: 15 Years of Experience in the Development of Nutrition Policy in Senegal* ("the series"), aims to support the government of Senegal in providing policy and strategic leadership for nutrition. Further, the series will inform an investment case for nutrition (*The Case for Investment in Nutrition in Senegal*) that will: (1) rationalize the use of resources for cost-effective interventions; (2) mobilize actors and resources; (3) strengthen the visibility of nutrition interventions in different sectors; and (4) favor synergy of interventions and investments.

The series was produced with guidance from a task force of development partner organizations under the leadership of the World Bank, and in close collaboration with the CLM. The task force comprised representatives from the following organizations: Government of Canada, REACH, UNICEF and the World Bank.
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An analysis of the nutritional status of key demographic groups in Senegal, including the geographic and sociodemographic inequalities in nutrition outcomes and their determinants.

An historical analysis of the nutrition policy landscape in Senegal, including the evolution of nutrition policies and institutions and their respective implications for programming and prioritization of interventions.

An analysis of the policy and political levers that can be used in Senegal to foster government leadership and galvanize the intersectoral coordination needed to mainstream nutrition into government policies and programs, and effectively, efficiently, and sustainably deliver nutrition interventions.

An analysis of the allocated funding to nutrition interventions in Senegal from 2016 to 2019, estimates of budgetary capacity for financing nutrition by government, and estimated costs for selected high-impact interventions.

An analysis of the organizational and institutional capacities for addressing nutrition in Senegal, covering the CLM, key ministries, and other stakeholders contributing to improvements in nutrition at the central, regional, and local levels.

Analysis of the relative costs and effectiveness of alternative scenarios for scaling up nutrition interventions in Senegal over the five years covering the PSMN.

Analysis of the potential risks to the scale-up of nutrition in Senegal, their likelihood of occurrence, potential impact, and potential mitigation measures.

The World Bank Independent Evaluation Group Project Performance Assessment Report, which evaluates the extent to which World Bank operations supporting nutrition in Senegal from 2002–14 achieved their intended outcomes and draws lessons to inform future investments.
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<td>CLM</td>
<td>Nutrition Coordination Unit</td>
<td>CLM</td>
<td>Cellule de Lutte contre la Malnutrition</td>
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<td>DBM</td>
<td>Double Burden of Malnutrition</td>
<td>DFM</td>
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<tr>
<td>DHS</td>
<td>Demographic and Health Surveys</td>
<td>EDS</td>
<td>Enquête sur la Démographie et la Santé</td>
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<td>DPNDN</td>
<td>National Policy for the Development of Nutrition</td>
<td>DPNDN</td>
<td>Document de Politique National de Développement de la Nutrition</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
<td>PIB</td>
<td>Produit Intérieur Brut</td>
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<td>MICS</td>
<td>Multiple Indicators Cluster Survey</td>
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<td>NCD</td>
<td>Noncommunicable Disease</td>
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Unless otherwise indicated, child nutrition indicators referenced in this report are taken from the UNICEF-WHO-World Bank Joint Child Malnutrition Estimates¹.
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The government of Senegal’s engagement in the nutrition sector has steadily increased over the past two decades, with the result that the rate of child stunting, in particular, has improved dramatically. The prevalence of under-five stunting has dropped to less than 20 percent, one of the lowest prevalence rates in Sub-Saharan Africa. The objective of this report is to support the government of Senegal in the development of its Plan Stratégique Multisectoriel de la Nutrition (Multisectoral Strategic Nutrition Plan) (PSMN) by providing a detailed analysis of the nutritional status of children under five and women of reproductive age. More specifically, the report aims to describe the geographic and sociodemographic inequalities of various forms of malnutrition in Senegal and their determinants.

Since 2005, various shocks in Senegal, including the 2008 global food, fuel, and financial crises, and a series of droughts, have contributed to uneven economic performance marked by poor economic growth. There are marked regional disparities in the trend and a prevalence of poverty. The poverty headcount has declined in the western and northern regions of the country and in the central region of Diourbel, while simultaneously increasing in some regions in the south and east. The result is a de facto divide in poverty between the north and the south.

As with economic performance, the prevalence of child stunting evolved in two major phases, with a steep drop followed by recent stagnation. The prevalence of child stunting in Senegal is much lower than that observed in other countries with the same level of income. However, progress against other forms of malnutrition are mixed. The prevalence of under-five wasting remained virtually stagnant between 2000 and 2012–13. With over one-fifth of women of reproductive age underweight, Senegal has the fifth highest prevalence in Sub-Saharan Africa. With nearly two-thirds of children under five suffering from anemia, Senegal ranks in the middle of countries in Sub-Saharan Africa for under five anemia. Senegal ranks particularly poorly in Sub-Saharan Africa in the prevalence of anemia among women of reproductive age. However, the prevalence of all forms of anemia among both children ages 6 to 59 months and women ages 15 to 49 years has been decreasing steadily since 2005.

While its nutrition profile is still dominated by undernutrition issues, Senegal is in the midst of a nutrition transition and increasingly facing the double burden
of malnutrition (DBM), the coexistence of both under-nutrition and overnutrition. Over one-fifth of women ages 15 to 49 years were estimated to be overweight or obese; the prevalence of overweight or obesity among women of reproductive age in Senegal is slightly higher than would be expected at its income level. However, the proportion of children under five who are overweight or obese has declined.

As with poverty incidence, regional disparities in child stunting show a north-south divide, with the regions in the north and west exhibiting much lower prevalence rates than the regions in the center and the south. This north-south divide in child stunting has persisted for the past decade and has increased in recent years. Although almost all sociodemographic groups shared in the reduction in child stunting between 2000 and 2005, urban areas, male children, and the wealthiest socioeconomic groups benefited most.

There are important regional disparities in the prevalence of child wasting as well. However, the regions of Saint-Louis and Louga, which have some of the lowest prevalence rates of poverty and child stunting have, along with the region of Tambacounda, consistently exhibited the highest prevalence rates of child wasting. Anemia among women of reproductive age remains a severe public health problem in all regions of Senegal despite improvement in some regions between 2005 and 2010. Therefore, one of the key characteristics of nutrition outcomes in Senegal is their marked heterogeneity across regions.
In Senegal, the government’s engagement in the nutrition sector and the fight against malnutrition have steadily increased over the past two decades, translating into, among other things, (1) the establishment in 2001 of the Cellule de Lutte contre la Malnutrition (Nutrition Coordination Unit) (CLM) and its Bureau Exécutif National (National Executive Bureau); (2) an increase in the government’s budget allocation to nutrition from an estimated US$0.3 million per year in 2002 to US$5.7 million per year in 2015, increasing from approximately 0.02 percent to 0.12 percent of the national budget; and (3) the scaling up of community-based nutrition interventions. Nutrition indicators improved in general as a result, and child stunting, in particular, dropped to less than 20 percent, one of the lowest prevalence rates in Sub-Saharan Africa.

However, these developments have not been accompanied by enhanced visibility of nutrition in sectors such as agriculture, education, social protection, and water and sanitation. This situation, compounded by the recent series of economic and climatic shocks, has favored an ad hoc response to food and nutrition insecurity in the country and perpetuated a fragmentation of approaches, discourse, and interventions. Moreover, several other nutrition problems with major implications, such as low birth weight, iron deficiency anemia, maternal undernutrition, and acute malnutrition, have received little or no attention, seriously threatening to reverse the gains achieved over the past several decades in the fight against malnutrition.

Recognizing the need to strengthen the multisectoral approach to malnutrition in order to boost and sustain the improvement in the nutritional status of its communities, the government of Senegal joined the Scaling Up Nutrition (SUN)\(^2\) Movement in 2011 and adopted the Renewed Efforts Against Child Hunger and undernutrition (REACH)\(^3\) approach in 2014. Furthermore, the government of Senegal has adopted a new nutrition policy, Document de Politique National de Développement de la Nutrition (National Policy for the Development of Nutrition) (DPNDN), for the period from 2015 to 2025 and has embarked on creating a multisectoral nutrition strategy. The Plan Stratégique Multisectoriel de Nutrition (Multisectoral Nutrition Strategic Plan) (PSMN) will incorporate a sectoral reform program that aims to expand the coverage of nutrition services and improve their quality and scale up pro-nutrition sector interventions with proven impact.
Objective of the Report

The objective of this report is to support the government of Senegal in the development of the PSMN by providing a detailed analysis of the nutritional status of key target groups, notably children under five and women of reproductive age. More specifically, the current report seeks to highlight the main geographic and sociodemographic inequalities in nutrition in Senegal to enable more equity-focused policymaking and programming and accelerate progress toward internationally agreed objectives such as the World Health Assembly (WHA) 2025 nutrition goals.4

Country Context

Senegal’s economy rebounded in 1995 and grew steadily until 2005 before slowing down. After a devaluation of its currency in 1994, and thanks to a series of structural reforms and better public finance management that boosted the export of key commodities such as groundnuts and phosphate, Senegal’s gross domestic product (GDP) grew on average by 4.4 percent each year between 1995 and 2005, well above its average annual population growth over the same period and translating into an annual average per capita GDP growth rate of 1.8 percent (World Bank 2015). Since 2005, various shocks, including the 2008 global food, fuel, and financial crises and a series of droughts in 2006, 2007, and 2011 (WFP 2014; World Bank 2015), have, among other factors, led to uneven economic performance marked by an annual average GDP growth of 3.2 percent, barely enough to keep up with population growth and leading to a virtual stagnation of per capita GDP growth, which registered negative values in 2006, 2009, and 2011.5

Senegal’s population grew at a fast pace between 2002 and 2013, driven mainly by population growth in urban areas and the western and central regions. Between the two most recent censuses of 2002 and 2013, the population grew by nearly 50 percent or an annual average growth of 2.5 percent (ANSD 2014). The estimated 3.5 percent annual average population growth in urban areas over the same period was twice as high as that estimated in rural areas, probably reflecting in part the massive, well-documented rural exodus (Gueye, Fall, and Tall 2015). Furthermore, the population is unevenly distributed among the regions of the country. Indeed, in 2013, as shown in map 1, the western regions of Dakar and Thies and the central region of Diourbel, taken together, are home to nearly half the country’s total population.

Following the trend of the country’s economic performance from 2000 to 2011, the poverty headcount dropped substantially between 2001 and 2005, before virtually stagnating between 2005 and 2011. The poverty headcount, based on the national poverty line, decreased from 55.2 percent in 2001, to 48.3 percent in 2006, and then to 46.7 percent in 2011 (ANSD 2013). Poverty reduction during the 2000s was mainly an urban phenomenon, notably during the first half of the decade, with the region of Dakar experiencing the largest reduction from 38 percent in 2001 to 28 percent in 2006. In 2011, as a result of a more modest reduction in the poverty headcount in rural areas over the same period, from 65 percent in 2001 to 59 percent in 2006, and a general stagnation of poverty across the board in the second half of the 2000s, the prevalence of poverty in Dakar is nearly half the prevalence observed in rural areas (ANSD 2014).

Map 1 shows the regional disparities in the prevalence of poverty in 2006 and 2011. Overall, the poverty headcount declined in the regions in the western and northern parts of the country and in the central region of Diourbel. At the same time, the situation worsened in some of the regions in the south and in the east, thus creating some de facto divide between the north and the south of the country.

Poverty is also strongly associated with working in the agricultural sector, with most of the poor living on subsistence agriculture or employed in agriculture-related activities (World Bank 2015).
**MAP 1:** Population and Poverty in Senegal by Region, 2002–13

**a. Population, 2002**

**b. Population, 2013**

Total number of inhabitants
- < 500000
- 500000–999999
- 1000000–1499999
- 1500000–1999999
- ≥ 2000000

**c. Poverty Headcount, 2006**

**d. Poverty Headcount, 2011**

Poverty headcount (%)
- < 30
- 30–39
- 40–49
- 50–59
- 60–69
- ≥ 70

The data used for the analyses in this report come mainly from a series of one Multiple Indicators Cluster Survey (MICS) and four Demographic and Health Surveys (DHS) conducted between 2000 and 2014. The MICS survey was conducted between May 5 and July 11, 2000 (Government of Senegal and UNICEF 2000). The four DHS surveys were carried out (1) between February 1 and June 10, 2005 (Ndiaye and Ayad 2006); (2) between October 13, 2010, and April 28, 2011 (ANSD and ICF 2012), and which was combined with a MICS survey; (3) between September 15, 2012, and June 15, 2013 (ANSD and ICF 2013); and (4) between January 21 and October 20, 2014 (ANSD and ICF 2015).

The MICS and DHS surveys are nationally and regionally representative and provide detailed household level and individual level economic, social, health, food, and nutrition data on children under the age of five and on women ages 15 to 49 years.

Regional and global comparisons relied exclusively on DHS data for nutrition indicators and on other open-source data such as the World Bank’s World Development Indicators and the United Nations World Population Prospects (UN DESA 2015) for aggregate economic and population information.
Although its nutrition profile is still dominated by undernutrition issues, Senegal is in the midst of a nutrition transition and increasingly facing the DBM. In absolute terms, the prevalence of child stunting in Senegal is one of the lowest in Sub-Saharan Africa. Indeed, with 18.7 percent of children under five too short for their age in 2014, Senegal has the second lowest prevalence of child stunting in Sub-Saharan Africa, bested only by Gabon (figure 1, panel a). Even more impressive, Senegal’s performance for child stunting is much lower than would be expected at its national income level (figure 2). By both global and Sub-Saharan Africa standards, Senegal is one the best performers in comparisons of indicators of child undernutrition, such as stunting, and national income levels as measured by per capita GDP.\(^8\) Indeed, the prevalence of child stunting in Senegal is much lower than that observed in countries with the same level of income, such as Côte d’Ivoire and Cambodia, and on par with the prevalence in countries with much higher income levels such as Ghana, a country with a per capita GDP nearly twice as high as Senegal’s, and Peru, whose per capita GDP is nearly five times as high.

The relationship between income and malnutrition is further explained in box 1.

However, the prevalence of anemia among children under five was 60.3 percent in 2014, placing Senegal in the middle of the countries in Sub-Saharan Africa for which DHS data are available. Furthermore, Senegal ranks particularly poorly in Sub-Saharan Africa in the prevalence of anemia among women ages 15 to 49 years, estimated to be 54.3 percent in 2010–2011,\(^9\) the last time a DHS survey with such data was collected for this demographic group. With the exception of The Gambia and Gabon, Senegal has the highest prevalence of anemia among women ages 15 to 49 years (figure 1, panel b).

Underweight of women is also an issue. Indeed, the prevalence of chronic energy deficiency or underweight among women of reproductive age was estimated at 22 percent in 2010–2011, making Senegal the country with the fifth highest prevalence in Sub-Saharan Africa.

Despite limited information, there are indications that the problems of overweight and obesity and their related NCDs are increasingly prevalent in the country. Data from the 2010–11 DHS show that 21.3 percent of women ages 15 to 49 years were estimated to be overweight or obese. The World Health Organiza-
tion (WHO) STEPS survey\textsuperscript{10} carried out in 2015 shows that hypertension affects 24 percent of the population, 2.1 percent have diabetes, and 19 percent have high cholesterol. Estimates from WHO suggest that, together, diabetes, cardiovascular diseases, and cancers are responsible for nearly 20 percent of total adult deaths in Senegal (WHO 2014). Furthermore, other surveys conducted in the city of Dakar in 2009 and in the Saint-Louis region in 2012 showed prevalence rates of type II diabetes of 17.9 percent and 10.8 percent, respectively (Duboz et al. 2012; Seck et al. 2015). Another survey conducted in 2010 in the city of Saint-Louis estimated that 46 percent of the population ages 15 years and above suffered from high blood pressure, 36.3 percent from high cholesterol, and 15.7 percent from metabolic syndrome (Pessinaba et al. 2013).

Contrary to what is observed with child stunting, the prevalence of overweight or obesity among women of reproductive age in Senegal is slightly higher than would be expected at its income level (figure 3). Indeed, Senegal performs worse than countries with higher income, such as Bangladesh and Cambodia, but much better than many countries in Sub-Saharan Africa, such as Cameroon, Ghana, Kenya, and Togo, where the problem of overnutrition among women is of much greater concern.

Overall, the nutrition profile of Senegal—characterized by a moderate level of child stunting and low level of child overweight, high woman underweight and anemia, and a slightly high level of overweight and obesity among women with growing rates of diet-related NCDs—is symptomatic of a country in the midst of a nutrition transition (Popkin, Adair, and Ng 2012) and suffering from the DBM at the population level (child stunting and women overweight) (Subramanian, Perkins, and Khan 2009), the household level (stunted child with overweight or obese mother) (Garrett and Ruel 2005), and the individual level (overweight or obese women suffering from anemia) (Asfaw 2007; Eckhardt et al. 2007). This phenomenon has been observed in countries experiencing a rapid economic transformation, which underlies a nutrition transition marked by a decrease in physical activity, a shift in dietary patterns toward increased consumption of fats, meats, sugar, and refined grains, and a shift toward nutrition-related NCDs (Popkin 1993; Popkin 1998; Popkin 2001).

\textbf{BOX 1: The Relationship Between Income and Malnutrition}

The relationship between income and malnutrition has been the subject of substantial research, but the evidence remains mixed. The extent to which economic growth leads to better nutritional status in either the short or long run is still debated (Vollmer et al. 2014; Alderman et al. 2014; Bershteyn et al. 2015). However, the correlation between the level of income and nutrition is a well-established fact, especially when cross-country data are analyzed. On average, the higher the national income of a country, the lower the prevalence of undernutrition among its population. It is estimated that, on average, a 10 percent increase in per capita GDP results in a reduction of the prevalence of child stunting of about 6 percent (Ruel and Alderman 2013).

Contrary to the correlation between national income and child undernutrition, which is negative, the empirical evidence suggests a positive correlation between national income and overnutrition in cross-country comparisons. The prevalence of overweight, obesity, and their related noncommunicable diseases (NCDs) tends to increase with a country’s national income up to a certain level before flattening out and decreasing (Ezzati et al. 2005). Among low- and middle-income countries, the relationship is positive with, on average, a 7 percent increase in the prevalence of overweight among women associated with every 10 percent increase in per capita GDP (Ruel and Alderman 2013).
FIGURE 1: Maternal and Child Nutrition in Senegal and Sub-Saharan Africa

a. Children under age 5 stunting

b. Anemia in women ages 15–49

(continued on next page)
FIGURE 1: Maternal and Child Nutrition in Senegal and Sub-Saharan Africa (continued)

**c. Children under age 5 overweight**

- São Tomé and Príncipe 2008
- Comoros 2012
- Benin 2006
- Malawi 2010
- Sierra Leone 2013
- Mozambique 2011
- Gabon 2012
- Lesotho 2009
- Rwanda 2010
- Cameroon 2011
- Zambia 2013
- Zimbabwe 2010
- Madagascar 2004
- Tanzania 2010
- Kenya 2014
- Nigeria 2013
- Guinea 2012
- Uganda 2011
- Namibia 2013
- Congo, Rep. 2011
- Côte d’Ivoire 2012
- Liberia 2013
- Gambia 2013
- Burundi 2010
- Ghana 2014
- Niger 2012
- Burkina Faso 2010
- Mali 2012
- Togo 2013
- Ethiopia 2011
- Eritrea 2002
- Senegal 2014

**d. Women ages 15–49 overweight**

- Swaziland 2006
- Gabon 2012
- Lesotho 2009
- Ghana 2014
- Mauritania 2000
- Comoros 2012
- São Tomé and Príncipe 2008
- Kenya 2014
- Cameroon 2011
- Namibia 2013
- Zimbabwe 2010
- Togo 2013
- Benin 2012
- Liberia 2013
- Congo, Rep. 2011
- Côte d’Ivoire 2012
- Nigeria 2013
- Zambia 2013
- Gambia 2013
- Tanzania 2010
- Senegal 2010
- Guinea 2012
- Uganda 2011
- Sierra Leone 2013
- Mali 2012
- Niger 2012
- Malawi 2010
- Mozambique 2011
- Rwanda 2010
- Burkina Faso 2010
- Eritrea 2002
- Burundi 2010
- Chad 2004
- Madagascar 2008
- Ethiopia 2011

(continued on next page)
FIGURE 1: Maternal and Child Nutrition in Senegal and Sub-Saharan Africa (continued)

FIGURE 2: Stunting in Children by Per Capita GDP

Note: The sizes of the circles are proportional to the number of children under the age of five. The red lines indicate the model’s prediction.

FIGURE 3: Overweight in Women by Per Capita GDP

Note: The sizes of the circles are proportional to the number of women ages 15 to 49 years. The red line indicates the model’s prediction.
Measures of nutritional status such as wasting, stunting, and anemia have been shown to exhibit seasonal variations, with prevalence rates generally surging during rainy seasons and before the harvest as a result of food shortages, increased morbidity, and greater female participation in the labor market (Martorell and Young 2012; Schwinger et al. 2014). Contrary to stunting, which is less sensitive over the short run to shocks, wasting is a more transient condition and its prevalence can fluctuate considerably during the year (WHO, UNICEF, and WFP 2014). As a result, prevalence of wasting estimated with survey data at a single time point can be a poor representation for conditions during the other periods of the year. The incidence rate is deemed a better indicator (Khara and Dolan 2014).

The MICS and DHS surveys used for this analysis were all conducted at different times of year, with some not overlapping the lean and rainy season while others overlapped partially or fully that period of peak in the prevalence of child wasting (figure 4). In the following section, we will present the national trends in some nutrition indicators in Senegal. However, given the nature of the surveys, the results should be interpreted with caution, notably for wasting.

**National Trends**

Similar to economic performance between 2000 and 2014, the prevalence of stunting among children under the age of five evolved in two major phases—a steep drop followed by stagnation (figure 5). From 2000 to 2005, child stunting dropped on average by 6 percent annually, falling from 26.8 percent to 19.6 percent. Since 2005, considering the anthropometric data from the 2010–11 DHS as outliers, the prevalence of child stunting remained virtually the same over the course of that decade, hovering around 19.0 percent until 2014. The average estimates based on the DHS are 18.7 percent for both 2012–13 and 2014 surveys. However, the preliminary results of the 2015 DHS put at 20.5 percent the prevalence of child stunting (ANSD and ICF 2016).

The prevalence of wasting among children under five, based on the available data, has virtually stagnated between 2000 and 2012–13, hovering around 10.0 percent before dropping substantially in 2014. More specifically, the prevalence of child wasting fell from 9.7 percent in 2000, to 8.5 percent in 2005, and rose to 8.8 percent in 2012–13. The estimate for the outlier year of 2010–11 was 10.1 percent. In 2014, the prev-
Prevalence of child wasting was estimated at 5.9 percent with a lower bound for the 95 percent confidence interval at 4.9 percent, below the 5 percent maximum limit set for the WHA 2025 target. However, the preliminary results of the Senegal 2015 DHS suggest a prevalence of global acute malnutrition or wasting of 7.8 percent and may signal a worsening situation.

The proportion of children under five who are overweight or obese, as measured by a weight-for-height z-score superior to more than 2 standard deviations above the median compared to the WHO child growth standards, has declined since 2000 from 3.4 percent to 1.2 percent in 2014.

The prevalence of all forms anemia among both children ages 6 to 59 months and women ages 15 to 49 years has been decreasing steadily since 2005. Among children, anemia dropped by 27 percent, from 82.6 percent in 2005 to 60.3 percent in 2014, an average of 3.4 percent each year. Interestingly, Senegal registered the most impressive progress very recent-
ly, between 2012–13 and 2014, with a 15.3 percent decrease in the prevalence of child anemia (figure 6, panel a). Among women, data are available only for the years 2005 and 2010–11, and the estimated prevalence of anemia suggests a very moderate decrease from 59.1 percent to 54.3 percent\textsuperscript{15} or an average annual rate of reduction of 1.7 percent (figure 6, panel b).

The rate of exclusive breastfeeding in Senegal (figure 1, panel e) is lower than that of many countries in the Africa Region, with the prevalence declining from an already low 39.0 percent in 2010–11 to 32.4 percent in 2014 (figure 7).\textsuperscript{16}

**Progress Toward the WHA 2025 Goals**

At the current pace, Senegal is on course to reach only the WHA 2025 goals related to child wasting and child overweight (figure 8, panels b and c). Indeed, the WHA calls for a reduction in the prevalence of child wasting to under 5 percent. However, given the uncertainty of the estimates of the prevalence of child wasting for the year 2014, it is plausible to argue that Senegal might already have reached that goal. The already low prevalence of child overweight continues to decline and can be considered under control as called for by the WHA goals.
As for the other WHA goals—a reduction of 40 percent in the prevalence of child stunting (figure 8, panel a), an increase in the practice of exclusive breastfeeding to at least 50 percent (figure 8, panel d), and a 50 percent decrease in the prevalence of anemia among women of reproductive age (figure 8, panel e)—Senegal is gravely off course and will not reach these goals unless there is a dramatic increase in the pace of progress. As previously mentioned, the prevalence of child stunting is stagnant at about 19 percent, and the country has experienced a relative setback over the past couple of years with a retreat in the practice of exclusive breastfeeding. The available data on women anemia suggest that, at the current rate of decline, the prevalence of anemia in that demographic group will be about 42 percent in 2025, nearly twice the objective of 26 percent.

**FIGURE 8**: Senegal’s Progress Toward the WHA 2025 Goals

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*Note*: Unlike the other goals depicted here, for which the prevalence ideally should drop, the goal for exclusive breastfeeding is to increase in prevalence.
Geographic and Sociodemographic Inequalities in Undernutrition Outcomes

Geographic Disparities

Overall, the regional inequalities in child stunting show a north-south divide along the poverty incidence lines with the regions in the north and west exhibiting much lower prevalence rates than the regions in the center and the south. Map 2 depicts the regional disparities in child stunting for each of the years 2000, 2005, 2012, and 2014. For consistency and to better appreciate trends at the regional level, the administrative organization of Senegal that existed before 2002 is used. In 2014, the prevalence of child stunting in each of the northern, western, and western half of the central regions of the country, namely Saint-Louis, Louga, Diourbel, Thies, Fatick, and Dakar, was below 20 percent. However, in the southern regions and the eastern half of the central region, the estimated prevalence of child stunting was deemed moderate, fluctuating between 20 and 29 percent, with the exception of the extremely poor region of Kolda, which exhibited a high prevalence of about 36 percent. This north-south divide shows that child stunting is strongly correlated with household income.

The north-south divide for the prevalence of child stunting has increased over the past decade. Despite a general stagnation in the prevalence of child stunting in Senegal since 2005, the evolution at the regional level has been uneven with some regions experiencing marked decreases while others stagnated or saw some increase. The impressive drop in child stunting experienced by Senegal between 2000 and 2005 was mostly driven by improvements in the densely populated western and central regions. Indeed, child stunting in regions such as Dakar, Thies, Fatick, and Kaolack was more than halved during that period of time. All other regions also saw some decrease in child stunting, with the exception of Saint-Louis and Kolda. Since 2005, the northern regions have shown a consistent decline in child stunting, with the prevalence in Saint-Louis dropping by half to about 14 percent in 2014. On the contrary, the region of Kaolack has seen a reversal of fortune with a steady increase in the prevalence of child stunting, with the prevalence in Saint-Louis dropping by half to about 14 percent in 2014. Over the same period, progress in the western regions and the regions of Diourbel and Fatick has stalled or has been inconsistent. Similarly, the region of Tambacounda has seen no progress at all, while Kolda remained a high prevalence area, thus increasing the gap between the north and the south.

Child wasting is less correlated with household income and has historically been a serious con-
dition in the regions of Saint-Louis, Louga, and Tambacounda. Map 3 shows the prevalence of child wasting in the regions of Senegal at different points since 2000. As for child stunting, each survey shows important regional disparities in the prevalence of child wasting. However, the regions of Saint-Louis and Louga, which have some of the lowest rates of poverty and child stunting and which experienced a strong reduction in stunting since 2005, have, along with the region of Tambacounda, consistently exhibited the highest prevalence of child wasting in the country, hovering between 10 and 14 percent. The other regions have shown considerable fluctuation in the prevalence of wasting between the different surveys as could be expected with such an indicator. Kolda, the region with the highest poverty incidence, has consistently shown a lower prevalence of child wast-

Anemia among women of reproductive age is a severe public health problem in all regions despite improvement in some regions between 2005 and 2010. Data from the 2010 DHS suggest that women ages 15 to 49 years are overburdened with anemia in all regions of Senegal. Indeed, in all regions, the prevalence of anemia among women of reproductive age is beyond the 40 percent critical threshold for a severe public health problem. Between 2005 and 2010, all regions experienced various degrees of decrease in the prevalence rate of anemia among women with the exception of the regions of Dakar, Tambacounda, and Matam, where the prevalence increased considerably.
**Sociodemographic Inequalities**

Although almost all sociodemographic groups shared in the reduction in child stunting between 2000 and 2005, urban areas, male children, and the wealthiest socioeconomic groups benefited most. Figure 9 shows the trends in the prevalence of child stunting among various sociodemographic groups. Overall, the prevalence of child stunting among all sociodemographic groups followed the same trends as the national prevalence. Although some groups benefited more during the period of rapid decline from 2000 to 2005, prevalence rates across almost all demographics have stagnated since 2005, thus maintaining the status quo for inequality.

In urban areas, although the prevalence of child stunting was nearly halved from about 21 percent in 2000 to 11 percent in 2005, it declined by only 20 percent in rural areas over the same period, from 30 percent to 24 percent (figure 9, panel a). Since 2005, the prevalence rates in both areas have remained stable hovering at about 12 percent in urban areas and 23 percent in rural areas. Thus children in rural areas bear a burden twice that of those living in urban areas.

The gender gap drastically narrowed between 2000 and 2005 with male children experiencing a drop in the prevalence rate to a level on par with that observed among female children (figure 9, panel b). Although both female and male children saw a decline in their respective prevalence rates between 2000 and 2005, the prevalence of stunting among boys fell from 30 percent in 2000 to 21 percent in 2005, within the margin of error of the 19 percent prevalence estimated...
among girls in 2005. The prevalence rates among both boys and girls have stagnated since 2005 without any significant difference between the groups.

As for the association of child stunting with the mother’s level of education (figure 9, panel d), the prevalence among children of women without any education is about 1.5 times higher than the prevalence of stunting among the children of women who have completed at least primary school. Furthermore, the gap between the two groups has not changed since 2000, although the prevalence rate for both groups exhibited a downward trend between 2000 and 2005 before stagnating.

Panel c of figure 9 shows a social gradient of child stunting, with children in the poorest quintile exposed to a risk of stunting at least twice, and as much as three times, as high as that for children in the richest quintile. Because the drop in child stunting between 2000 and 2005 was weighted toward the wealthiest socio-economic groups, as evidenced by trends in urban areas and the richest quintiles (figure 9, panels a and c), the distribution of the burden of child stunting became more unequal during that period (figure 10, panel a). However, between 2005 and 2012, the DHS data suggest an increase of the prevalence of child stunting in the richest quintiles while the drop continued among the poorest quintiles (figure 9, panel c), thus resulting in a less unequal distribution of the burden (figure 10, panel b). More recent data from 2014, however, suggest an increasing gap between the poorest and richest quintiles (figure 9, panel c), suggesting a worsening of the distribution of the burden of child stunting in Senegal (figure 10, panel c) to the detriment of less advantaged groups, notably in the rural areas, where poverty is most concentrated (figure 9, panels a and c).
FIGURE 10: Concentration Curves for Stunting in Senegal, 2000–14

Analysis & Perspective: 15 Years of Experience in the Development of Nutrition Policy in Senegal

Photo: Adama Cissé/CLM
A key characteristic of nutrition outcomes in Senegal is their marked heterogeneity across regions. A crucial step in furthering the fight against malnutrition in Senegal requires each region to undertake research to understand its specific drivers of malnutrition and to design regionally appropriate strategies to overcome them. Given Senegal’s progression along the nutrition transition, a robust analysis including stunting, wasting, anemia, and overweight and obesity for each region is recommended.
Endnotes


2. The SUN Movement is a global movement that began in 2010 that unites various actors including governments, civil society organizations, United Nations agencies, and the private sector in a renewed global effort to end malnutrition in all its forms. The core principle of the SUN Movement is that actions across multiple sectors, at multiple levels and with multiple stakeholders are necessary to sustainably and substantially reduce malnutrition (SUN 2015).

3. REACH was established in 2008 by the Food and Agriculture Organization of the United Nations (FAO), United Nations Children’s Fund (UNICEF), the World Food Programme (WFP), and the World Health Organization (WHO) to assist governments of countries with a high burden of child and maternal undernutrition to develop capacities and coordinate actions to accelerate the scale-up of food and nutrition interventions (REACH 2012).

4. In 2012 the World Health Assembly (WHA) Resolution 65.6 endorsed a comprehensive implementation plan for maternal, infant, and young child nutrition, which specified a set of six global nutrition targets to be reached by 2025: (1) a 40 percent reduction in stunting of children under five; (2) a 50 percent reduction in anemia in women of reproductive age; (3) a 30 percent reduction in low birth weight; (4) no increase in childhood overweight; (5) an increase in the rate of exclusive breastfeeding in the first six months to at least 50 percent; and (6) reduce and maintain childhood wasting at less than 5 percent.


8. Measured using purchasing power parity.


10. The WHO STEPwise approach to Surveillance (STEPS) is a standard protocol for collecting, an-


12. There is anecdotal evidence that the anthropometric data from the 2010–11 DHS survey were poorly collected. Furthermore, several partial surveys conducted during the same period did not confirm the results of the 2010–11 DHS survey, which appears invariably as an outlier in all the analyses we performed.


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