1. Introduction

The rights of every child to life, survival and development are enshrined in the United Nations Convention on the Rights of the Child. Despite the commitments of nations throughout the world, almost 10 million children continue to die every year, with the majority of child deaths occurring in just 60 developing countries. Around 40 per cent of child deaths occur during the child’s first month of life, usually in the child’s home and often because there is no access to health services and basic health commodities. Many children die as a result of contracting easily preventable or treatable illnesses and conditions, including diarrhoeal infections, measles, malaria and pneumonia, among others. In up to half of deaths of children under five, undernutrition is an underlying cause. Unsafe water, poor sanitation and inadequate hygiene also contribute to child mortality and morbidity. Water, sanitation and hygiene are closely linked to childhood undernutrition. Research dating back to 1968 has confirmed the deleterious effect of diarrhoea on children’s nutritional status. Eighty-eight per cent of all cases of diarrhoea globally are attributable to water, sanitation and hygiene. Ascaris (roundworm), Trichuris (whipworm) and hookworm infestation are attributable to inadequate sanitation and hygiene. More recent evidence has provided guidelines to prevent and treat these illnesses (e.g. promotion of breastfeeding, supplementation of micronutrients).

Child survival is a major development priority, both internationally and within individual countries. Millennium Development Goal Four has as its target a two-thirds reduction in the under-five mortality rate between 1990 and 2015. Beyond the desirability of meeting international development targets, improving child survival and health is a crucial investment for future development and prosperity of nations. Well-nourished, well-cared-for, healthy children are more likely to survive and develop into healthy and productive adults able to make a meaningful contribution to the social and economic development of their families, communities and nations. Investing in the survival and good health of children is also cost-effective. The interventions with the strongest impact on the prevention of child death are appropriate infant feeding practices (preventing 19 per cent of deaths) and the use of insecticide-treated materials (preventing 7 per cent). The most effective treatment interventions are the use of oral rehydration therapy (resulting in a 15 per cent reduction in child mortality if applied universally), and the use of antibiotics for sepsis and pneumonia (each preventing 6 per cent).

Cost-effective solutions are available that could bring rapid improvements, but urgency and commitment are required.
to implement them and to meet the Millennium Development Goals (MDGs) related to maternal and child health. Maternal mortality has generally received less attention from national governments and the international community than child mortality, and as a result successes have been more elusive. However, a growing body of research evidence shows that the necessary tools to make an impact in this previously neglected area are available. It is estimated that 80 per cent of maternal deaths could be averted if women had access to essential maternity services and basic health care. There is a growing consensus that maternal and newborn health and survival can best be improved by establishing a ‘continuum of care’ for mothers, newborns and children that integrates programmes and interventions for reproductive health; safe motherhood; newborn care; and child survival, growth and development, all delivered within a legal, institutional, and community and family environment that upholds and respects women’s rights.

The emerging trends in under-five mortality, as in other indicators of children’s well-being in Mozambique, show persistent geographical disparities. The northern part of the country and rural areas are still far behind the southern parts of the country and urban areas (despite marked improvements in both urban and rural areas). Though there have been improvements in all segments of the population, there has been little reduction in the gaps between the poorest and the best-off.

This chapter is divided into two sections: health and nutrition, and water and sanitation.

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1 Maternal mortality is defined by the WHO as the death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the site or duration of pregnancy, from any cause related to or aggravated by the pregnancy or its management.
2. Health and nutrition

2.1. Child survival

The principal indicator used to measure the level of child well-being in a country is the under-five mortality rate. The under-five mortality rate results from many factors: the nutritional status and health knowledge of mothers; childcare practices; the availability, use and quality of maternal and child health services; income and food availability in the family; the availability of clean water and safe sanitation; and the overall safety of the child’s environment. The under-five mortality rate can be taken as a proxy of the health status of Mozambican children and of Mozambican society as a whole.

Results from the 2008 Multiple Indicator Cluster Survey indicate a reduction in the under-five mortality rate from 153 deaths per 1,000 live births in 2003 to 141 in 2008 (see Figure 3.1). This is significant progress in improving child and maternal health and survival in Mozambique, although the rate of decrease in the under-five mortality rate has slowed in recent years and will need to accelerate if the country is to achieve MDG 4. Despite this progress, Mozambique has the 22nd highest under-five mortality rate in the world. Furthermore, the improvement in child survival rates has been unevenly distributed across the country; children and women in some provinces have benefited less than those living in other provinces. The AIDS pandemic is increasingly taking its toll on children’s lives and could negatively affect the recent encouraging trend.

In addition to the under-five mortality rate, measuring the rates of neonatal (less than one month) and infant (under one year) mortality are also critical, as these rates acknowledge the particular vulnerability of newborns and children in their first year of life. Neonatal mortality in particular indicates the circumstances of the entire pregnancy period and the birth of the child, such as the mother’s health, the circumstances in which the child was delivered and the care the newborn received in the first few days of life.

Children face a barrage of diseases, all rendered more dangerous by undernutrition. The majority of deaths in children under five are due to a small number of common, preventable and treatable conditions, such as:

![Figure 3.1: Mortality rates in Mozambique per 1,000 live births, 2003 and 2008 (five-year average preceding the survey)](source: DHS 1997, DHS 2003, MICS 2008)
as malaria, neonatal conditions, acute lower respiratory infections, HIV infection, infectious intestinal diseases, meningitis and undernutrition, occurring alone or in combination. A child’s risk of dying is very high in the first month of his or her life (the neonatal period); almost a quarter of all under-five deaths occur during this period (38 per 1,000 live births in 2008).\textsuperscript{14}

The observed reduction in mortality in Mozambique has been more pronounced in rural areas. The average mortality rate from 1987 to 1997, 237 deaths per 1,000 live births, was reduced to 164 deaths for the 1998–2008 period, equivalent to a 32 per cent reduction. In urban areas, the under-five mortality rate decreased from 150 in 1987–1997 to 138 in 1998–2008, a reduction of around 10 per cent. The marked improvement in rural areas is likely to be linked to improved access to health facilities and services. Geographical disparities remain acute, with a child in Cabo Delgado province being almost three times more likely to die before reaching age five than a child in Maputo City. A similar trend was observed in infant mortality (see Figure 3.2), which also fell much more rapidly in rural areas.

The marked improvement in child mortality rates in rural areas may be associated, at least in part, with increased access to health services in those areas. Rural areas saw a large improvement in terms of distance to the nearest primary health facility. In 2008/09 in the rural North, for example, 69.7 per cent of households are now able to access such a facility within a 45 minute walk compared to only 31.5 per cent in 2002/03. Access in the rural Centre and South has also improved, but not quite so quickly.

Access in urban areas to primary health facilities appears to have worsened, as a slightly smaller share of households report they are able to reach a facility on foot within 45 minutes. This may be due to a number of factors such as urbanisation, with higher population growth in the periphery of cities where access to public facilities is lower; and a greater reliance on hospitals and other medical facilities in urban areas, thus reducing demand for basic primary facilities.\textsuperscript{15}

Figure 3.2: Infant mortality rates in Mozambique per 1,000 live births 1997, 2003 and 2008 (five-year average preceding the survey)

There is a significant difference in under-five mortality between the central and northern provinces and the southern provinces. The highest rates were recorded in Zambezia (206 deaths per 1,000 live births) and Cabo Delgado (181 deaths per 1,000 live births). Tete province has the third highest under-five mortality rate, 174 per 1,000 live births. Maputo province and Maputo City report the lowest under-five mortality rates (103 and 109, respectively).\textsuperscript{16, ii}

A household-level multivariate regression analysis was conducted to further explore which factors were related to the survival of children (0–17 years) in the household, the dependent variable in the model taken as a proxy for child health.

Households where the head has secondary-level education or higher are less likely to experience a child death, as Figure 3.4 confirms. The observed relationship to the age of the head of household simply reflects the biological relationship between parent’s and child’s age. However, the gender of the head of household does not appear to be statistically correlated to child survival. Anti-mosquito spraying appears to reduce household child mortality by one per cent.\textsuperscript{17}

Figure 3.3: Share of households with less than 45 minutes walk to nearest primary health facility, 2002/03 and 2008/09 (percentage)

![Figure 3.3](image)


\textsuperscript{i} Average of ten years preceding the survey.
Malaria, neonatal causes and acute respiratory infections are the three major immediate causes of mortality among young children in Mozambique.\textsuperscript{18} AIDS is also emerging as a major killer, with 10 per cent of under-five deaths attributed to it. Undernutrition is a major underlying cause of child mortality, as are diarrhoeal illnesses. Many of the causes of child mortality are preventable by either vaccination or other simple prophylactic measures.

**Figure 3.4: Probability of child (age 0–17) survival in the last 12 months by education level of the head of household, 2008**

![Probability of child survival by education level](source)

- **Source:** UNICEF calculations based on MICS 2008

**Figure 3.5: Causes of under-five mortality in Mozambique, 2008**

![Causes of under-five mortality](source)

- **Source:** National Institute of Health, London School of Hygiene and Tropical Medicine and UNICEF, Mozambique National Child Mortality Study 2009, Maputo, 2009.

\textsuperscript{18} These findings are derived from the Ministry of Health and UNICEF’s 2008 child mortality study. The aim of the study was to measure neonatal, infant and under-five mortality rates in Mozambique for all programme-relevant causes using data collected at community level. Verbal autopsies, i.e., interviews with family members or caregivers about the circumstances of death after the event has taken place, were used to determine the causes of child mortality.
The 2010 National Millennium Development Goal Progress Report found that if trends in reducing child mortality continue, the country has the potential to reach the MDG relating to child mortality by 2015. However, to reach the target for under-five mortality, equivalent to a mortality rate of 108 per 1,000 live births in 2015, the required annual reduction in the number of deaths is 4.3 per cent for the under-five mortality rate and 3.7 per cent for the infant mortality rate. This would represent an acceleration of the reduction rates recorded in the last five years, which are three per cent and slightly less than two per cent per year, respectively.

### 2.2. Child nutrition

Undernutrition is the main underlying cause contributing to the high level of child mortality in Mozambique. It is also important in its own right, since undernutrition (in particular, chronic undernutrition or stunting) affects cognitive development and is closely linked to future educational outcomes. The major manifestations of undernutrition are underweight (low weight for age), wasting (low weight for height), stunting (low height for age), and micronutrient deficiencies.

#### Figure 3.6: Chronic undernutrition rates by country, 2009

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Country</th>
<th>Stunting prevalence (%)</th>
<th>Number of children who are stunted (thousands, 2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>India</td>
<td>48</td>
<td>60,788</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>15</td>
<td>12,685</td>
</tr>
<tr>
<td>3</td>
<td>Nigeria</td>
<td>41</td>
<td>10,158</td>
</tr>
<tr>
<td>4</td>
<td>Pakistan</td>
<td>42</td>
<td>9,868</td>
</tr>
<tr>
<td>5</td>
<td>Indonesia</td>
<td>37</td>
<td>7,888</td>
</tr>
<tr>
<td>6</td>
<td>Bangladesh</td>
<td>43</td>
<td>7,219</td>
</tr>
<tr>
<td>7</td>
<td>Ethiopia</td>
<td>51</td>
<td>6,768</td>
</tr>
<tr>
<td>8</td>
<td>Democratic Republic of Congo</td>
<td>46</td>
<td>5,382</td>
</tr>
<tr>
<td>9</td>
<td>Philippines</td>
<td>34</td>
<td>3,617</td>
</tr>
<tr>
<td>10</td>
<td>United Republic of Tanzania</td>
<td>44</td>
<td>3,359</td>
</tr>
<tr>
<td>11</td>
<td>Afghanistan</td>
<td>59</td>
<td>2,910</td>
</tr>
<tr>
<td>12</td>
<td>Egypt</td>
<td>29</td>
<td>2,730</td>
</tr>
<tr>
<td>13</td>
<td>Viet Nam</td>
<td>36</td>
<td>2,619</td>
</tr>
<tr>
<td>14</td>
<td>Uganda</td>
<td>38</td>
<td>2,355</td>
</tr>
<tr>
<td>15</td>
<td>Sudan</td>
<td>40</td>
<td>2,305</td>
</tr>
<tr>
<td>16</td>
<td>Kenya</td>
<td>35</td>
<td>2,269</td>
</tr>
<tr>
<td>17</td>
<td>Yemen</td>
<td>58</td>
<td>2,154</td>
</tr>
<tr>
<td>18</td>
<td>Mynmar</td>
<td>41</td>
<td>1,880</td>
</tr>
<tr>
<td>19</td>
<td>Nepal</td>
<td>49</td>
<td>1,743</td>
</tr>
<tr>
<td>20</td>
<td>Mozambique</td>
<td>44</td>
<td>1,670</td>
</tr>
<tr>
<td>21</td>
<td>Madagascar</td>
<td>53</td>
<td>1,622</td>
</tr>
<tr>
<td>22</td>
<td>Mexico</td>
<td>16</td>
<td>1,594</td>
</tr>
<tr>
<td>23</td>
<td>Niger</td>
<td>47</td>
<td>1,473</td>
</tr>
<tr>
<td>24</td>
<td>South Africa</td>
<td>51</td>
<td>1,425</td>
</tr>
</tbody>
</table>

**Children’s nutritional status**

Using World Health Organisation (WHO) classifications, stunting prevalence among Mozambican children is very high (44 per cent), underweight prevalence is medium (18 per cent), and wasting prevalence is low (4 per cent), according to MICS 2008 data (See Figure 3.6). A slowly declining trend is observed across all undernutrition indicators from 1996/97 to 2008. Mozambique has one of the highest rates of stunting world-wide, with over 1.6 million children experiencing stunting.

The IOF 2008/09 survey indicates slightly different levels of undernutrition to MICS 2008 – for example, chronic undernutrition is 46 per cent according to IOF 2008/09 versus 44 per cent in MICS 2008. Analysis conducted by the MPD restricted the analysis of MICS 2008 and IOF 2008 to households surveyed during the same period of 2008 (the MICS was conducted between September and November 2008 while IOF ran from September 2008 to August 2009). This analysis indicated no statistical differences between the national averages for the three indicators.

**Acute undernutrition (wasting)**

No significant difference was observed between the 2003 and 2008 rates of acute undernutrition for children under five, which were five and four per cent, respectively. Wasting or acute undernutrition, which is defined on the basis of weight for height, is a type of undernutrition that results from a recent excessive loss of weight due to severe illness and/or lack of food. It should be noted that the temporal and seasonal instability of this indicator makes meaningful comparisons between years challenging.

Although wasting at a national level is low (less than 5 per cent is considered low by the WHO classification), provincial variations are significant, ranging from nine per cent in Nampula to one per cent in Gaza (see Figure 3.8). Wasting prevalence is linked to wealth, with children in the poorest households over three times more likely to suffer acute undernutrition (six per cent) than those in the richest households (two per cent). Wasting rates are highest at six months of age (eight per cent) and then progressively decline. Wasting prevalence is similar in rural and urban areas (five and three per cent, respectively).

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**Figure 3.7: Undernutrition rates (moderate) in children under five, 2003 and 2008**

![Figure 3.7: Undernutrition rates (moderate) in children under five, 2003 and 2008](image)

**Source:** DHS 1997, MICS 2008.

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The anthropometric data from DHS 2003 were recalculated based on the 2006 WHO standard population.
Underweight

The prevalence of underweight among children under five reduced from 20 per cent in 2003\textsuperscript{23} to 18 per cent in 2008.\textsuperscript{24} Underweight, which is defined as low weight for age, is a function of deficiencies in both current and past nutrition, health, and other care experienced by a child. The greatest improvements occurred in rural areas, where the prevalence decreased from 25 per cent in 2003 to 19 per cent in 2008; during the same time period, prevalence in urban areas remained static at 13 per cent. Larger improvements were seen among the poorest households, in which prevalence of underweight children fell from 29 per cent in 2003 to 23 per cent in 2008.\textsuperscript{25}

A higher proportion of boys are underweight than girls (20 per cent against 15 per cent). Underweight levels by age group are highest at ages 6–11 months (22 per cent), decreasing slightly as children get older, but still remaining close to 15 per cent as children approach their fifth birthdays. Provincial disparities are particularly acute, with more than one in four children underweight in Nampula province, compared with one in fifteen in Maputo City (see Figure 3.9).\textsuperscript{26}
The 2010 National Millennium Development Goals Report considers that is “potential” that the MDG target of reducing underweight prevalence by half will be met. While this is an important achievement, there is no room for complacency, since levels of stunting (low height for age) are more than twice the levels of underweight. Even if Mozambique meets the underweight MDG, urgent action is needed to address the very high levels of stunting.

**Chronic undernutrition (stunting)**

The proportion of five-year-old children that are stunted has decreased from 48 per cent in 2003 to 44 per cent in 2008. Mozambique’s stunting prevalence is still classified as “very high” by the WHO. Stunting, or chronic undernutrition, defined as low height for age, shows undernutrition resulting from cumulative inadequacies in the nutritional and health status of a mother before and during pregnancy and of a child in the first two years of life. Stunting is a good indicator of the well-being of a population, as it reflects the structural context surrounding undernutrition. Children who are stunted have compromised physical and mental development, and this growth opportunity is irreversibly lost. It cannot be regained, even if nutrition conditions improve and a child gains weight.

The proportion of children with severe stunting decreased from 23 per cent in 2003 to 18 per cent in 2008. The observed reduction appears to have occurred predominantly in rural areas, where the proportion decreased from 52 per cent to 47 per cent. In urban areas, where the prevalence of chronic undernutrition is lower, the reduction was less marked, with only an annual 0.2 percentage points reduction achieved between 2003 (36 per cent) and 2008 (35 per cent).

In Mozambique, stunting is observed among children at a very early age, even before six months, and increases up to 24–36 months. The high prevalence (slightly above 20 per cent) of stunting recorded among children less than six months old reported in the 2008 MICS is a cause for concern, as one would not normally expect to see such a high prevalence at this early age. Stunting rates increase with age from birth up to 24–36 months, reaching a peak of around 54 per cent, after which it decreases slightly.

**Provincial disparities in relation to stunting are particularly striking** (see Figure 3.10). Stunting prevalence among children under five

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**Figure 3.10: Percentage of chronic undernutrition (stunting) in children under five by province, 2008**

is highest in the provinces of Cabo Delgado (56 per cent) and Nampula (51 per cent), and in Zambezia, Niassa, Tete, Sofala and Manica prevalence also exceeds 40 per cent.32

Male sex, age (in months), a low education level in the mother, use of unsafe water, use of precarious sanitation, and living in central or northern provinces all have a negative effect on children’s height for age. These results were derived by analysing some of the factors related to chronic undernutrition through multivariate regression (see Table 3.1) using data from MICS 2008. The effect of the province of residence remains, even when other variables, such as poverty and access to safe water and improved sanitation, are considered.

The introduction of the variable ‘wealth’ reduces the impact of the mother’s education and the quality of water and sanitation, making these factors not significant. This demonstrates that the variable ‘wealth’ is the most important underlying cause of chronic undernutrition.

The p-value tests the probability of the regression coefficient taking the same value or a more extreme one if there is no association between the explanatory variable and height-for-age Z-score in children 0–59 months, using the same sampling and analysis methods repeatedly.

These high stunting rates have received increased attention since 2009. The nutrition component of the PARPA II impact evaluation highlighted this issue and recommended that it be addressed with a sense of urgency and that a multi-sectoral plan of action be developed to address it. A high-level national seminar held in March 2010, with participation of the Prime Minister, the Ministers of Health and Agriculture and other high-level Government representatives, served to craft inputs for this plan and the Multi-sectoral Plan of Action for the Reduction of Chronic Undernutrition 2011-2015 (2020) was approved by the Council of Ministers in September 2010. The plan aims to reduce stunting to 20 per cent in 2010.

Table 3.1: Multivariable linear regression on the height-for-age Z-score in children under five, 2008

<table>
<thead>
<tr>
<th>Height-for-age of children 0–59 months</th>
<th>Linear regression coefficient (b)</th>
<th>95% confidence interval of (b)</th>
<th>P-value1</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Male sex</td>
<td>-0.188</td>
<td>-0.253 to -0.122</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>b) Residence in Manica or northward</td>
<td>0.819</td>
<td>0.37 to 1.269</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>c) Natural log of age in days</td>
<td>-0.132</td>
<td>-0.191 to -0.073</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>d) Interaction factor: residence x age</td>
<td>-0.176</td>
<td>-0.246 to -0.106</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>e) Mother’s successful years at school</td>
<td>0.032</td>
<td>0.019 to 0.045</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>f) Unsafe source of drinking water</td>
<td>-0.160</td>
<td>-0.255 to -0.064</td>
<td>0.001</td>
</tr>
<tr>
<td>g) Unimproved sanitation facilities</td>
<td>-0.191</td>
<td>-0.297 to -0.085</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>constant</td>
<td>-0.266</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


---

The wealth variable is based on a wealth index. The Wealth Index is constructed based on information on household’s possession of durable goods such as a television, a bicycle, a car as well as the characteristics of accommodation including electricity, source of drinking water, type of sanitation facility and material used for roofing. It is an indicator of the level of wealth that has been shown to be correlated with measures of expenses and incomes. For a full discussion of the methodology and its limitations see Gwatkins et al, *Socio-economic differences in Health, Nutrition and Population in Mozambique*, The World Bank, 2000.
Causes of chronic undernutrition in Mozambique

The causes of undernutrition amongst children are interrelated. They are depicted in graphic form in the conceptual framework (see Figure 3.11) and can be grouped across three levels. The immediate causes are inadequate dietary intake (in quantity and quality) and diseases. The interaction between these two factors leads to increased morbidity and mortality. HIV infection is also a major cause of failure to grow and of undernutrition among children. Inadequate dietary intake and diseases in turn are caused by insufficient access to food, inadequate maternal and childcare practices (particularly poor breastfeeding and other feeding practices) and insufficient access to health care, safe water and sanitation services. Basic causes include poverty, insufficient education (particularly of mothers) and gender inequities. The most visible examples of the latter are teenage pregnancies, which have a direct impact on both the mother’s and her child’s height. An analysis of the IOF 2008-9 data showed a significant difference in stunting levels between children whose mothers were younger that 19 when the children were born (54 per cent) and children whose mothers were older than 19 when they gave birth (46 per cent).

Across the world, stunting starts to manifest itself immediately after birth (unlike wasting and underweight, which start from about three months of age), and continues to increase in the first two or three years of life, after which it remains stable. Chronic

Figure 3.11: The conceptual framework for undernutrition

undernutrition is an intergenerational phenomenon, since the child of a woman with a suboptimal nutritional status before and during pregnancy will have a lower potential height. Whether or not a child reaches its full growth potential depends on the food, health and other care it receives in the first two years of its life. The period before pregnancy up to two years of age is therefore referred to as “the window of opportunity.” Even when a child survives her or his early years, undernutrition and repeated infections can lead to lifelong developmental delays.

**Infant and young child feeding**

Appropriate infant feeding practices are crucial for child survival and development. Exclusive breastfeeding is recommended for the first six months of life. After this, children should receive solid, semi-solid and soft foods in increasing frequency, along with continued breastfeeding. Breastfeeding can be continued to two years of age or beyond. The WHO recommends that breastfeeding be initiated immediately after birth, when the newborn’s suckling reflex is strong. The Ministry of Health approved in early 2009 a comprehensive five-year communication and social mobilisation plan to promote, protect and support breastfeeding.

In 2008, 63 per cent of newborns were put to the breast within one hour after birth. This compares with a figure of 65 per cent in 2003. Eighty-eight per cent of newborns were put to the breast within one day of birth in 2008. Exclusive breastfeeding rates in children under six months old in Mozambique increased significantly between 2003 and 2008 (from 30 to 37 per cent), but the level remains low in absolute terms (see Figure 3.12). Exclusive breastfeeding decreases rapidly with age; from 57 per cent for the zero-to-one-month age group to 17 per cent in the four-to-five-month age group (see Figure 3.13). The main items given to newborns that interfere with exclusive breastfeeding are water and solid, semi-solid or soft foods (see Figure 3.14). A qualitative study in Maputo City and the provinces of Gaza, Tete, Zambezia and Nampula showed that mothers have heard of the recommendation to breastfeed exclusively, but they feel they are not able to put their knowledge into practice, since other family members insist that they should give their baby water, traditional medicines and/or solid, semi-solid or soft foods. This suggests that communication efforts should focus on eliminating these items from the diet and

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*Figure 3.12: Percentage of children of different age groups who are exclusively breastfed: 1997, 2003 and 2008*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1997 (DHS)</th>
<th>2003 (DHS)</th>
<th>2008 (MICS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3 months</td>
<td>37.6</td>
<td>38.3</td>
<td>48.4</td>
</tr>
<tr>
<td>0-6 months</td>
<td>30.1</td>
<td>31.0</td>
<td>36.8</td>
</tr>
</tbody>
</table>


*Figure 3.13: Exclusive breastfeeding in children under 12 months, 1997, 2003 and 2008*

<table>
<thead>
<tr>
<th>Month</th>
<th>1997</th>
<th>2003</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>57.3</td>
<td>49.8</td>
<td>49.8</td>
</tr>
<tr>
<td>2-3</td>
<td>53.1</td>
<td>49.6</td>
<td>49.6</td>
</tr>
<tr>
<td>4-5</td>
<td>56.7</td>
<td>53.4</td>
<td>53.4</td>
</tr>
<tr>
<td>6-7</td>
<td>51.4</td>
<td>53.1</td>
<td>53.1</td>
</tr>
<tr>
<td>8-9</td>
<td>48.9</td>
<td>49.6</td>
<td>49.6</td>
</tr>
<tr>
<td>10-11</td>
<td>46.8</td>
<td>49.3</td>
<td>49.3</td>
</tr>
</tbody>
</table>

include family members and communities in efforts to communicate that breastmilk contains sufficient water and nutrients for children less than six months old, and that mothers need practical and emotional support for breastfeeding.

The median duration of breastfeeding in 2008 was reduced to 18 months, from 22 months in 2003.\textsuperscript{40} This is a cause for concern, since breastmilk still provides key nutrients and protects against disease for children between 12 and 23 months of age. Continued breastfeeding is most important when children are sick and lose their appetite for other foods but continue to be breastfed.\textsuperscript{41}

After six months, solid, semi-solid or soft foods need to be introduced into children’s diet, with an adequate frequency. For children between six and eight months of age, this is two to three times per day for and for children between nine and eleven months, it is three times per day in addition to breastmilk. On average, only half of children aged six to eleven months received the minimum recommended number of meals, as seen in Figure 3.15. There is considerable variability among provinces. Seventy-one per cent of children in this age group are being appropriately fed in Niassa, compared with 32 per cent in Inhambane.\textsuperscript{42}

**Infant feeding and HIV transmission**

One of the ways in which HIV can be transmitted from a mother to her child (in addition to during pregnancy and childbirth) is via breastfeeding. It has been determined that the total risk of mother-to-child transmission of HIV is about 30–45 per cent. Numerous studies have documented that the risk of non-breastfed children dying from causes that can be prevented by breastfeeding, including diarrhoea, undernutrition and infections, is similar to...
the risk of breastfed children being infected with HIV. The so-called HIV-free survival rate at 18 months or two years of age is similar for both groups. The earlier guidance for mothers living with HIV recommended exclusive breastfeeding, unless replacement feeding was ‘acceptable, feasible, affordable, sustainable and safe.’

WHO updated its guidelines at the end of 2009 to recommend the use of antiretroviral drugs (for either the mother or the child) during breastfeeding. In this way, the child receives the benefit of breastmilk as well as protection against HIV transmission. The Ministry of Health of Mozambique, within the context of the Prevention of Mother-to-Child Transmission programme, adopted the latest WHO recommendations in mid-2010. This means that HIV-positive mothers will be advised to breastfeed exclusively for the first six months of their child’s life and to continue breastfeeding with adequate complementary feeding up to 12 months longer. After this, breastfeeding can be stopped. Throughout the breastfeeding period and up to one week after that, children should receive a daily dose of the antiretroviral drug nevirapine. The new guidance are expected to be introduced in a fashion starting in 2011.

Micronutrient deficiencies: Iodine deficiency

Iodine deficiency is the single largest cause of preventable brain damage and mental retardation in the world. Iodine deficiency also reduces child survival, growth and development. When pregnant women are iodine-deficient, they risk miscarriage, stillbirths and other complications. The visible and most severe consequences of iodine deficiency are goitre (an enlarged thyroid gland) and cretinism. The milder forms of iodine deficiency cause reduced mental development.

The most cost-effective strategy for preventing iodine deficiency is universal salt iodisation. Salt iodisation is the fortification of salt destined for human and animal consumption with iodine. In addition, iodised oil capsules can be distributed in areas with a high prevalence of iodine deficiency.

In January 2000, the Ministry of Health and the Ministry of Industry and Commerce issued the joint Ministerial Diploma No. 7/2000, which requires all locally produced or imported salt for human and animal consumption to be iodised. Enforcement, however, has been relatively weak to date.

Figure 3.15: Children 6–11 months old who received breastmilk and complementary food at least three times per day, by province, 2008

The Ministry of Industry and Commerce has invested in training salt producers and providing salt iodisation and monitoring equipment, while the Ministry of Health supports promotional activities. The NGO PSI is also supporting the Government in creating increased demand for iodised salt.

The use of iodised salt increased slightly from 54 per cent in 2003 to 58 per cent in 2008. The increase came from greater iodised salt use in urban areas. In rural areas there was a slight decrease. Differences between provinces in use of iodised salt and levels of adequately iodised salt are large. In 2008, only 25 per cent of households were using adequately iodised salt (more than 15 parts per million). This low percentage could be due to inappropriate iodisation and packaging practices in the factory and/or to inappropriate storage practices.

Notably, the salt–producing provinces of Cabo Delgado, Nampula and Zambezia have the lowest levels of salt iodisation. Levels of iodisation decreased in all three provinces between 2003 and 2008. This could be because unprocessed, non-iodised salt is more easily available in areas where salt is extracted and can more easily make its way onto the local market.

Households in the wealthier quintiles more often use iodised salt and also more often use adequately iodised salt. This is probably because wealthier households can better afford iodised salt, which is often two or more times more expensive than non-iodised salt, and to the fact that households in the higher wealth quintiles may be better equipped to store the salt appropriately.

In 2007, the Ministry of Health started distributing iodised oil capsules in the provinces with the highest rates of iodine deficiency, namely Niassa, Nampula, Zambezia and Tete. The target group for this intervention was pregnant women and children 7–24 months old. In 2008, iodine capsules were distributed during the Child Health Weeks, achieving 89 per cent coverage. The intervention was discontinued in 2009.

**Figure 3.16: Use of iodised salt by province, 2008**

Iron deficiency and anaemia

Anaemia can be caused by various factors: iron deficiency, diarrhoea, malaria, worm infections, tuberculosis and HIV infection. Iron deficiency is the main cause of anaemia. Children with anaemia have lower physical and mental development and school performance, often have little energy and have a reduced appetite. Anaemia in pregnant women and mothers is a major contributory factor for maternal mortality. Women who are anaemic before and during pregnancy have a higher risk of bearing children with low birth weight (less than 2,500 grams), and anaemia in early pregnancy affects a child’s potential height. A national study showed that 74 per cent of children under five were anaemic in 2002.

Vitamin A deficiency

Vitamin A is a crucial nutrient for the prevention of disease and deaths. The 2002 national survey referred to above found that 69 per cent of children 6–59 months old had vitamin A deficiency (low serum retinol). The Ministry of Health provides supplementation with high-dose vitamin A capsules to new mothers in the first six weeks after delivery and to children 6–59 months old to prevent vitamin A deficiency. A comparison of vitamin A supplementation coverage in 2003 and in 2008 shows a marked increase: from 50 per cent to 72 per cent. This increase is probably related to the introduction in 2008 of biannual Child Health Weeks, in which children receive vitamin A supplements and deworming medicines, and often also immunizations and other pretentive interventions. The coverage rates of these campaigns have increased to over 95 per cent.

The 2008 MICS data show that children from wealthier families are more likely to have received vitamin A supplements: 81 per cent of children in the wealthiest quintile had received them, compared with 62 per cent of children in the poorest quintile. In rural areas, 69 per cent of children received vitamin A supplements compared with 78 per cent in urban areas.

2.3. Maternal survival, health and nutrition

It is estimated that approximately 80 per cent of maternal deaths could be averted if women had access to essential maternity and basic health services. There is a growing consensus that improving maternal and newborn health and survival can be

Figure 3.17: Use of iodised salt by wealth quintile, 2008

achieved through establishing a ‘continuum of care’ that integrates programmes and interventions for reproductive health, safe motherhood, newborn care and child survival, growth and development, delivered within a legal, institutional and community and family environment that upholds and respects women’s rights (see Figure 3.19).

Estimates of maternal mortality ratios in Mozambique indicate that maternal mortality has decreased substantially in recent years, from an estimated 1,000 maternal deaths per 100,000 live births in the early 1990s to 408 per 100,000 live births in 2003. By comparison, the estimated maternal mortality ratio for all of sub-Saharan Africa was 920 in 2005.

The Institutional Maternal Mortality Ratio (IMMR), that is, the maternal mortality rate recorded in health facilities, has also declined in Mozambique. This reduction is largely due to improved access to health care services.

Figure 3.18: Vitamin A supplementation coverage, 2003 and 2008


Maternal health is usually assessed by measuring the maternal mortality ratio (MMR), which is an estimate of the annual number of deaths among women from pregnancy-related causes per 100,000 live births.

Using the sisterhood method, the 2003 DHS estimates that the MMR during the 10-year period prior to the survey was 408 maternal deaths per 100,000 live births. The sisterhood method has wide margins of error, with the result that the ‘real’ MMR lies somewhere between 200 and 600 maternal deaths per 100,000 live births.

Periodically, UNICEF, WHO, UNFPA and the World Bank evaluate reported maternal mortality data from countries and make adjustments to account for the well-documented problems of under-reporting and misclassification of maternal deaths, and to develop estimates for countries with no data. The estimated adjusted MMR for Mozambique was 520 per 100,000 live births in 2005.

The IMMR declined from 230 per 100,000 live births in 1993 to 177 per 100,000 live births in 2003, although significant disparities between provinces exist, with the 2003 IMMR estimated at 291 per 100,000 live births in Cabo Delgado and 26.5 per 100,000 live births in Maputo province.
services, particularly family planning, emergency obstetric and neonatal care and antenatal care, and improvements in equipment, communications material and transport since 2007. Health staff have been trained in Integrated Management of Neonatal and Childhood Illnesses with a focus on neonatal care, and 90 per cent of health facilities now implement Integrated Management of Neonatal and Childhood Illnesses services, compared with 50 per cent in 2005.  

Mozambique has real potential to achieve the 2015 MDG 5 targets: a Maternal Mortality Ratio of 250/100,000 live births, and skilled birth attendance coverage of 66 per cent. Achievement of these targets will require: improved quality and coverage of reproductive health services; expansion and maintenance of quality emergency obstetric and neonatal care; timely diagnosis, treatment and referral of obstetric complications; improvement in the structure and functioning of the referral system;

Figure 3.19: The continuum of care for maternal and newborn health

Connecting care during the lifecycle (A) and at places of caregiving (B). Adapted from partnership for Maternal, Newborn and Child Health, with permission.

Box 3.1: Child Health Weeks

The delivery of an integrated package of relatively cheap preventive and curative interventions, when delivered at scale, can reduce under-five mortality by up to 63 per cent. Unfortunately, in many countries the children that are most in need of these interventions do not have easy access to quality services at health facilities. Child Health Weeks are designed as a mostly temporary measure to improve access by delivering a package of cost-effective health and nutrition interventions to children under-five years of age, using a campaign approach that reaches even the remotest areas of a country. Use of a campaign approach not only expands the reach of health services, but it can also strengthen routine and outreach service delivery as health staff often receive additional training and families receive additional information about services. Availability of an integrated package of effective, quality health services delivered at a single point in time and at a single location saves caregivers from making multiple (and costly) trips to health facilities with their children, and also creates demand for other routine health services, especially when effective social mobilisation has been carried out.

Child Health Weeks usually comprise at least two complementary health or nutrition interventions and may include a few more. Services and interventions that are delivered in Mozambique include:

**Core Interventions:**
- Vitamin A supplementation of children aged 6 months to 5 years;
- Routine or catch-up immunisation against measles, polio, tetanus, diphtheria and whooping cough, and tuberculosis;
- De-worming of children aged 1-4 years.

**Other Interventions that have been added in Mozambique include:**
- Screening for undernutrition (with the use of Mid Upper Arm Circumference tapes and referrals for management of acute undernutrition);
- Promotion and distribution of long-lasting, insecticide-treated nets;
- Promotion of healthy family and child-care practices, such as exclusive breast-feeding;
- Immunisation of women of reproductive age against tetanus;
- Vitamin A supplements for lactating mothers during first 8 weeks after delivery.

Key to the success of a Child Health Week is a well-integrated social mobilisation strategy that targets the universal participation of eligible families covered by the campaign. Designed and implemented at national, provincial and district levels under the coordination of the Ministry of Health, the strategy is twofold. First—and beginning well ahead of the Child Health Week—the strategy works to raise public awareness about the week. The strategy’s second component works hand-in-hand with service delivery to ensure the promotion of critical messages on complementary health behaviours and hygiene practices. Social mobilisation for Child Health Weeks exploits mass and local media for the dissemination of public service announcements and—especially through community-based radio—the generation of discussion and participation through community dialogue and debates. Local activists penetrate media dark areas to disseminate information, using communication materials specifically produced for the campaigns, using local languages to reach the communities.

Throughout the week, strategic use is made of local and national influencers—opinion leaders and decision makers who have the trust and respect of their constituents—to reinforce messaging and maximise participation. Through community meetings and interpersonal communication at the household level, local leaders play a crucial role in rallying participation for these child health campaigns.
improvement of the Health Information System to better monitor emergency obstetric and neonatal care; ensuring reproductive health commodity security; and increased involvement of the community, particularly men, in reproductive health decisions.

There are five direct causes of maternal mortality: haemorrhage (usually occurring post-partum), sepsis, eclampsia, obstructed labour and complications of abortion. Most of the direct causes of maternal mortality can be readily addressed if skilled health personnel are on hand and key medicines, equipment and referral facilities are available. Indirect obstetric deaths occur as a result of either previously existing conditions or conditions arising in pregnancy that are not related to direct obstetric causes but may be aggravated by the physiological effects of pregnancy. These include such conditions as AIDS, malaria, anaemia and cardiovascular diseases. Teenage pregnancies also increase the risk of maternal deaths.56

One of the most important factors affecting women's health is good nutrition. In Mozambique, about nine per cent of women of reproductive age are undernourished (as indicated by a low body mass index), according to data from the 2003 Demographic and Health Survey.57 In 2003, the prevalence of undernutrition was greater among women in rural areas than in urban areas and was twice as high among the poorest women (10 per cent) as amongst the wealthiest women (5 per cent).58 Anaemia, which can be related to insufficient consumption of iron-rich foods, worm infestations, malaria or other infections, affected 70 per cent of pregnant women and 48 per cent of non-pregnant women according to a 2002 study.59 Despite the prevalence of anaemia, 39 per cent of pregnant women do not receive iron and folic acid supplementation during pregnancy.58

The coverage of antenatal care in Mozambique has improved significantly in recent years, with the proportion of women attended at least once by skilled health personnel during pregnancy increasing from 85 per cent in 2003 to 92 per cent in 2008 (see Figure 3.20).59 The largest gains were recorded in rural areas, where the proportion of pregnant women who reported receiving antenatal care at least once increased from 79 per cent in 2003 to 90 per cent in 2008. This increase is the result of expansion of health services into rural areas. Antenatal care coverage in urban areas remained almost universal, with a slight increase from 97 per cent in 2003 to 99 per cent in 2008.

Antenatal care coverage exceeded 80 per cent in all provinces of the country, ranging from 81 per cent in Zambezia to almost universal coverage in Gaza and Maputo City. Antenatal care coverage varies according to the socio-economic status of women, with 86 per cent of women in the poorest quintile reporting having attended at least one antenatal visit, compared with 99 per cent in the wealthiest quintile. Coverage among women in the poorest quintile has risen from 67 per cent in 2003 to 85 per cent in 2008.

Data from the 2008 MICS reveal that 58 per cent of births took place in health facilities. In rural areas the coverage reached 49

* When the ratio of the height and weight of a woman, used to derive the body mass index, is less than 18.5, a woman is regarded as being malnourished.
per cent. The proportion of institutional deliveries in rural areas has increased since 1997 (33 per cent) and 2003 (34 per cent). The proportion of institutional births in urban areas remained stable at 81 per cent. The relatively high proportion of births that take place outside of formal maternity or other health facilities is important, both in relation to women’s access to emergency obstetric and neonatal care services, but also to their use of prevention of mother-to-child transmission interventions, which are delivered through health facilities. Outside of formal health facilities, there is no system in place to ensure that those who do not have institutional deliveries comply with, and therefore benefit from, this intervention.

The norms established in the national antenatal care programme recommend that all pregnant women receive information on possible health problems during pregnancy, including HIV infection and the risk of HIV transmission from mother to child. In addition, they should be weighed, have their height measured, have their blood pressure taken and be tested for syphilis. However, there appears to be little compliance with these norms. According to MICS 2008, while the majority of pregnant women receiving antenatal care were weighed during consultation, only 52 per cent were informed about the symptoms of pregnancy-related health complications, only 48 per cent had their height measured, only 36 per cent were asked to provide a urine sample and only 47 per cent had their blood taken for HIV testing. In addition, only just above half of the women (59 per cent) were counselled about HIV and AIDS. These findings indicate the overall poor quality of the primary health care services in Mozambique and show the urgent need for training of mid-level and basic staff, in order to maintain acceptable levels of maternal health services.

In 2003, only 48 per cent of births were attended by skilled health personnel. This increased to 55 per cent in 2008. The provinces with the lowest proportion of births attended by skilled personnel were Manica (33 per cent) and Zambezia (38 per cent). The vast majority of antenatal care is provided by nurses and midwives (53 per cent in 2008), with doctors accounting for only 2 per cent of antenatal care provided overall. Access to skilled health personnel

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**Figure 3.20: Women attended at least once by skilled health personnel during pregnancy, 1997, 2003 and 2008**

![Bar chart showing attendance rates](chart)

during birth and institutional births is correlated with wealth. Ninety per cent of women in the highest wealth quintile gave birth in a health facility compared to 38 per cent of women in the lowest quintile (Figure 3.21).  

Post-partum care also remains low. About 60 per cent of women who had non-institutional births do not receive any kind of post-partum care. Only 12 per cent of women who had non-institutional births attend some form of health facility up to two days after delivery. Community interventions are needed to reach these mothers. Since 2008, a neonatal component has been included in the Integrated Management of Childhood Illness (IMCI) and Community-Integrated Management of Childhood Illness (CIMCI) packages, changing the acronyms to Integrated Management of Neonatal and Childhood Illness (IMNCI) and Community-Integrated Management of Neonatal and Childhood Illness (C-IMNCI), respectively. In order to scale up community-based preventive and curative health services, the Ministry of Health in collaboration with its partners has developed training manuals to implement an appropriate model of comprehensive, community-based newborn care, with provision for home visits to be made on key days during the first month of life (days 3, 7, 14 and 28) to identify danger signs and provide early referrals. Training of trainers was conducted in all three regions of the country in 2008, and training of community health workers in the implementation of community IMNCI was initiated in some Reaching Every District (RED) districts of the country. In 2009, close to 450 community health workers were trained in C-IMNCI. As a result, over four thousand newborns (3 per cent of expected deliveries) in 21 districts of 7 provinces were visited at home in the first month of life. Among them, over 1,100 (28 per cent) were referred to health centres in 2009. The ongoing revitalisation of the community health worker programme with paid workers will further strengthen and expand these interventions with comprehensive Home-Based Maternal, Child and Newborn Care.

![Figure 3.21: Proportion of women receiving antenatal care and delivering in a health facility by wealth quintile, 2008](image)

Anaemia and vitamin A deficiency are among the major nutritional problems affecting women, particularly those who are pregnant and lactating. The 2002 national survey on vitamin A deficiency and anaemia and malaria in children under five and their mothers indicated that 70 per cent of pregnant women suffered from anaemia, against 48 per cent among non-pregnant women. Only 61 per cent of pregnant women received iron and folic acid supplementation during pregnancy. These findings illustrate low levels of compliance with existing national policy on iron and folic acid supplementation for pregnant women.

2.4. Childhood illnesses

A major public health intervention to address childhood illness has been the development of the IMCI programme, which has three components: building the capacity of health professionals, strengthening the health system and improving family and community health practices. IMCI was introduced to Mozambique in 1998, when the Ministry of Health began gradual implementation, starting in 29 districts. Since then IMCI coverage has increased. According to the 2008 Annual Joint Evaluation of health system performance, about 90 per cent of health services nationwide were implementing Integrated Management of Neonatal and Childhood Illnesses, compared with about 50 per cent in 2005.

IMNCI is one of the key pillars of the Accelerated Child Survival and Development strategy, with the potential, if implemented fully and including a community component, to prevent up to one third of all child deaths.

While important progress was made in reducing childhood illnesses, the overall situation remains daunting. Particular successes and challenges in combating childhood illness in Mozambique in the areas of malaria, acute respiratory infection, diarrhoea and vaccine-preventable diseases are presented below in more detail.

2.5. Malaria

The 2008 National Child Mortality study confirms malaria as the leading killer of children in Mozambique. Thirty-three per cent of deaths among children under five are attributed to malaria. Among children aged one to five, deaths attributed to malaria reach 46 per cent. As well as being the major cause of death among young children, malaria also accounts for 40 per cent of all out-patient consultations, and up to 60 per cent of in-patients in paediatric wards require treatment for severe malaria, placing a significant burden on health resources.

Prevalence of malaria has changed little during the period between a 2002 national survey and the 2007 Malaria Indicator Survey, which recorded an overall prevalence of 51 per cent (27 per cent in urban areas and 58 per cent in rural areas).

Thirty-six per cent of children with a fever were given antimalarial medicines in 2008, compared to 15 per cent in 2003 (see Figure 3.22). While this still falls short of the revised Roll Back Malaria targets, it does demonstrate significant improvement. Major reductions in infection were observed in areas of the country where scaling-up of malaria prevention and control interventions have occurred, for example in Maputo province, where malaria prevalence has dropped dramatically.

The low reported rates of appropriate treatment indicate, on the one hand, low awareness and demand among caregivers for treatment (only 60 per cent of children with fever were taken to a health facility, xi The Malaria Indicator Survey used the recently developed Rapid Diagnostic Tests to test for the presence of malaria parasites.

xii The 2000 Abuja Roll Back Malaria summit set a target that by 2005, 60 per cent of those suffering from malaria should be able to access and use correct, affordable and appropriate medicines within 24 hours.
according to the 2007 Malaria Indicator Survey), and on the other hand low access to health facilities. Outside the formal health system, only registered pharmacies and a few specially registered shops can supply antimalarial medicines, making access to prompt treatment difficult, especially in underserved rural areas. Malaria treatment is also available at community level in selected parts of the country, where it is administered by community health workers known as APEs (Agente Polivalente Elementar). Village health workers, known as Socorristas and trained by World Relief, are also authorized to treat malaria at community level in Gaza. It is hoped that ongoing revitalization of the APE programme by the Government will improve the situation.

The situation regarding prevention and control of malaria is more positive than that for prompt and effective treatment. The Government of Mozambique promotes the use of two equally effective tools for malaria control and prevention: Indoor Residual Spraying (IRS) of the interior surfaces of houses with long-lasting insecticides, and long-lasting insecticidal nets. The Government identified IRS as a key strategy for malaria control and prevention in PARPA II, establishing a target of 50 per cent IRS coverage by the year 2009, compared with about 18 per cent in 2005. This PARPA target has already been achieved, with over 50 per cent of the population being covered with IRS, although questions remain as to the quality of the spraying carried out and the accuracy of the coverage data.

In 2000, two major insecticide-treated net programmes were initiated in Zambezia and Gaza, and insecticide-treated nets were introduced into the public health system for the first time. By mid-2009, there were long-lasting insecticidal net programmes in all ten provinces and Maputo City. Long-lasting insecticidal nets are distributed to pregnant women through antenatal services and to children under five through campaigns, including Child Health Weeks. Since 2009, the

Figure 3.22: Proportion of children receiving appropriate treatment for malaria, 2003 and 2008

Government introduced a policy of universal access to long-lasting insecticidal nets. Coverage of children under five following campaign activities in 2009 is estimated at around 93 per cent in unsprayed districts and about 54 per cent nationally.72 Mosquito-net ownership on a national scale has risen from 18 per cent of households owning at least one mosquito net in 2003 to 65 per cent in 2008.73 However, only 31 per cent of households reported owning a net that was treated with an insecticide.13 The proportion of children who reported sleeping under a net the night before the survey rose from 10 per cent in 2003 to 42 per cent in 2008. Of the 42 per cent of children who slept under a net, 23 per cent slept under a treated net.74 In 2008, 74 per cent of pregnant women throughout the country had received a long-lasting insecticidal net, up from only 46 per cent in 2007.75

Due to the expansion of insecticide-treated net coverage and indoor residual spraying, the 2010 Roll Back Malaria targets for prevention could be met.14 However, while showing encouraging signs of progress, coverage with treated nets, which are twice as effective as untreated nets, remains far below national and international targets. In addition, household ownership of mosquito nets is not translating into effective use of nets by children under five and pregnant women; the two population groups most at risk of severe illness and death due to malaria.

As many as one million pregnancies in sub-Saharan Africa every year are thought to be complicated by co-infection with malaria and HIV.76 Both malaria and HIV infection in pregnancy are associated with maternal anaemia, low birthweight, and maternal and infant mortality, with HIV infection presenting an increased risk of malaria. In the presence of co-infection, the prevalence of anaemia and low birthweight may exceed 35 per cent.77 The WHO now recommends the use of intermittent preventive treatment and insecticide-treated nets for all pregnant women living in a high-risk malaria area. Accordingly, the Ministry of Health in Mozambique also strengthened preventive treatment and introduced intermittent preventive treatment in 2006. MICS 2008 recorded that 67 per cent of pregnant women had received intermittent preventive treatment, which is not far short of the 2010 target.

2.6. Acute respiratory infection

Like malaria, acute respiratory infection (ARI) is a leading cause of morbidity and mortality among young children in Mozambique, with pneumonia being the most serious such infection. The WHO estimates that 60 per cent of ARI deaths could be prevented by the selective use of antibiotics, but the success of treatment relies upon early detection and access to medical facilities.

The proportion of children under five with symptoms of pneumonia reduced from 10 per cent in 2003 to 5 per cent in 2008. In 2008, around 65 per cent of children with ARI symptoms were taken to a health facility.78

The prevalence of ARI symptoms among children living in urban areas was higher.

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72 Prior to the introduction of long-lasting insecticidal nets that do not require treatment during their useful lifespan of three to five years, mosquito nets required re-treatment with insecticide every six months to ensure continuing efficacy. All mosquito nets distributed since 2006 are long-lasting nets.
73 2010 Roll Back Malaria targets are as follows: 80 per cent of the population protected from malaria by IRS or Long-Lasting Insecticidal Nets, 80 per cent of people able to receive effective treatment within 24 hours, and 80 per cent of pregnant women able to receive Intermittent Preventive Treatment against malaria in pregnancy.
74 Defined as the provision of at least two treatment doses of sulphadoxine-pyrimethamine during routine antenatal clinic visits.
than among those living in rural areas (12 per cent and 9 per cent respectively). The percentage of children with symptoms in Maputo City was five times higher than in Tete (see Figure 3.23). This could be explained by the higher population density in Maputo City, as ARI is likely to be spread or aggravated by overcrowded housing, poor-quality living environments or pollution. The lower prevalence among children from poorer or less well-educated families could be explained by the fact that the majority of more highly educated people live in urban areas.

There is a wide disparity in the proportion of children receiving treatment for ARI (see Figure 3.24). Children from better-off families and children whose mothers had at least a primary-level education were much more likely to receive treatment for ARI symptoms than those from rural areas, those from poor families and those whose mothers had no education. No relationship was observed between a mother’s level of education and her ability to recognise symptoms of pneumonia, suggesting that the education system should have a stronger focus on family health issues.

Figure 3.23: Prevalence of acute respiratory infection, by province, 2008

![Figure 3.23: Prevalence of acute respiratory infection, by province, 2008]


Figure 3.24: Proportion of children under five receiving appropriate treatment for acute respiratory infection by province, 2008

![Figure 3.24: Proportion of children under five receiving appropriate treatment for acute respiratory infection by province, 2008]

2.7. Diarrhoeal diseases

Diarrhoea is another major cause of child morbidity and mortality in Mozambique. It becomes more frequent in children six months and older, when they begin to crawl and to eat complementary food. Recent global estimates indicate that every year 1.5 million children die from diarrhoea. The World Health Organisation estimated in 2007 that 26,900 deaths per year in Mozambique were attributed to water-, sanitation- and hygiene-related diarrhoeal disease.

Data from the 2008 MICS indicate that diarrhoeal disease is the fifth most important cause of under-five mortality. This is supported by the 2009 National Child Mortality Study, which reports that gastrointestinal infectious disease contributes almost seven per cent to the total number of deaths. Diarrhoeal disease causes a relatively higher proportion of total under-five deaths in Inhambane (12 per cent) and Cabo Delgado (11 per cent), and a slightly higher proportion of deaths in boys than in girls across all age groups, from post-neonatal to under five. The 2008 MICS also indicates that there has been an increase in diarrhoeal disease prevalence in children under five, from 14 per cent in 2003 to 18 per cent in 2008. The highest prevalence of diarrhoea was recorded in Nampula (23 per cent) and the lowest in Niassa (13 per cent). Stunted children appear to have diarrhoea more frequently than non-stunted children, with 51 per cent of stunted children experiencing diarrhoea in the two weeks prior to the survey, compared with 37 per cent of non-stunted children.

Almost half (47 per cent) of children (aged 0-5 years) with diarrhoea received oral rehydration therapy and continued with normal breastfeeding. Zinc is not yet being used systematically to treat diarrhoea in Mozambique. Introduction of zinc and community case management by trained community health workers will further improve results and accelerate reduction of under-five mortality.

2.8. Cholera

Due to the low levels of sanitation coverage, a high number of cholera cases have been recorded over the years in Mozambique (see Table 3.2). From 1992 to 2004, cholera cases from Mozambique represented between one third and one fifth of all African cases. In 1997/98, a cholera outbreak registered 50,000 cases and 1,353 deaths, with a case fatality rate of 3.2 per cent. The factors contributing to cholera outbreaks in Mozambique are: lack of sanitation and poor hygiene conditions, scarcity and lack of access to potable water, inadequate waste disposal, poor economic conditions of the communities, recurrent droughts and floods, high population density and poorly planned urbanisation.

Table 3.2: Cholera cases in Mozambique, 2007–2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of cholera cases</th>
<th>Number of deaths</th>
<th>Case fatality rate</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1,073</td>
<td>16</td>
<td>1.4%</td>
<td>From Week 41 (October–December 2007)</td>
</tr>
<tr>
<td>2008</td>
<td>12,306</td>
<td>157</td>
<td>1.3%</td>
<td>January–December 2008</td>
</tr>
<tr>
<td>2009</td>
<td>19,088</td>
<td>150</td>
<td>0.8%</td>
<td>January–December 2009</td>
</tr>
<tr>
<td>2010</td>
<td>4,129</td>
<td>56</td>
<td>1.4%</td>
<td>As of 21st epidemiological week</td>
</tr>
</tbody>
</table>

Box 3.2: Child-to-Child radio and school: getting the voice of children across

Designing effective rights-based messaging for children and young people is a challenge. Messaging that educates and also stimulates children’s engagement and participation can facilitate their adoption of pro-social and health-seeking behaviours and attitudes. Children and youth are catalysts in creating demand for a rights-based society and can also become agents for community empowerment. Child-to-child programming is producing strong results as a behaviour development and empowerment strategy for young people.

The Child-to-Child Media Network was created in 2000 as a partnership between Radio Mozambique, Ministry of Education, UNICEF and, more recently, local civil society organisation N’weti (2007). Using an entertainment-education approach, the Child-to-Child Media Network actively involves children and young people in developing, producing and presenting radio and TV programmes by and for children, both to ensure their right to participation and to offer them an opportunity to express their opinions and aspirations. Programmes are broadcast in 16 national languages as well as Portuguese. Child-to-Child has increased opportunities for children and adolescents to express themselves, and has also increased their knowledge of child rights and health and education issues. Subjects like HIV infection, sexual abuse and child trafficking, usually taboo in Mozambican society, are being openly discussed by the child presenters of radio and television programmes for young people. The programmes are increasingly being linked to school curricula to reinforce messages and expand the impact of both school and media.

Radio Mozambique presenter Amelia Maisha Tunzine, 15, is one of several presenters who use the airwaves to talk frankly with their peers about subjects that matter to them but are often considered off-limits by parents. “I don’t feel uncomfortable anymore talking about difficult subjects like HIV. It is no longer an adult problem; it also affects children. If the issue is only approached by adults, then kids will continue to believe it’s something they don’t have to deal with,” she says.

A 2008 audience survey conducted by Radio Mozambique in 2008, in which 76 per cent of those surveyed were 10–13 years old, indicated that 55 per cent of those interviewed listened to the radio every day. Nearly half listened to Child-to-Child programmes. Among their main reasons for listening were the educational/informative nature of the programmes and the quality of information received.

Larsen Manjate, 17, who has worked on Child-to-Child radio shows since 2006 and has had his own show since 2007, sees Child-to-Child as a way to help children understand not only childhood problems but also the challenges of adulthood. He said, “I think that what we broadcast helps kids grow into adults who know how to make good choices. I think we help make good changes in kids’ lives.”

According to a study undertaken by the Community Radio Network, FORCOM, in 2008, Child-to-Child community radio programmes facilitate easier communication between parents and children. Listening to the shows makes it easier for parents and caregivers to discuss difficult and sensitive issues with their children or wards, since these issues are often debated on the radio.

For children across Mozambique who do not have access to conventional schooling, the radio programmes can serve as a low-cost means of promoting children’s participation, strengthening their access to life-saving information and promoting healthy behaviours.
To address the poor sanitation situation in the country, the Government of Mozambique launched a sanitation campaign in 2008 that focused on hand-washing, constructing and using latrines, providing safe water and waste disposal. A multi-sector, multi-year cholera prevention plan is being finalised.

2.9. Vaccine-preventable diseases and immunisation

The national Expanded Programme of Immunisation has made substantial progress in recent years. Mozambique has increased its immunisation rates for measles and diphtheria-pertussis-tetanus (DPT) 3 from around 50 per cent in 1991 to 70–80 per cent in 2007. Two new vaccines, hepatitis B and Haemophilus Influenzae, have been introduced, and there are plans to introduce rotavirus and pneumococcus vaccines.

In order to address low coverage and the inequities in coverage between rural and urban areas and among provinces and wealth quintiles, the Ministry of Health introduced the Reaching Every District (RED) approach, which focuses on building the capacity of districts, health workers and communities to improve immunisation and other maternal and child survival services. The RED approach is currently being used by the Ministry of Health as a platform for reaching MDGs 4 and 5.

In 2008, eighty-seven per cent of children under one had received vaccination against tuberculosis, and 71 and 70 per cent received DPT 3 and Polio 3 vaccines, respectively. Sixty-four per cent of children were vaccinated against measles. Children living in urban areas are still more likely to be vaccinated than those in rural areas. Fifty-five per cent of children 12–23 months old in rural areas received all the vaccines, as against 74 per cent of children living in urban areas. Eleven per cent of children in rural areas received no vaccines, compared to four per cent in urban areas.

Figure 3.25: Immunisation of children aged 12–23 months by antigen, 1997, 2003 and 2008

“This picture shows where we fetch water. It is full of garbage, mud and dirty water. This is not good, because we may end up getting cholera and other diseases. Kids end up playing in this water, because we do not have playgrounds and parks. The children get sick.”

“You will receive better care if you have a family member working at a hospital.”

“The majority of us do not have a hospital inside our community. The closest ones are approximately 3.5–5 km from our home. Most of us have to walk to the hospital. Walking when you are sick is very tiring. Sometimes we can afford to go to the hospital, other times, we cannot afford the fees. A lot of us have marks on our arms. We don’t know why we have them, but we can’t afford to go to the doctor to find out.

“At the hospital, they want money for every small thing. How much can we afford? And when we are sick and they are asking for money, we feel sad and upset. When we grow up and if we become doctors, we will always take care of the poor people first, because we know how it feels when someone doesn’t take care of you just because you don’t have money.”

— Argentina, age 16

Measles vaccination coverage in Mozambique improved substantially in 2005 following implementation of a national immunisation campaign that reached 95 per cent of children aged 9 months to 14 years. A follow-up measles campaign during the second phase of the 2008 Child Health Weeks reached 99 per cent of children aged 9–59 months. As a result of these campaigns and strengthened routine services using the RED approach, the number of measles cases reported in the country has substantially decreased. Another follow-up campaign is planned for 2011.

Since 2008, biannual National Child Health Weeks have been implemented by the Government of Mozambique to give every eligible child an opportunity to obtain a basic package of child survival interventions. The specific objective of the biannual National Child Health Weeks is to reach at least 80 per cent of eligible children under five with vitamin A supplementation plus other child survival interventions. Since 2010, the package has been expanded to include elements of maternal health.

2.10. HIV and AIDS

The vulnerability of a country to the effects of infectious disease, including AIDS, depends to a large extent on the level of human development attained by that country. Individuals and society as a whole are better able to protect themselves against the impact of illness and disease in developed countries. This is because of constrained financial resources at the national and household level in developing countries, and reduced human capital arising from a lack of education opportunities and access to other basic social services. In Mozambique, HIV and AIDS adversely affect development and obstruct the fulfilment of human rights, as reflected in key indicators such as life expectancy at birth, child mortality, school attendance, literacy and household income, among others.

Because of the cross-cutting nature of AIDS in Mozambique, it is dealt with in Chapter 6, Cross-cutting issues.

2.11. Sector financing and budget allocations

The proportion of total financial resources available to the Government that are allocated to the health sector, including external funding, has shown a clear decrease over the period 2006–2010, falling from 13.4 per cent in 2006 to 8.4 per cent in 2010. This level of funding is below the Abuja target of allocating at least 15 per cent of the State budget to the health sector. The sector continues to rely heavily on external funding; the proportion of the sectoral resource envelope funded from external sources decreased from around 65 per cent in 2008 to almost 39 per cent in the 2010 budget proposal. An analysis of 2008–2010 data reveals that both internal and external funding components of the health budget decreased in real terms.

Of the total allocation to the National Health System in 2010, 60 per cent was allocated to the Ministry of Health and 40 per cent to the Provincial Health Directorates. In terms of investment funding, the provincial level of the National Health System received only 22 per cent of the total investment funding envelope.

The disparities in funding between primary and tertiary or quaternary levels of the health care system are of particular importance for the health and development of children, as tertiary- and higher-level care facilities tend to be concentrated in urban areas, while many of the diseases and conditions that affect children (e.g. malaria, diarrhoeal diseases) are most prevalent in rural areas and are best managed at the primary health care level. In addition, tertiary and higher levels of the health care system tend to focus on less cost-effective curative care, rather than preventive care.

Funding from the 2009 proposed state budget equates to around $US 10 per capita. If total health funding available to the sector from both the state budget and other off-budget sources is considered, spending increases to around $US 17.7 per person, of
which $US 10.4 was actually spent in 2008 (although vertical funding is not captured in the Budget Execution Report, reducing the recorded per capita spending, as discussed below). This health allocation is in line with the stated PARPA II objective to increase health spending to $US 15 per capita by 2009. Despite showing improvement over time, per capita health spending remains below the recommended minimum to meet basic health needs in low-income countries, as proposed by the World Bank and WHO, and also below the sub-Saharan African average, which was estimated at $US 31.9 in 2002.

In 2010, per capita allocations to the provinces varied from 266 Meticais per person in Niassa to 74 meticais per person in Zambezia and 73 in Nampula (see Figure 3.26). The Committee on the Rights of the Child has raised concerns “about the inequitable allocation of resources among provinces, with the lowest expenditures being allocated to the provinces where child well-being indicators, including child poverty, are among the worst in the country.” The G19 group of donors is also concerned and continues to advocate strongly that the Government introduce a provincial funding allocation formula or mechanism that takes into account the varying levels of social development indicators.

Not all donor financing and internal revenues in the health sector are captured in the state budget. A high proportion of funding from some partners is directed towards projects and remains ‘off-budget’. According to the 2008 state budget Execution Report (Relatório de Execução do Orçamento do Estado), around 56 per cent of the 2008 total health sector budget consisted of vertical funding, executed outside of the direct control of the Government. The high degree of off-budget financing hampers sectoral

Figure 3.26: Per capita health allocations by province (Meticais), 2009


Table 3.3: Comparative analysis of health allocations, 2007 and 2008

<table>
<thead>
<tr>
<th>Description</th>
<th>Annual allocation ($US)</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
<td>2008</td>
</tr>
<tr>
<td>State Budget (internal component)</td>
<td>112,730,067</td>
<td>120,847,887</td>
</tr>
<tr>
<td>Recurrent</td>
<td>107,166,049</td>
<td>115,039,479</td>
</tr>
<tr>
<td>Investment</td>
<td>5,564,018</td>
<td>5,808,408</td>
</tr>
<tr>
<td>State Budget (external component)</td>
<td>111,788,250</td>
<td>90,610,103</td>
</tr>
<tr>
<td>Global Fund</td>
<td>49,384,580</td>
<td>64,794,092</td>
</tr>
<tr>
<td>Common Fund</td>
<td>96,750,494</td>
<td>93,956,010</td>
</tr>
<tr>
<td>PROSAÚDE - Central</td>
<td>24,979,244</td>
<td>30,675,029</td>
</tr>
<tr>
<td>PROSAÚDE - Medicines</td>
<td>45,000,000</td>
<td>35,890,754</td>
</tr>
<tr>
<td>PROSAÚDE - Provincial</td>
<td>26,771,250</td>
<td>27,390,229</td>
</tr>
<tr>
<td>Total</td>
<td>370,653,391</td>
<td>370,208,092</td>
</tr>
</tbody>
</table>


Figure 3.27: Allocations to health sector (by millions of Meticais), MTEF 2010–2012

planning and has prompted the Ministry of Planning and Development and the Ministry of Finance to attempt to improve the extent to which external assistance is reflected in Government public finance management systems.

Within the context of the introduction of a Sector Wide Approach in health in 2001, common funding mechanisms were created, culminating in a Memorandum of Understanding for the common fund PROSAÚDE in 2003. In 2004, this was followed by the creation of the Provincial Common Fund and the Pharmaceutical Common Fund. In 2008, the PROSAÚDE Memorandum was updated and the three Common Funds were amalgamated under the single Common Fund PROSAÚDE II. The PROSAÚDE Common Fund is on-budget and on-treasury. Increasingly, disease-specific ‘vertical’ funds are being channelled through the PROSAÚDE II common fund, and this has made quantifying the full resource envelope available to the Government significantly easier.

The 2009 State Budget Execution Report notes that health sector (minus HIV) budget execution has increased in recent years, from 69 per cent in 2008 to 75 per cent in 2009. HIV-related execution fell dramatically during the same period, from 79 to 55 per cent. Health budget execution remains lower than most other sectors. One reason cited for this decrease is that the sector benefits from vertical funding more than other sectors. Due to lack of information on expenditure of these funds, they are recorded as zero execution in the budget reports, thereby reducing overall budget execution levels.
3. Water and sanitation

Mozambique has made significant advances in the water supply and sanitation and hygiene (WASH) sector in recent years. Improvements have been realised in the institutional and policy framework. It has also created a regulatory structure and that incorporates the Government, the private-sector and consumers. Progress has also been made in the decentralisation of management.

Most reforms and investment, however, have targeted water and sanitation supply in the larger urban centers. Rural and peri-urban water services remains fragile and sanitation access and hygiene promotion have largely stagnated, particularly in peri-urban areas. Institutional capacity remains limited, especially at the local levels.

The 2006 Childhood Poverty in Mozambique: A Situation and Trends Analysis noted that rural water supply coverage had not improved, due to the relatively high costs involved in Mozambique as compared to other countries in the region. Since 2006, the Government of Mozambique, with support from partners, has standardised its procurement and contracting procedures and promoted strong private sector participation. Consequently, costs of construction of rural water supplies have been reduced by 36 per cent.

The Convention on the Rights of the Child requires States Parties to take appropriate measures to combat disease and malnutrition within the framework of primary health care, through, inter alia, the application of readily available technology and the provision of adequate nutritious foods and clean drinking water. Hygiene and sanitation are also covered: the Convention states that States Parties must “ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, hygiene and environmental sanitation and the prevention of accidents.”

The primary international framework for the water and sanitation sector is the MDGs, specifically Goal 7: to ensure environmental sustainability. The water and sanitation specific target is Target 7c: “halve by 2015 the proportion of people without access to safe drinking water and basic sanitation.” The indicators for assessing progress towards this target include: the proportion of the population using an improved drinking water source, and the proportion of the population using an improved sanitation facility. Improving access to water and sanitation was a key Government priority within the human capital pillar of PARPA II, which recognises the importance of increasing access to improved water supplies and sanitation facilities in reducing poverty.

3.1. Institutional framework

The revised National Water Policy focuses on decentralisation; sustainability; effective user participation; the shifting of Government roles and responsibilities from implementer to facilitator and increased involvement of the private sector, Non-Governmental Organisations and Community-Based Organisations. The National Water Policy has the following key objectives:

- Satisfaction of basic needs of human water consumption. The medium-term goal is in accordance with the MDG target to reduce by half the number of people without access to a safe and reliable water supply. The long-term goal is to guarantee universal access to a safe and secure water supply and to increase service levels;
Improvement of sanitation as an essential tool for the reduction of water-borne diseases (such as cholera, malaria and diarrhoea) improved quality of life and environmental conservation. Separate goals are set for urban and rural areas. The long-term goal is to contribute to attainment of universal access to sanitation services;

- Water efficiently used for economic development;
- Water used for environmental conservation. The Water Policy promotes conservation of water as part of water resources management;
- Reduction in vulnerability to floods and droughts through better coordination and planning, as well as preparedness of individuals, communities and institutions in affected areas;
- Joint management of shared river basins to promote regional peace and integration.

Through the National Water Policy, the Government has reaffirmed its political commitment to attaining the MDG targets relating to water and sanitation, which imply the provision of improved water and sanitation services for more than seven million Mozambicans in rural areas and three million in urban areas before the year 2015.

The 2009 National Rural Water Supply and Sanitation Programme is the framework for putting into operation and implementing the Rural Water Supply Strategic Plan (PESA-ASR) 2006-2015 towards reaching the MDG target of 70 per cent coverage for rural water supply and 50 per cent coverage of rural sanitation at national level. The programme’s development objective is to contribute to the satisfaction of basic human needs, improve well-being and contribute to the reduction of rural poverty in Mozambique through improved access to water supply and sanitation services. The programme consists of four components:

- Support to sustainable increase in rural water supply and sanitation coverage;
- Development of appropriate technologies and management models for rural water supply and sanitation;
- Capacity-building and human resource development in the rural water supply and sanitation sub-sector;
- Support to decentralised planning, management, monitoring and financing of rural water supply and sanitation activities.

The Rural Water Supply and Sanitation Programme recognises the necessity for a legal framework for community participation to enable community organisations to represent and act on behalf of community members in making binding commitments to public authorities and private entities, collecting and managing funds, operating a bank account, making purchases and payments and entering into agreements with local governments, dealers, suppliers, contractors and others. Two laws: Law 15/2000 of 20 June 2000 on defining community authorities and their relationship with state entities, and Law 8/91 of 18 July 1991 which defines conditions for creation of legally recognised associations provide a legal framework for the operation of community-based organisations. These laws could be applied separately or jointly to provide a legal basis for the operation of water and sanitation committees.

### 3.2. The National Rural Water Supply and Sanitation Programme

In 2010 a new Sector Wide Approach (PRONASAR-Programa Nacional de Abastecimento de Água e Saneamento Rural) for the water and sanitation sector was created with the objectives of meeting basic human needs, improving well-being and contributing to poverty reduction through the increased use and access to water supply and sanitation. The PRONASAR provides the framework for the operationalisation and implementation of the Strategic Plan of the ARSA (PESA-ASR). It aims to address imbalances in rates of
“Every morning, I wake up at 5 a.m. to fetch water. I carry at least 20 large containers of water, as shown in the photo. When I’m finished, I am very tired, very tired.”

“We do not have running water in our homes. It is mainly the responsibility of children, particularly girls to collect water. Some of us have to make 20 trips a day to the well. The water sources can be far away, some as far as 60 minutes. The water feels very heavy on our heads and our arms hurt from holding 20 litres of water particularly when we haven’t eaten anything from the night before.”

“We start collecting water between 4am and 5am everyday, including weekends. It is difficult carrying water while dodging cars and trucks as we try to cross busy streets. When we come back from collecting water, we are always very tired. When it is hot outside, and we haven’t had enough water to drink, we get very bad headaches.”

“It is not safe for girls to fetch water by themselves. Even when we are together, we have to be careful. A lady who went alone was killed last year when she went to fetch the water at 3am. Another young girl fell into the water well and died instantly. It makes us feel scared, that’s why it is important to go to the water well with a friend.”

— Enya, age 12

access and use within the provinces and districts and promote harmonisation of aid and institutional reform in the subsector with particular focus on capacity building at provincial, district and local levels. The implementation of PRONASAR began in 2010 will be implement in two phases namely Phase I (2010-2012) and Phase II (2013-2015). A 2008 code of conduct for the water sector, signed by the Government and nine development partners applies the principles of the 2005 Paris Declaration on Aid Effectiveness to the water sector in Mozambique. UNICEF currently co-chairs the PRONASAR Sector Wide Approach.

3.3. Water supply

The proportion of households in Mozambique with access to safe water increased from 36 per cent in 2004 to 43 per cent in 2008. The most common water source is an unprotected well. Important disparities in access to safe water persist between urban and rural areas and among provinces. Almost all households in Maputo City (98 per cent) have access to safe water, compared to only 26 per cent of households in Zambezia and 36 per cent in Cabo Delgado. Access to safe water also varies considerably across household wealth quintiles. Only 13 per cent of households in the poorest quintile have access to safe water, compared with 85 per cent of households in the wealthiest quintile. Further, only 22 per cent of households without access to safe water use an appropriate method of treating their drinking water (e.g. boiling), thereby increasing the risk of waterborne diseases.

There is a large urban/rural disparity as well: 70 per cent of urban households have access to safe water, compared to only 30 per cent of rural dwellers. Despite the improvements in urban areas, a significant number of the population living in the peri-urban areas are lacking safe drinking water and adequate sanitation facilities. Estimates for water and sanitation coverage in some peri-urban areas in Mozambique are as low as 10 per cent. Due to the lack of proper sanitation, drainage systems, waste management and poor hygiene practices, peri-urban areas are often an excellent breeding ground for gastroenteric diseases as well as malaria. People living in peri-urban areas in Mozambique are often among

Figure 3.28: Proportion of households with access to safe water, by geographic location 2004 and 2008

the poorest and most vulnerable in society, as they do not have stable incomes, nor do they have arable land to provide for their own food consumption. Population density is high and often municipal authorities have limited funds to provide services for peri-urban areas. Cholera epidemics and malaria are more common in peri-urban informal settlements than in any other areas of Mozambique.113 "Because of geography and climatic conditions large parts of peri-urban areas are on floodplains, situated below sea level annual floods and stagnant water after rains are common," which in combination with the practice of open defecation and unimproved latrines leaching content into the environment are main causes of disease. Unlike the rural water supply and sanitation sector, where a Sector Wide Approach has been introduced, focus on sanitation in peri-urban areas has not yet been prioritised.
It is estimated 5 per cent of the population receives water supply via a small, piped system.\textsuperscript{114} No situational assessment has been performed, though it is widely considered that a large number of these systems are either non-functional or deficient, delivering water irregularly to only a small proportion of potential users. Most of these systems are managed by local government, and only function if water fees are subsidised.

For the vast majority of households (95 per cent) that do not have any access to running water in the home, it is an adult woman who normally collects water. The mean time to walk to water source is just under one-hour (49 minutes), and multiple trips per day are generally necessary. In households where children collect water, it is much more likely to be a girl than a boy who does so. Girls collect water in 11 per cent of households in both Nampula and Gaza, spending on average 52 and 96 minutes, respectively per trip. Men in the wealthiest households are five times more likely to collect water than men in the poorest households.\textsuperscript{115}

A multivariate regression analysis was conducted to further examine the factors that influence whether a household has access to an improved water source, defined as taken from a source other than unprotected wells, lakes, rivers or lagoons (see Figure 3.31). Unsurprisingly, the results show that, besides location characteristics, household wealth is the most important explanatory variable in the model. However, other factors are also found to play an important role. Female-headed households are significantly more likely to have access to safe water than male-headed households. The presence of a well educated head-of-household (secondary or higher level) is also significantly correlated with access to safe water.\textsuperscript{116}

It is worth noting how location characteristics, i.e., local infrastructure, have the major role in explaining water quality. Rural households are significantly less likely than urban households (17 per cent) to have access to an improved water source, as are all households living outside Maputo City, especially those in northern provinces.

\begin{figure}[h]
\begin{center}
\includegraphics[width=\textwidth]{Figure3.31}
\end{center}
\caption{Probability of access to improved water source, by wealth score 2008}
\end{figure}

Source: UNICEF calculations based on MICS 2008
3.4. Sanitation

Access to improved sanitation facilities remains low, particularly in rural areas and the northern and central provinces. Access to safe sanitation increased from 12 per cent of households in 2004 to 19 per cent in 2008.\textsuperscript{117} There is a large discrepancy between urban and rural households: 47 per cent and 6 per cent, respectively (see Figure 3.32), with a much lower rate of improvement for rural households.

The WHO and UNICEF Joint Monitoring Programme notes that 74 per cent of the 11.7 million people living in rural areas in Mozambique practiced open defecation.\textsuperscript{118} Only 5 per cent had access to improved sanitation facilities and 21 per cent to unimproved facilities. However, improving access to sanitation remains a key Governmental objective. Reflecting this commitment, the ministries of Public Works and Housing and Health were awarded an African Ministers’ Council on Water (AMCOW) AfricaSan award for their leadership in getting 185 villages to attain Open Defecation-Free status in 2009.\textsuperscript{119} AMCOW was formed in 2002 in Abuja, Nigeria, primarily to promote cooperation, security, social and economic development and poverty eradication among member states through the management of water resources and provision of water supply services. The AMCON AfricaSan Awards are dedicated to recognising outstanding efforts and achievements in sanitation and hygiene in Africa which result in large-scale, sustainable behaviour changes and tangible impacts. They aim at raising the profile of sanitation and hygiene by drawing attention to successful approaches, promoting excellence in leadership, innovation and sanitation and hygiene improvements in Africa.

A regression analysis was conducted to further examine the factors affecting household access to good sanitation facilities, defined as the ownership or use of a non-traditional water closet. As with improved water sources, three factors are found to be positively and statistically significant for improved sanitation:

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3.32.png}
\caption{Access to safe sanitation, by geographic location 2004 and 2008}
\end{figure}

household wealth, head-of-household education, and location. Also, living in a female-headed household implies higher likelihood of improved sanitation, although the effect is lower than for education (2.5 per cent against 24 per cent for higher education levels).120

Local infrastructure plays a major role, with all the provinces showing a lower probability of access than Maputo City, although the effects are lower than in the case of improved water source access (see Figure 3.34).

### 3.5. Sustainability of WASH Infrastructures

Recent studies by the Water and Sanitation Foundation (Fairwater) indicated that there are 50,000 non-functioning water supply systems across Africa. This represents a failed investment of $US 215–360 million.121 With the increased participation of the private sector and civil society in water point and household sanitation construction, the Government of Mozambique is shifting its focus towards ensuring sustainability and quality of infrastructure.

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**Figure 3.33: Access to improved sanitation facilities, by province 2008**

![Access to improved sanitation facilities, by province 2008](image)


**Figure 3.34: Probability of access to improved sanitation source, by wealth score 2008**

![Probability of access to improved sanitation source, by wealth score 2008](image)

Source: UNICEF calculations based on MICS 2008
“This picture shows the washroom. The water leaks from the washroom. As a result, the area is very smelly. Children play in this area as there are no places for children to play. It is not healthy for the children to play in areas that are not clean.”

“The washroom leak causes health problems.”

“We have washrooms in our yards, but they are not very well built. The washrooms are made of corrugated zinc sheets or reeds. They don’t have electricity. Most washrooms have a capulana (sheet) instead of a door. When the wind blows the capulana, everyone can see me inside. I feel so embarrassed. Without electricity inside the washroom, some of us have fallen into the washbasins and gotten hurt. We sometimes feel scared going to the washroom at night and will always try to take someone with us.”

“When it rains, the water causes a lot of problems. It attracts flies that can cause cholera. The smells are unbearable. The washrooms become muddy and dirty with the water leaking both inside and outside the washroom. As a result, the waste and dirty water leak out into the yard. Children often play close to the washrooms because of limited space for play. As a result, they get sick from the contaminated water mixed into the mud.”

— Marta, age 10

Box 3.3: Government access data versus household use data on water and sanitation

There are two main sources of information on access to and use of water and sanitation: the routine monitoring systems of the National Water Directorate (DNA) and household surveys conducted by the National Institute of Statistics. These two sources use different indicators. Both sources also use different definitions of urban and rural areas.

**Water supply**

DNA reports that in 2009, 52 per cent of the population in rural areas has access to water from an improved source, compared with 30 per cent reported in the 2008 MICS. The access data was calculated through the assumption that one water point serves, on average, 500 people. Recent Government analyses indicate that the average number of users per improved water point is about 287. This figure was shown to be in broad agreement both with the sustainable capacity of the hand-pumps used in the country, and the norms used by other African countries. In 2010 Government, with the support of development partners, agreed to adopt a new standard for planning of 300 people per water point within one kilometre walking distance providing 20 litres per person per day as the standard for planning. Further, estimation of rural water supply coverage will be based on data from household surveys conducted by the National Institute of Statistics or other national representative surveys, related to access to and use of water supply and sanitation.

**Sanitation**

Regarding the population with access to improved sanitation in rural areas the figure reported by DNA, is 40 per cent, whereas the figure reported in the 2008 MICS is only 6 per cent. This discrepancy is due to low use of existing facilities by individuals as a result of low levels of sanitation knowledge and ambiguities regarding the classification of sanitation facilities in household surveys. Improved definitions of sanitation facilities are slated to be included in subsequent surveys.

The sustainability of rural water supplies requires that special attention be paid to quality control throughout the rural water supply project cycle. This includes: during the preparation of bidding documents and technical specifications; during the construction of water points; during procurement of all materials and equipment; and during capacity building of communities. Recent sustainability checks undertaken by external auditors of rural water and sanitation facilities in Tete, Manica, Sofala and Zambezia indicate that up to 30 per cent of all rural water supplies are non-operational due to a lack of community ownership of facilities, a weak spare parts chain and lack of trained mechanics.

In 2010, UNICEF undertook the Midterm Impact Assessment and 2010 Sustainability Check of the One Million Initiative in Tete, Manica and Sofala Provinces. The Mid Term Impact Assessment was a case controlled panel study undertaken in 80 control villages and schools and 80 treatment villages and schools. Results from the 1600 household surveys indicated a 27 per cent and a 9 per cent increase in use of improved water sources and sanitation respectively in the programme area (18 districts) between 2008 and 2010 and 6 per cent reduction in levels of self-reported diarrhoeal disease. Furthermore, the sustainability assessment noted increased levels of both institutional and infrastructural sustainability in the programme.

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The water sector considers urban areas to include only 13 major cities, while the definition of urban areas used by National Institute of Statistics in the 2003 DHS was 13 cities and 68 secondary towns.
3.6. Water and sanitation in schools

In Mozambique, access to safe water and sanitation in schools is still not well defined due to a lack of agreed indicators and survey tools. However, in a recent baseline survey undertaken in five districts, it was noted that only 28 per cent of schools had access to safe water, and fewer than 28 per cent had access to sanitation.

To accelerate progress towards the MDGs, the Government of Mozambique is promoting a Child-Friendly Schools programme, with the aim of providing a minimum quality package to all schools in target districts. Amongst other interventions, the programme provides safe water and adequate sanitation facilities in all schools in the selected districts. By 2008, this effort had resulted in an increase in the proportion of schools with water from 28 per cent to 80 per cent.

Box 3.4: Community Led Total Sanitation

The One Million Initiative is a six year programme partnership between the Dutch Government and UNICEF that aims to support the efforts of the Mozambique Government to ensure adequate water supply and sanitation and the adoption of improved hygiene practices for a million rural people in 18 districts, of which 6 are in Tete, 6 in Sofala and 6 in Manica.

After the use of the Participatory Hygiene and Sanitation Transformation methodology through non-governmental organisations contracted by the districts failed to bring the desired results in the programme’s sanitation and hygiene promotion activities, it was decided to introduce Community Approach for Total Sanitation. In Mozambique, this has taken the form of a combination of Community Led Total Sanitation (CLTS) with a system of awards/prizes. CLTS is an innovative methodology for mobilising communities to completely eliminate open defecation. Communities are facilitated to conduct their own appraisal and analysis of open defecation and take their own action to become open defecation free. At the heart of CLTS lies the recognition that merely providing toilets does not guarantee their use, nor result in improved sanitation and hygiene. Earlier approaches to sanitation prescribed high initial standards and offered subsidies as an incentive. But this often led to uneven adoption, problems with long-term sustainability and only partial use. It also created a culture of dependence on subsidies. Open defecation and the cycle of fecal-oral contamination continued to spread disease.

In contrast, CLTS focuses on the behavioural change needed to ensure real and sustainable improvements – investing in community mobilisation instead of hardware, and shifting the focus from toilet construction for individual households to the creation of “open defecation-free” villages. By raising awareness that as long as even a minority continues to defecate in the open everyone is at risk of disease, CLTS triggers the community’s desire for change, propels them into action and encourages innovation, mutual support and appropriate local solutions, thus leading to greater ownership and sustainability.

WaterAid and UNICEF have become important disseminators and champions of CLTS. Today CLTS is in more than 20 countries in Asia, Africa, Latin America and the Middle East.

CLTS has a great potential for contributing towards meeting the MDGs, both directly on water and sanitation (goal 7) and indirectly through the knock-on impacts of improved sanitation on combating major diseases, particularly diarrhoea (goal 6), improving maternal health (goal 5) and reducing child mortality (goal 4).

In addition to creating a culture of good sanitation, CLTS can also be an effective point for other livelihoods activities. It mobilises community members towards collective action and empowers them to take further action in the future. CLTS outcomes illustrate what communities can achieve by undertaking further initiatives for their own development.
per cent in the five programme districts. The introduction of CLTS in schools and training of key implementing non-governmental organisations and governmental staff has led to a scale-up of sanitation in schools.

The UNICEF Child-Friendly Schools Annual Field Assessment Report\textsuperscript{124} shows that considerable progress has been made in the enrolment, retention and educational performance of children in Mozambique. The net enrolment ratio at primary level has risen from 69 per cent in 2003 to 95 per cent in 2007. Table 3.4 illustrates progress in raising enrolment in the five school districts where activities are being implemented.

### 3.7. Sector financing and budget allocations

Approximately 85 per cent of sector investments over the last three years have come through official development assistance. Actual sector budgets for the period 2006-2008 have increased by 150 per cent as compared with the period 2003-2005 (from roughly $US 46 million to $US 116 million). Similarly, disbursements have increased over this same period by 155 per cent,\textsuperscript{125} though the overall rate of disbursement has remained relatively constant at around 60 per cent. “On-treasury” funding is disbursed at a

<table>
<thead>
<tr>
<th>District</th>
<th>2006</th>
<th>2008</th>
<th>Increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Total</td>
</tr>
<tr>
<td>Maganja da Costa</td>
<td>31,579</td>
<td>18,335</td>
<td>49,914</td>
</tr>
<tr>
<td>Buzi</td>
<td>17,448</td>
<td>13,007</td>
<td>30,455</td>
</tr>
<tr>
<td>Mossurize</td>
<td>16,226</td>
<td>11,786</td>
<td>28,012</td>
</tr>
<tr>
<td>Changara</td>
<td>20,706</td>
<td>17,836</td>
<td>38,542</td>
</tr>
<tr>
<td>Chibuto</td>
<td>22,645</td>
<td>22,387</td>
<td>45,032</td>
</tr>
</tbody>
</table>

rate of 82 per cent, as opposed to donor-
managed projects which disburse at an
average rate of 58 per cent.\textsuperscript{126} Government
of Mozambique disbursement rate
improvement has been brought about by
a combination of the elimination of the old
“duodecimal” budget allocation system,
the introduction of the new state financial
management system (SISTAFE), improved
procurement processes, more punctual
donor disbursements, improved estimates
of project start-up dates, and the allowance
by some donors of payment of Government
of Mozambique counterpart contributions
or tax payments using the same projects’
credits or grants.

The annual average investment required to
meet MDG targets in rural areas has been
estimated at $US 70 million.\textsuperscript{127} The first
phase of the National Rural Water Supply
and Sanitation programme (2009–2011) will
require an estimated $US 200 million.

Although planned expenditure for
urban water exceeds estimated required
investment, there is a shortfall of
approximately 35 per cent in relation to
the rural water sector.\textsuperscript{128} Current budget
commitments for sanitation indicate that
approximately five per cent of funds needed
have been committed for rural sanitation,
$US 3 million has been committed per
annum versus an estimated $US 22 million
required. In urban sanitation approximately
half of the amounts required have been
committed.\textsuperscript{129} Given the major funding
shortfall, it is unlikely that the MDGs related
to water and sanitation will be achieved.
Resources for the funding gap are being
mobilised by both establishing a common
fund and improving coordination of
programme funds.

In 2010, the Government of Mozambique
reported that 7.6 per cent ($US 241 million)
of the total state budget was allocated to the
water sector.\textsuperscript{130} This is a significant increase
over the 2.8 per cent in 2003 (see Table 3.5).
In a move towards decreasing geographical
disparities, the National Rural Water
Supply and Sanitation programme will be
implemented on a priority basis in provinces
and districts meeting agreed criteria,
which include present water and sanitation
coverage, poverty, written commitments and
adequate staffing, amongst others.

Despite this increase in the proportion of
the total budget allocated to water and
sanitation, the Government’s contribution
has declined steeply. In 2006, 66 per cent
of water and sanitation expenditures were
covered by external financing.\textsuperscript{131} Analysis
of the total investment in the sector in 2010
indicates that 85 per cent of funding now
originates from external resources, although
this is a slight decrease from 2009.\textsuperscript{132,133}

| Table 3.5: Financing of the water sector as a proportion of state budget, selected years 2003–2010 |
|----------------|----------------|----------------|----------------|----------------|----------------|
|                | 2003 | 2004 | 2005 | 2008 | 2009 | 2010 |
| 3%             | 2%   | 2.5% | 5%   | 4.5% | 8%   |

4. Conclusions

There are a number of underlying causes for the high mortality rates and poor health status of Mozambican children and substantial barriers to improving child survival and development in Mozambique.

One of the main underlying causes of child morbidity and mortality in Mozambique is the lack of access to public services, both in terms of physical and economic access and the poor quality of these services. Barriers to accessing and using services are particularly acute for poorer households, for people living in rural areas, and for those with less education. This directly relates to higher mortality rates among children from these households.

There are significant disparities in the allocation of resources from central level to particular provinces and rural areas. This can partly be attributed to insufficient links between health policy instruments, which emphasise poverty reduction and the need to target vulnerable groups, and the sector planning and resource allocation systems.

Poverty remains a key underlying cause of child mortality. The mortality rates among children from poorer families are significantly higher than those from better off families. Data from the 2008 MICS survey show that child mortality levels start decreasing significantly only in the fourth wealth quintile.

Poverty contributes to the high rates of child mortality not only through the disadvantages faced by poorer families, such as lower access to services, lower levels of education and less healthy living environments, but also due to the immediate lack of money to pay for services or medication.

Care practices, including child feeding practices, hygiene and sanitation, and management of childhood illnesses, play an important part in the survival and healthy development of children. Care practices not only have a direct impact on the health of children, but also shape the behaviour and treatment of their own children later in life. Due to low levels of education, limited access to information about the prevention and treatment of illnesses and the unhealthy environment of many households, the practices of care-givers are often inappropriate or even detrimental to children’s health.

Access to safe water and particularly safe sanitation remain low. Safe water and sanitation are essential to improving the health of children and households due to the high prevalence of water-borne diseases. Lack of access to safe water also takes time away from productive activities as the mean time to walk to water source is just under one-hour, a trip taken most often by women and girls.

While progress has been made in setting up an enabling environment (sector institutional framework and related implementation guidelines and approaches), the capacity to implement interventions at the required scale and with the required quality is not always present at sub-national levels. Furthermore, sector assessments recently undertaken have shown that despite developments in the urban areas, a significant number of the population living in the peri-urban areas are lacking safe drinking water and adequate sanitation facilities.

Improved sanitation and hygiene practices, particularly at rural and peri-urban areas, should be a national priority and requires a strong multisectoral collaboration to address all underlying causes. Although actions are being taken towards to improving sanitation conditions (through sanitation campaigns), additional efforts still need to be made at all levels with a strong community approach focus. CLTS is an innovative methodology for mobilising communities to conduct their own appraisal and analysis of their own sanitation and take measures to improve their situation in a sustainable way.
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