Development Progress

Progress in health in Eritrea:

Cost-effective inter-sectoral interventions and a long-term perspective

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List of abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ACORD	Agency for Cooperation and Research in Development
ANC	Antenatal Care Coverage
ART	Anti-retroviral Therapy
ARV	Anti-retroviral
AVE	Adal Voice of Eritreans
C-IMCI	Community Integrated Management of Childhood Illness
DHS	Demographic and Health Survey
EEBC	Eritrea–Ethiopia Boundary Commission
EPHP	Eritrean Public Health Programme
EPI	Expanded Programme on Immunization
EPLF	Eritrean People´s Liberation Front
EU	European Union
FAO	Food and Agriculture Organization
GAVI	Global Alliance for Vaccinations and Immunisations
GDP	Gross Domestic Product
GNP	Gross National Product
GoE	Government of Eritrea
HIV	Human Immunodeficiency Virus
HRW	Human Rights Watch
IFAD	International Fund for Agricultural Development
IMCI	Integrated Management of Childhood Illness
IMF	International Monetary Fund
IMR	Infant Mortality Rate
IRIN	Integrated Regional Information Networks
IUTLD	International Union Against Tuberculosis and Lung Disease
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Ratio
MoE	Ministry of Education
MoH	Movement of Health
NACP	National AIDS Control Programme

NGO	Non-governmental Organisation
NSEO	National Statistics and Evaluation Office
OCHA	UN Office for the Coordination of Humanitarian Affairs
ODA	Official Development Assistance
PENHA	Pastoral and Environmental Network in the Horn of Africa
PFDJ	People's Front for Democracy and Justice
PFP	Physicians for Peace
PHC	Primary Health Care
PMTCT	Prevention of Mother-to-child Transmission
RBM	Roll Back Malaria
RTI	Research Triangle Institute
SHNP	School, Health and Nutrition Project
STD	Sexually Transmitted Disease
U5MR	Under-five Mortality Rate
UK	United Kingdom
UN	United Nations
UNCTAD	UN Conference on Trade and Development
UNDAF	UN Development Assistance Framework
UNDP	UN Development Programme
UNFPA	UN Population Fund
UNGASS	UN General Assembly Special Session
UNHCR	UN High Commissioner for Refugees
UNICEF	UN Children's Fund
UNIDO	UN Industrial Development Organization
US	United States
USAID	US Agency for International Development
VCT	Voluntary Counselling and Testing
WFP	World Food Programme
WHO	World Health Organization

1. Introduction

'Most of the millions of children that die due to controllable diseases every year worldwide are Africans. Africa has a long way to go; and Eritrea is an example that shows through organized effort a lot could be done' (UNICEF's representative in Eritrea, in Tekeste, 2008).

Eritrea is one of the few countries expected to achieve the Millennium Development Goals (MDGs) in the health sector in general and in child health in particular: 'of the 46 countries in sub-Saharan Africa, only Eritrea, Cape Verde, Mauritius and Seychelles are on track to attain MDG 4 [Reduce Child Mortality]' (UNICEF, 2008a: 7). This is all the more surprising since Eritrea is the only one of these four countries that is not a small middle-income island state. It is also particularly striking because improvements started prior to independence in 1991, during a 30-year war of liberation, and have continued despite lack of progress in other development areas.

Indeed, this progress in health needs to be considered in relation to a lack of progress in other areas. Lack of sustained economic growth has affected poverty reduction, keeping Eritrea among the poorest countries in the world, with an average annual per capita income of $200 in 2006 (World Bank, 2009). Severe droughts, the international food crisis and the global recession have further deepened macroeconomic imbalances that have been growing since the renewed war with Ethiopia, weakening the country's overall economic performance (IMF, 2009). Additionally, the government has been criticised for its strict control of political, social, and economic systems, with nearly no civil liberties allowed, and has been accused of persecution of political dissidents and human rights abuses. Eritrea's progress story needs to be appraised in relation to this wider and more challenging governance and development context.

This case study was carried out as a desk review supplemented by key informant interviews. No primary in-country data collection was carried out. As such, data comparisons should be viewed with caution. The country's political situation, as well as its relative isolation, means information and resources are not only limited but also particularly politicised and polarised and are thus in many cases contradictory. Given these weaknesses, this story may not give a complete picture but rather provides a platform to further examine Eritrea's important story and the factors contributing to it.

2. Context

2.1 Country context

2.1.1 Historical roots and the emerge of the principle of self-reliance

Located between Ethiopia, Sudan and Djibouti, with 1,212km of coast along the Red Sea, Eritrea's strategic geopolitical location along the world's busiest shipping lanes has shaped its history (NSEO, 2003). Occupied by the Ottoman Turks and Egyptians before the 19th century, the territory took the form of present-day Eritrea after being colonised by Italy in 1889. In 1941, the defeat of the Italians during World War II led to 10 years of British occupation, and in 1952 the UN – backed by the US – imposed a federation with Ethiopia, in spite of the socio-cultural and historical differences between the countries and the presence of Eritrean groups favouring independence (Sabo and Kibirige, 1989). Within this, Eritrea was an autonomous unit under its own constitution and elected government, but in 1962 Ethiopia unilaterally dissolved the arrangement and annexed Eritrea as part of its territory (ibid; Shiker, 2007).

Ethiopia's interventions in Eritrea finally triggered a war for self-determination that lasted 30 years (Sabo and Kibirige, 1989). This cost thousands of lives and left tens of thousands with severe disabilities and injuries. To cope with the needs of their fighters and the civilian population, the Eritrean People´s Liberation Front´s (EPLF), in what became a parallel state system operating in liberated areas, started developing a set of social programmes, involving education, medical care and production of food and other supplies (Findlay, 1989).

Eritrea gained *de facto* independence in 1991 and was officially recognised in 1993, when it also joined the UN and became eligible to receive international aid to help reconstruct and develop its economy and alleviate its humanitarian problems (EEBC, 2002).[1] The process of reconstruction that took place during the seven years of peace after independence was interrupted in 1998 by renewed fighting with Ethiopia over border issues. Despite signing a peace treaty in 2000, Eritrea and Ethiopia remain in what is known as a situation of 'No War, No Peace,' with the two states continually on the verge of going back to war again (WHO, 2009).

The international isolation Eritreans suffered during the fight for self-determination forced them to depend on their own human and material resources, which led to the development of the principle of self-reliance.[2] Eritreans began to believe they could rely only on themselves (Hoyle, 1999), especially with the leading party encouraging phrases such as 'We Are on Our Own' and 'No One Will Help Us, It Is Us Who Need to Do It'. Such concepts now lie at the heart of Eritrean society:[3] the principle of self-reliance has become both a critical rhetorical device for mobilising the nation and the driving force behind the government's socioeconomic and political policies.

As such, when the guerrilla-like Eritrean resistance needed to transform itself into a well-organised army, a large number of Eritreans and foreign professionals came from abroad to join the EPLF and were instrumental in training and developing capacity among the fighters. The fighters also built schools, ammunition depots, garages and factories for the manufacture of food products and shoes, among other things. A fully equipped underground hospital, able to manufacture basic drugs, was also constructed. This used resources creatively, with fixtures and fittings in its pharmacy and laboratories made in the field out of container lorries and captured ammunition boxes (Pateman, 1990; Sabo and Kibirige, 1989; Tesfamarian, 2008a; 2008b).

1. After a UN-supervised referendum in which 98.5% of Eritreans voted in favour of independence.
2. Ethiopia's annexation of Eritrea received no condemnation from the international community, while its pleas for independence remained widely ignored (Shiker, 2007). On the other hand, Ethiopia was backed first by the US (1953-1977) and later by the Soviets (after 1977), who gave the country modern weaponry to suppress the Eritreans. The EPLF supplied itself with munitions, tanks and artillery previously captured from Ethiopian forces and adapted to meet EPLF needs. With little outside help and few resources, Eritreans made their way to independence. The EPLF supplied itself with munitions, tanks and artillery previously captured from the Ethiopian forces which were adapted to meet EPLF needs. The fighters were common Eritreans from every ethnic background who joined the liberation movement in growing numbers, including women, who represented around 30% of the fighters (Connell, 1997; Wax, 2004; interviews).
3. Interviews.

2.1.2 Territory, climate and population characteristics

Eritrea's territory is divided into three main topographical regions: arid mountains in the western lowlands, temperate weather in the central highlands and desert at sea level in the eastern coastal lowlands. Water is scarce and the land is prone to soil erosion. Recurrent and severe droughts have led the country into famine and food insecurity; even in years of favourable rainfall, crop yields meet no more than 60-70% of the country's needs (OCHA, 2009).

No population census has been carried out in Eritrea, thus no accurate data are available. Estimations range from 3.5 to 4.9 million people, of whom approximately 80% live in rural areas, with many living in extremely remote areas.[4] Approximately one-third of those living in remote rural areas are pastoralists who move around the lowlands and across borders in search of water and pasture for their animals.[5] As a consequence, these groups, as well as those living in remote villages, are hard to reach in terms of basic health services, adequate nutrition and shelter. Additionally, an estimated 300,000 to 1 million people are estimated to have been displaced by the war with Ethiopia; although many have been resettled, people still live under difficult conditions, with inadequate shelter, sanitation, food and basic services (World Bank, 2004).

Ethnically divided into nine groups that speak different languages, and with half of its population Muslim and the other half Christian, a trans-ethnic and trans-religious nationalism has grown as a result of the need to be united during the war (Bereketeab, 2002; Connell, 1997). According to Bereketeab (2002), Eritrean identity goes beyond ethnicity and religion.

2.1.3 Political sphere

After independence, the EPLF transformed into the People's Front for Democracy and Justice (PFDJ) and became the only legal party in Eritrea. Its former leader, Isaias Afewerki, became the president, on the principle that,

> *'Political pluralism designed to foment division and conflict among the society on the basis of ethnicity, religion or other forms of sub-national sentiments has no acceptance in Eritrea […] For political pluralism in the yet undeveloped multi-tribal African society to reach the desired stage in a manner that serves the collective interest of these societies, it requires a long political, social, economic and cultural transformation process. It is dangerous to directly copy and apply the experience that any country has gone through'* (AllAfrica, 2008).

With no constitution or judicial system in place, the Government of Eritrean (GoE) needed to build institutions from scratch. In 1997, a new constitution was approved with the broad participation of all sections of the population residing in the country, as well as Eritreans living abroad. However, this has never been put into practice, and Eritrea's first elections were postponed indefinitely following the outbreak of the second war with Ethiopia in 1997 (Weldehaimanot, 2007).

Reports on the political situation in Eritrea are contradictory. There are some who support GoE's claim that efforts have been made to consolidate the active participation of all sections of the population in the nation-building process and that a grassroots-type, community-based democracy with low levels of corruption has emerged (Kotch, 1995; Mountain, 2004). On the other hand, much has been made of the authoritarian and even dictatorial rule in Eritrea: there is no independent press and the GoE has arbitrarily detained anyone who criticises it, including dissident ex-fighters[6] and those who refuse to take part in the national conscription scheme.[7] Persecution and human right abuses have been widely reported, in Eritrean blogs and by Human Rights Watch (HRW) and other human rights organizations (AVE, 2010; HRW, 2009).

4. The number of the Diaspora is also uncertain: estimations range from 0.5 to 1 million (Bereketeab, 2007; Kibreab, 2007).
5. NSEO, 2003; PENHA Eritrea; World Bank, 2004; www.penhanetwork.org/pages/Eritrea.html
6. In September 2001, a number of prominent PFDJ members publicly aired grievances against the government, calling for implementation of the constitution and the holding of elections. The government instituted a crackdown: 11 signatories of the petition (Group 15) were arrested and held without charge in an unknown location (HRW, 2002).

2.1.4 Economy

Eritrea is one of the poorest countries in the world, with an average annual per capita income of $200 in 2006 (World Bank, 2009). Years of war coupled with successive droughts left the economy totally devastated at the time of independence. From 1992 to 1997, peace and stability as well as the successful recovery programme and other policies introduced by GoE translated into an annual gross domestic product (GDP) growth rate of around 7% (NSEO, 2003; UNDAF, 2006). However, the second war with Ethiopia and consecutive years of drought/crop failure beginning in 2000 had a negative impact on the GDP rate, which averaged 1.2% between 2005 and 2008 (NSEO, 2003; World Bank, n/d). The proportion of the population living below the national poverty line went up, from 53% during 1993-1995 to 66% during 2001-2003 (with about one-third classified as extreme poor). The current situation of 'No War No Peace' remains the most important obstacle to Eritrea's socioeconomic development, since already scarce national resources are being diverted for defence purposes (UNDAF, 2006; WHO, 2009).

Poverty incidence is higher in rural areas (about 65% of the population in rural areas lives below the poverty line compared with 50% of the population in the capital Asmara). In small and remote towns, this number goes up to 81% of the population. Poverty is slightly higher among women than men.[8] However, income inequality remains low.

Agriculture and pastoralism productivity is low, as the sector depends on rainfall, with less than 10% of arable land irrigated (NSEO, 2003; Tekeste et al., 1999). Industry, which relied mainly on Ethiopian markets, has been stagnant since the outbreak of the conflict. GoE holds a policy of economic autarky while restricting free enterprise and tightening control of all aspects of the economy. Private sector activity remains constrained, with key businesses owned by the ruling PFDJ (Healy, 2007).

The Eritrean people appear to be a very important resource. For example, high levels of popular participation in the country's reconstruction and development were vital for Eritrea's post-independence growth. Meanwhile, the participation of all women and men over 18 in compulsory military training and national reconstruction helps compensate for the country's lack of capital in terms of an affordable labour force, as does the Warsai-Yikaalo National Development Campaign, introduced in 2002, which also helps GoE mobilise human resources (Bereketeab, 2004). Some authors sustain that, in fact, the two qualify as forced labour (Kibreab, 2009).

Financial contributions from Eritreans living abroad are critical in keeping the economy running. The diaspora supports GoE development programmes through a 'voluntary' tax of 2% of their income abroad, which between 1997 and 2003 averaged $5.9 million per annum.[9] However, following the second war with Ethiopia, a substantial proportion of the Eritrean diaspora became reluctant to pay the tax (Bereketeab, 2007; Kibreab, 2007).[10] Eritreans' major contribution remains the private remittances sent to families, which by 2008 were estimated at about $300 million annually – a major proportion of the country's gross national product (GNP) – with an average of 34.4% over the period 1993-2000 (Healy, 2007; interviews). Remittances significantly exceed official development assistance (ODA), which over the same period represented 26.5% of GDP (Kibreab, 2007). According to the World Bank (2002), dependence on support from the diaspora has started shifting to dependence on aid, with donor support rising to 34% and transfers declining to 27% by 2001.

2.2 Sectoral context

2.2.1 Background

The concept of 'modern health services' was introduced in Eritrea during Italian colonial rule when the first hospital was built. However, health care was generally limited to a few urban centres and available to the native population on a minimal basis (MoH, 2004; Sabo and Kibirige, 1989). Some hospitals were built during the Ethiopian occupation, but gradually the resources allocated to these were cut. The health service situation deteriorated rapidly as most facilities were destroyed during the war and most health staff either went into exile or joined the liberation movement (MoH, 2004).

7. National service of 18 months (6 months of military service and 12 of development and military-related service) is obligatory for 28-40 year olds. However, conscription has become open-ended, and many who reported for service during the 1998-2000 border war still find themselves in the military.
8. www.er.undp.org/poverty/.
9. This entitles Eritreans living abroad to a series of rights, including the right to an Eritrean citizenship. According to Bereteab (2007), supporters of political organisations banned from the country, not surprisingly, never complied with payment of the voluntary contribution.
10. The diaspora was reluctant to be accused of financing the war, and also felt they were being exploited (Koser, 2003, in Bereketeab, 2007).

However, EPLF then began to take responsibility for the civilian population in areas liberated from Ethiopia. In 1970, EPLF health care services began with a single mobile clinic, for basic first aid and malaria treatment only, and an underground hospital in Sahel, complete with operating rooms and laboratories. In 1981, the EPLF introduced the Eritrean Public Health Programme (EPHP),[11] which aimed to establish comprehensive primary health care focused on services for women and children, and promoted breastfeeding, family planning, immunisation, nutrition programmes, health education and a wide range of therapeutic services (Findlay, 1989; Sabo and Kibirige, 1989; Tesfamariam, 2008a).

The health care delivery infrastructure in the liberated areas gradually expanded. Clinics were set up in settled areas and mobile clinics increased in number in nomadic and conflict-affected areas. By 1985, there were 40 mobile clinics, 26 stationary clinics and 6 hospitals. Mobile clinics were staffed by a health assistant, a medical assistant, a barefoot midwife and two or three barefoot doctors (lay workers trained in activities such as first aid, childbirth assistance and dispensing drugs and preventive medicine), providing services to scattered and remote communities. Stationary clinics were composed of village health workers and traditional birth attendants. The EPLF also set up a Training and Information Section that instructed barefoot doctors and midwives, x-ray technicians, pharmacy assistants, laboratory technicians, dental technicians and anaesthetists. By 1985, there were 29 doctors, 150 nurses, 418 village health workers and traditional birth assistants, 1,600 barefoot doctors and 41 barefoot midwives. Their priorities were proper nutrition, adequate and safe water supplies, basic sanitation, immunisation against and prevention and control of endemic diseases, health education and curative services (Sabo and Kibirige, 1989; Pateman,1990).

During the war, the EPHP operated at three levels: through a community health service at village level based on the services of a village health worker and a traditional birth assistant; through health stations at sub-district level servicing approximately 10,000 people; and through health centres which supported health stations and serviced up to 50,000 people. Health centres were, in turn, supported by a number of regional hospitals and one central hospital in Orotta, which provided major surgery for the numerous war casualties. Facilities were camouflaged to avoid air attacks and ready to be dismantled, moved temporarily or buried underground (Sabo and Kibirige, 1989).

Some non-governmental organisations (NGOs) and Eritreans living abroad sent pharmaceutical supplies. However, in order to meet increasing needs, the EPLF also established an underground drug production plant that was able to produce about 44 types of medical supplies, including infusions, intravenous fluids, tablets, capsules, syrups and ointments, which were able to meet about 40% of total demand (MoH 2004; Sabo and Kibirige, 1989).

2.1.2 Health priorities and policies

Prior to independence, EPLF health policy was based on two basic principles: health services must be taken to the masses in general and to the workers, peasants and nomads in particular; and prevention should take precedence over cure. In line with this, the goals regarding health care services were as follows: 1) render medical services freely to the people; 2) eradicate contagious diseases and promote public health by building the necessary hospitals and health care centres all over Eritrea; and 3) scientifically develop traditional medicine (Sabo and Kibirige, 1989). Decentralisation of health services and community involvement were also at the core of the strategy. Committees at the village level selected health workers for their area and took responsibility for health education and sanitation. 'The health care system was a grassroots organization structured from the "bottom-up"' (ibid: 682).

After independence, emphasis was placed on ensuring access to health care services through the restoration of health facilities damaged during the war, the provision of adequate supplies of drugs and equipment, the expansion of available health services to communities through the construction of new facilities and the training of qualified health personnel (NSEO, 2003).

GoE has issued a comprehensive Macro Policy, with education and health as the key elements. Two macro health objectives have been established: to reduce and eventually eliminate deaths from easily controllable diseases; and to enhance awareness of good health practices in order to improve the productivity of the workforce (MoH, 2004). Meanwhile, policies and strategies implemented during the war of independence have been formalised under a Primary Health Care (PHC) Policy. This focuses on the prevention of diseases and the promotion of health at local levels to reach more people, and aims to provide quality PHC services to everyone at an affordable cost (NSEO, 2003).

11. 'EPLF Health Services have been separate from the EPHP since 1985. There is coordination in the field but each provides distinct services and has discrete sources of funds. The EPLF receives its supplies/funds from Eritrean refugees abroad and predominantly serves EPLF members/fighters. The EPHP provides food, educational material, medical supplies and health care to civilians. The EPHP receives funds from individual humanitarian donors through the Eritrean Relief Association, a not-for-profit humanitarian organization that assists Eritrean victims of famine, drought and war in Eritrea and Sudan, with headquarters in Sudan' (Sabo and Kibirige, 1989: 682).

In recognition of the fact that the causes of ill-health are closely related to non-health factors, the PHC approach is based on the coordination of various sectors. Thus, the Ministry of Health (MoH) emphasises an integrated programme for PHC that incorporates crosscutting issues, including inter-sectoral collaboration, community participation, decentralisation of health services, information, education and communication and capacity building (NSEO, 2003).

Other sub-sectoral policies and strategic plans are in place for specific diseases, programmes and approaches, mainly focusing on those that pose the most serious public health concerns, such as malaria, tuberculosis, HIV/AIDS and sexually transmitted diseases (STDs) (WHO, 2004).

Framed within the strategy for PHC, one of the major priorities in the health field is the reduction of the five main diseases that cause childhood morbidity and mortality: diarrhoea, acute respiratory infections, malaria, measles and malnutrition (MoH, 2004). The MoH Family and Community Health Division is in charge of monitoring the coordination and follow-up of health services for children, using a multi-sectoral approach that emphasises the critical dependence of child health on maternal health: facilitating close collaboration across the various divisions of MoH; conducting growth monitoring programmes at all health facilities and at community level; supervising therapeutic (referral) feeding and home follow-up interventions; and improving the skills of all health care workers through training that covers the major causes of child mortality and morbidity (ibid).

Given the low socioeconomic status of the Eritrean people, health services are provided mainly free of charge or at a nominal cost. For the period 1995-2000, average GoE expenditure on health as a percentage of total GoE expenditure was 4.5% (WHO, 2004); for 2001 MoH declared that total expenditure on health comprised 6.4% of total GoE expenditure (MoH, 2004). Services are financed mainly from three sources: the GoE budget, development assistance and, to a lesser extent, user fees (ibid). MoH declares that GoE is the health sector's main source of financing (ibid), although a recent report states that two-thirds comes from donor assistance (World Bank, 2009). Development assistance is expected to almost double in 2007-2011 compared with 2002-2006, with humanitarian assistance reducing by more than 90% (WHO, 2009).

Compared with other countries, there are very few donors in the health sector and the country in general (World Bank, 2009). The UN system is one of the major contributors towards development and humanitarian assistance in Eritrea.[12] Other development partners include the World Bank[13] and several bilateral agencies,[14] as well as national and international NGOs.

2.1.3 Health care delivery system characteristics

GoE manages and controls the vast majority of health infrastructure and the health service system, with MoH the main provider. Other government departments, such as the police, the Ministry of Defence and the Ministry of Agriculture, also deliver certain health services, although to a lesser degree (MoH, 2005). The private sector provides some health services, mainly through small clinics and one privately run hospital, which is owned by the government. Faith-based organisations and NGOs are the largest providers after MoH but their influence is still very small.

Health services in Eritrea are delivered using a referral system based on three tiers, comprising primary-level facilities (health stations and health centres), secondary-level facilities (first contact or sub-zone hospitals and zonal referral hospitals) and tertiary-level facilities (national referral hospitals) (MoH, 2005). Table 1 provides a summary of the care and type of facilities available at each level of the public administration in the country.

12. The Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), the UN Children's Fund (UNICEF), the UN Conference on Trade and Development (UNCTAD), the UN Development Programme (UNDP), the UN Industrial Development Organization (UNIDO), the UN Population Fund (UNFPA) and the World Health Organization (WHO) contribute with development and humanitarian assistance. The Office for the Coordination of Humanitarian Affairs (OCHA), the UN High Commissioner for Refugees (UNHCR) and the World Food Programme (WFP) give only humanitarian assistance.

13. The World Bank provided loans and grants to MoH for HIV/AIDS, malaria, STD, tuberculosis and early childhood development projects (WHO, 2009).

14. China, Italy, Japan, Norway, the UK, the European Union (EU), the Global Alliance for Vaccinations and Immunisations (GAVI), the Global Fund and the International Union Against Tuberculosis and Lung Disease (IUTLD).

Table 1: Level of care, type of health facility and services provided

Level of care	Health facilities	Services provided
Primary level	Health stations/clinics (first contact and smallest health unit)	Preventative care focusing on immunisation, antenatal care, control and care of communicable diseases and basic curative services
	Health centres (larger than health stations)	• Curative and preventative care, including polyclinic services, mother and child clinics, environmental sanitation, epidemic disease control and outreach services • Supervision of health stations and provision of training to village health workers and traditional birth attendants
Secondary level	First contact hospitals at sub-zone level (generally located in regional capitals)	• General medical and obstetric care • Basic laboratory support services • Minor surgical procedures and deliveries and beds for inpatients • Supervision of health centres in locality
	Zonal referral hospitals (located in regional capitals)	• General surgery, deliveries, laboratory, ophthalmic care, radiology, dental, obstetric and gynaecological services • Used as clinical training sites
Tertiary level	National referral hospitals	Specialised facilities located in Asmara serving whole country • Orotta Hospital: medical and surgical cases for adults • Orotta Paediatric Hospital • Orotta Gynaecological and Obstetrics Hospital • Behan Aini Ophthalmic Hospital • St. Mary's Psychiatric Hospital

Source: MoH (2005).

Limited transportation and communication leads to delays in the referral system, contributing to increased mortality, especially among nomads and those living in remote areas (WHO, 2009). Additionally, the country still suffers from an acute shortage of human resources, which threatens the effective functioning of the health system (MoH, 2004; WHO, 2004). In 2004, the number of physicians per 1,000 population was 0.05, and the number of nurses per 1,000 population was 0.55 (World DataBank). By 2004, the lack of midwives was particularly critical (MoH, 2005) – this is particularly important given the high maternal mortality rate. Doctor shortages are compensated for by the use of expatriates, who make up approximately 25% of all doctors (WHO, 2004).

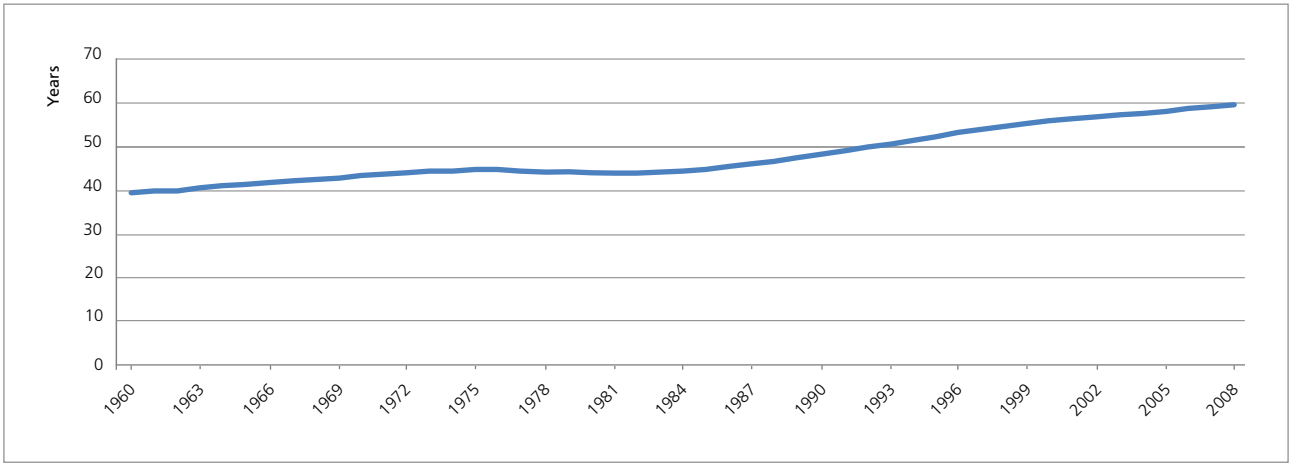
3. What has been achieved

The set of indicators analysed below provides evidence of the progress Eritrea has made in terms of improving the health status of society as a whole and for children in particular. When possible, the analysis focuses on those health improvements that have contributed to a more equitable society.

3.1 Life expectancy

Life expectancy is widely regarded as an indicator of a country's overall health. Eritrean life expectancy at birth has improved significantly over the years, from 39.1 years at birth to 59.5 years in 2008. As Figure 1 shows, the improvement has been continuous over the whole period at an average yearly rate of almost 0.9%. Notably, life expectancy improved even during the years of conflict, suggesting a positive impact of EPLF's health programmes.

Figure 1: Life expectancy at birth, 1960-2008

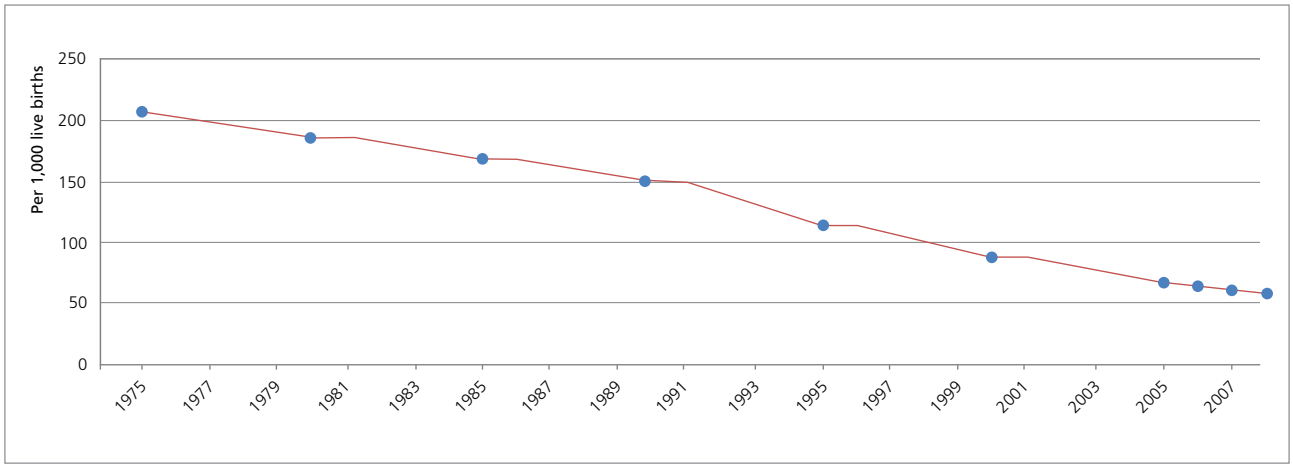


Source: World DataBank.

3.2 Child mortality

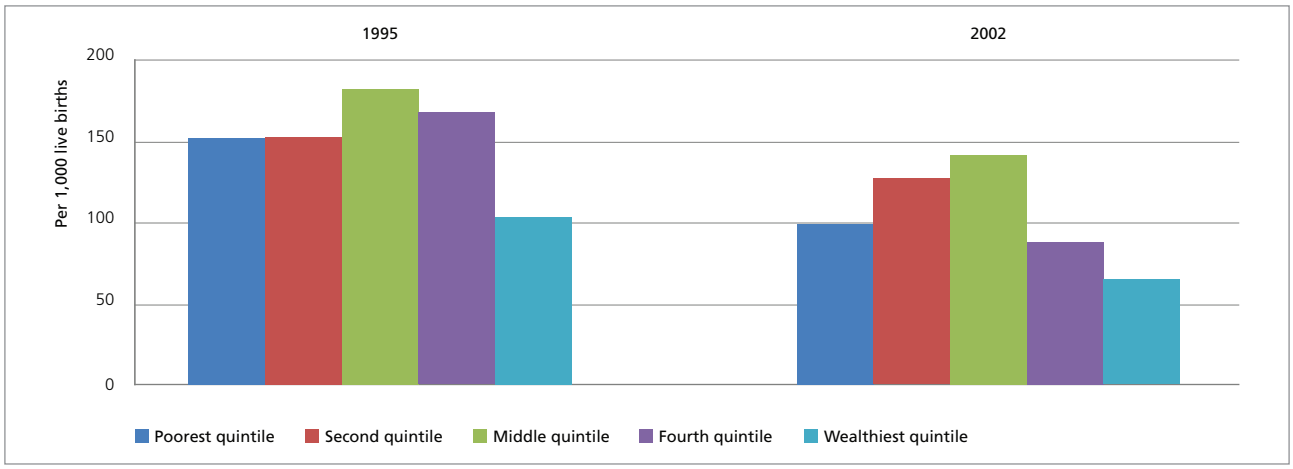
Eritrea has made remarkable improvements in terms of its infant mortality rate (IMR) (0-1 year old) and under-five mortality rate U5MR (0-5 year old) over the past 35 years. As Figure 2 shows, the U5MR plunged from 205 to 58.2 deaths per 1,000 live births between 1975 and 2008. It fell throughout the period but the decline naturally accelerated after independence, at an average yearly rate of 5.4% compared with 2.1% during the conflict.

Figure 2: U5MR, 1975-2008



Source: World DataBank.

Figure 3: U5MR by income quintile, 1995 and 2002



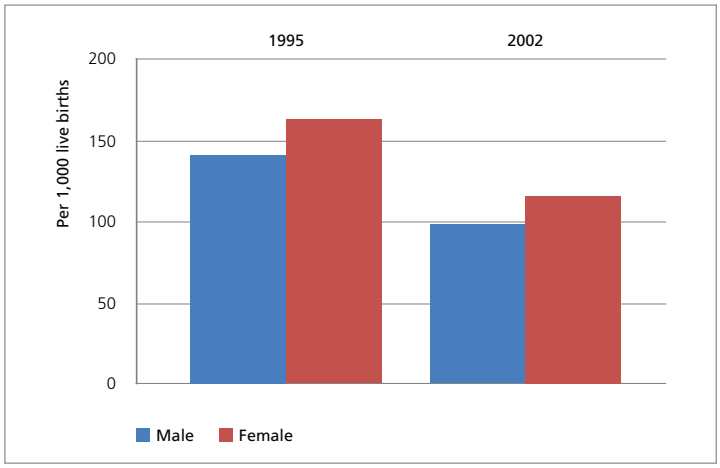
Source: Authors' calculations based on Demographic Health Survey (DHS) and Multiple Indicator Cluster Survey (MICS) data.

Figure 3 reveals that the U5MR declined across income quintiles, with the fourth quintile registering the biggest drop (from 167.8 to 88 deaths per 1,000 live births from 1995 to 2002). The U5MR for the poorest and wealthiest declined by almost the same rate for both income quintiles (35% and 37%, respectively). However, the absolute decline for the poorest was larger than that for the wealthiest, contributing to a reduction in the rich–poor gap, which dropped by almost 30% in the seven-year period analysed.

Between 1995 and 2002, both urban and rural areas reduced their U5MR by 43 deaths per 1,000 live births, thus the gap between them remained the same (Figure 5), meaning that, in relative terms, the U5MR in urban areas experienced a bigger drop than rural areas (33% and 27%, respectively)

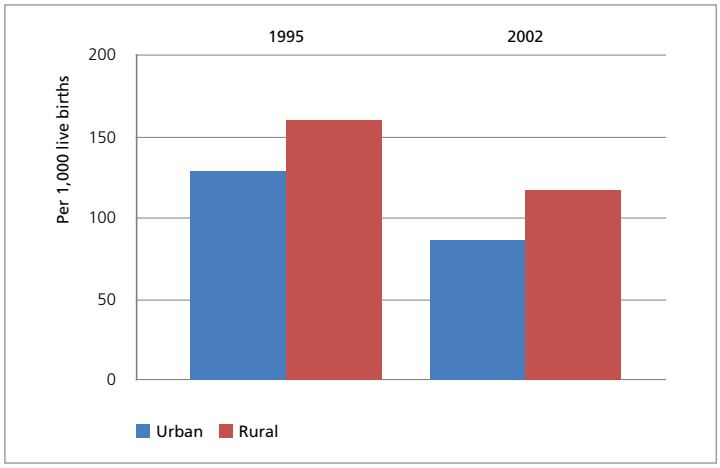
No significant differences occurred when comparing progress on the U5MR by gender. The chances of dying before the age of five among girls declined slightly more than those of boys (47.7 and 43.6 deaths per 1,000 live births, respectively). However, the reduction in the U5MR among boys showed a slightly greater decline than that among girls. The gap between male and female mortality rates reduced by 19% during the seven-year period analysed, though.

Figure 4: U5MR by gender, 1995 and 2002



Source: Authors' calculations based on DHS and MICS data.

Figure 5: U5MR by rural–urban, 1995 and 2002

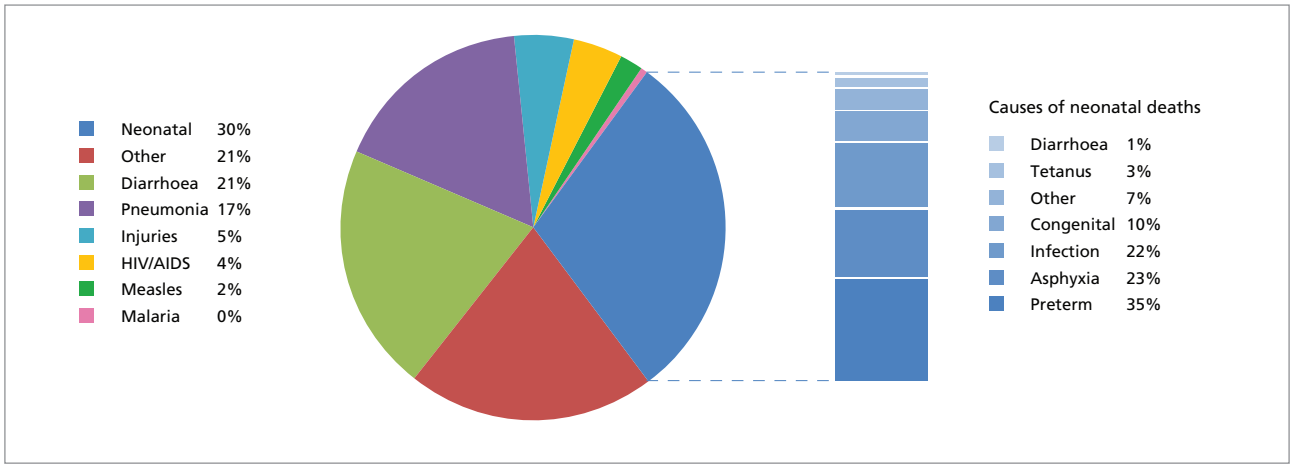


Source: Authors' calculations based on DHS and MICS data

Figure 6 shows the main causes of death among children under the age of five. The main causes are neonatal – of which preterm birth,[15] asphyxia and infections altogether account for 80% – (30%) followed by diarrhoeal diseases (21%) and pneumonia (17%). However, overall more than one-third of child deaths are attributable to under-nutrition (WHO, 2010).

15. Refers to the birth of a baby of less than 37 weeks gestational age

Figure 6: Causes of under-five deaths, 2008



Source: WHO (2010).

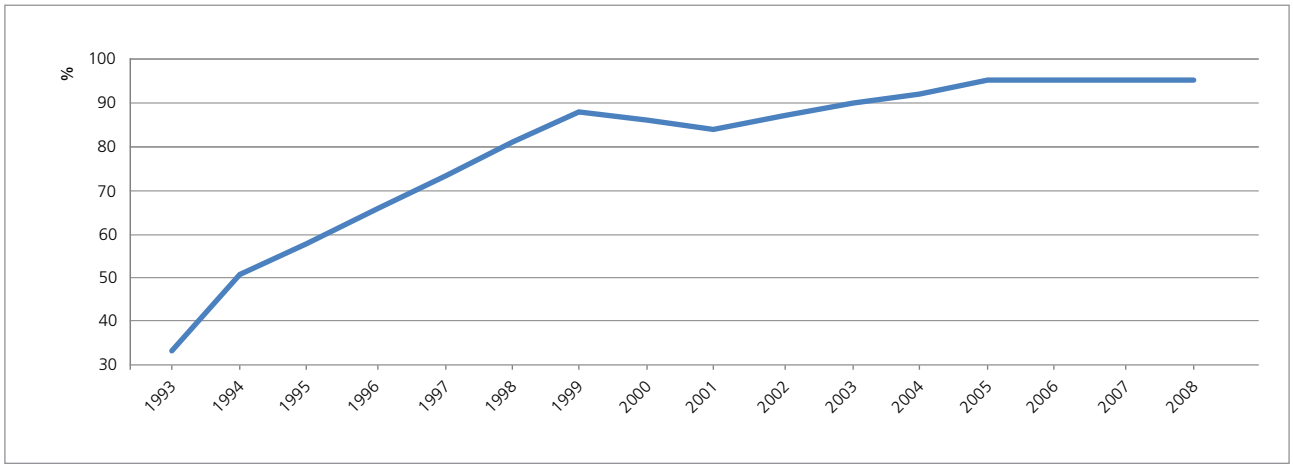
3.3 Immunisation coverage

Impressive achievements have been made in the field of immunisation. Prevention and control of diseases such as measles, poliomyelitis and diphtheria are key to reducing infant and child morbidity and mortality. Although the immunisation programme started well before independence, interviewees noted that until 1991 only about 10% of children had received vaccinations. Since then, 99% of one-year-old Eritrean children have received a dose of BCG vaccine (against tuberculosis), 97% have received three doses of DPT3 (to prevent diphtheria, pertussis and tetanus), 97% have been vaccinated against hepatitis and 96.8% have received the third dose of the polio vaccination (World DataBank). Regarding immunisation against measles, from 1993 to 2008 coverage increased from 34% to 95%, with impressive performance during the first years after independence (Figure 7). As a consequence,

> *'the five major vaccine preventable diseases no longer pose any major public health problem in Eritrea. The country has eliminated maternal and neonatal tetanus. Measles morbidity and mortality have been reduced to less than 90% of the 1991 levels and is heading towards achieving the Polio free status'* (WHO, 2009: 4).

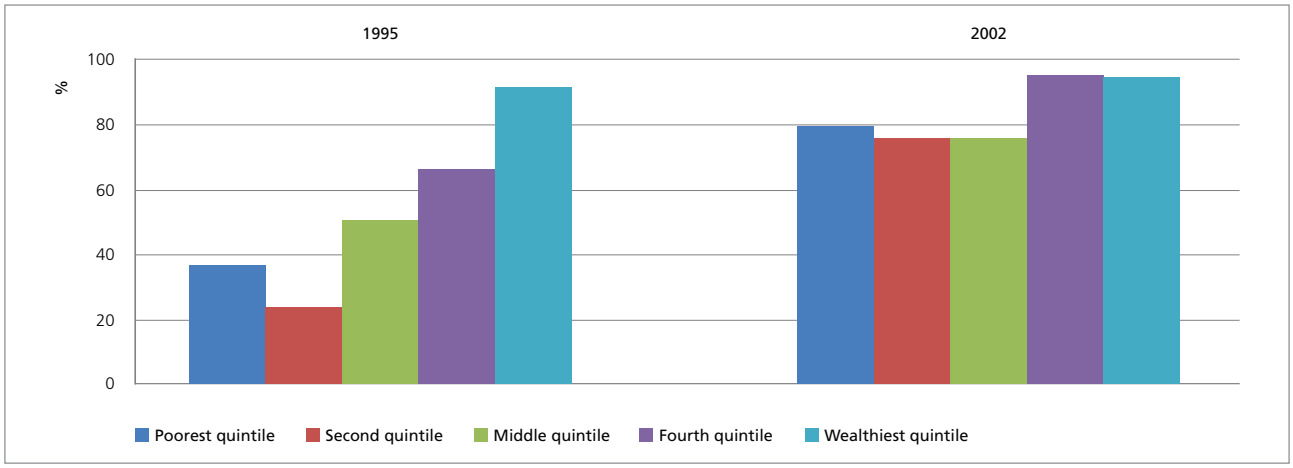
Improvements in immunisation coverage have been extremely equitable (Figure 8), with the gap between the poorest and the wealthiest quintiles reducing by 72% between 1995 and 2002. The difference in coverage of about 55% in 1994 was reduced to 15.4% in 2002. In both absolute and relative terms, progress for the poorest quintile was considerably greater than that for the richest quintile: while among the rich the rise in coverage was 3.3%, among the poorest the rise in the level of immunisation was of 42.9%, showing that the programme is extremely pro-poor.

Figure 7: Proportion of one-year-old children immunised against measles, 1993-2008



Source: MDG indicators.

Figure 8: Proportion of one-year-old children immunised against measles by income quintile, 1995 and 2002

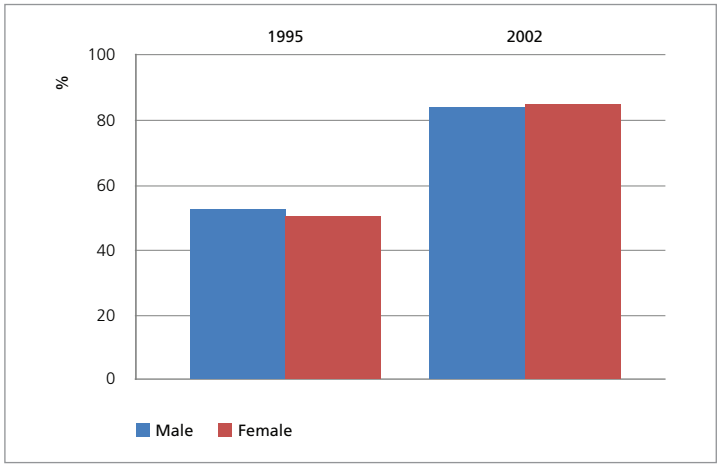


Source: Authors' calculations based on DHS and MICS data.

The gap between genders, already small in 1995, was almost eradicated by 2002 (2.9% and 0.8%, respectively), with both boys' and girls' immunisation reaching levels of more than 80%. Reverting to the previous pattern, in 2002 the proportion of girls immunised against measles was slightly higher than that of boys (84.6% and 83.8%, respectively).

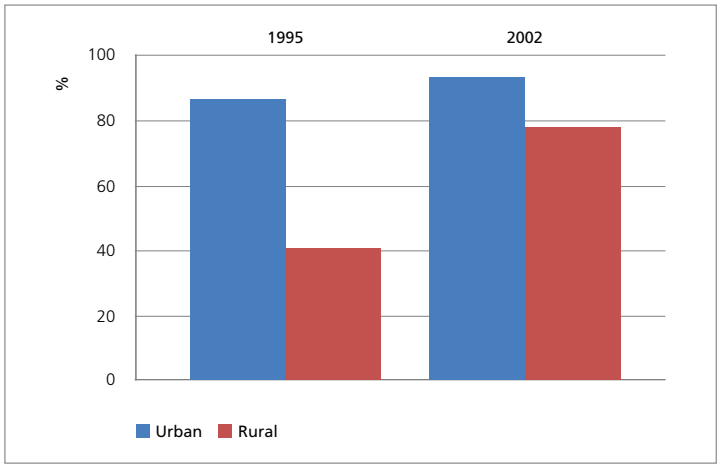
In terms of coverage by area, while urban areas still contain a greater number of children immunised against measles (93.8% in 2002 compared with 87% in 1995), efforts put into reaching remote populations in rural areas have resulted in an impressive improvement, with the number of children receiving vaccinations against measles in rural areas almost doubling, from 40.7% to 78.5%, in only seven years. Consequently, the gap between areas reduced by 67%.

Figure 9: Proportion of one-year-old children immunised against measles by gender, 1995 and 2002



Source: Authors' calculations based on DHS and MICS data.

Figure 10: Proportion of one-year-old children immunised against measles by region, 1995 and 2002

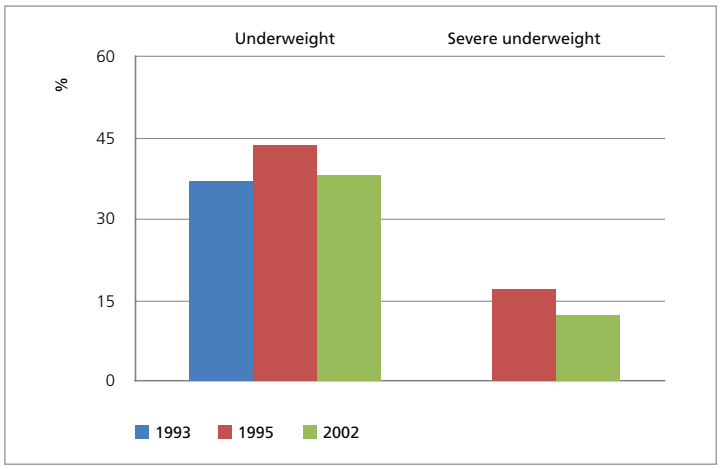


Source: Authors' calculations based on DHS and MICS data.

3.4 Under-nutrition

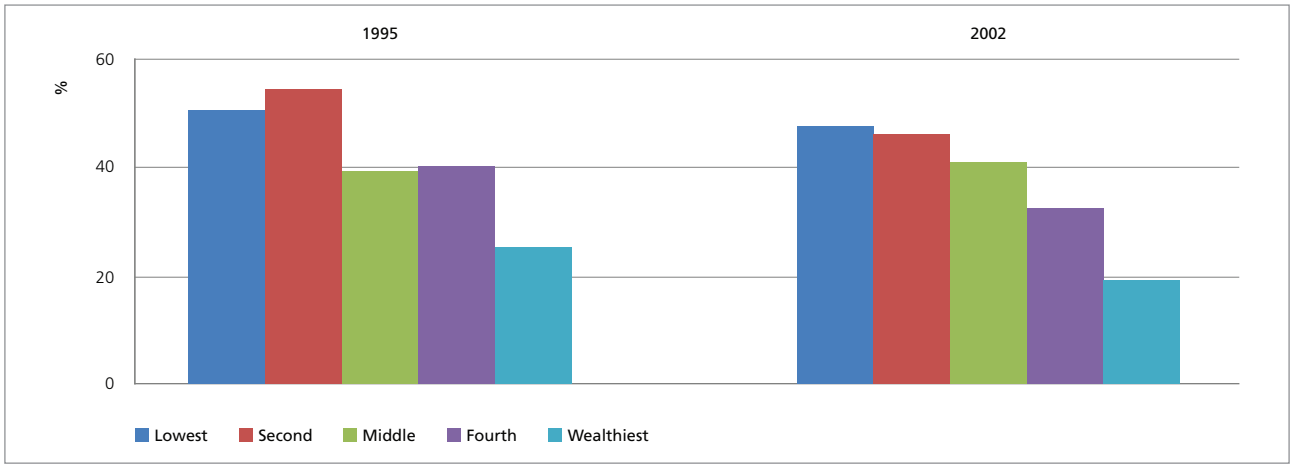
Achievements have been less impressive in the field of children's nutrition, given the impacts of droughts in 1993 and between 1999 and 2003. In spite of the poor harvest, underweight decreased by 12% (from 43.7% to 38.4%) between 1995 and 2002, while in the same period severe underweight dropped by 28% (from 17% to 12.2%) (Figure 11).

Figure 11: Children underweight and severe underweight, 1993, 1995 and 2002



Source: Authors' calculations based on DHS data.

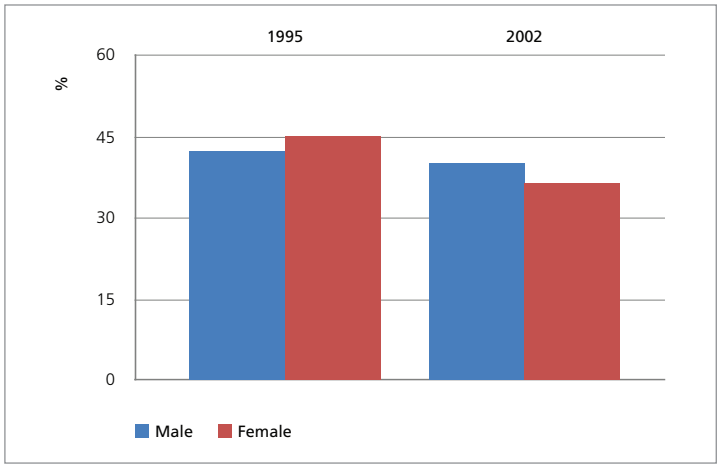
Figure 12: Children underweight by quintile, 1993, 1995 and 2002



Source: Authors' calculations based on DHS data.

From 1995 to 2002, the proportion of children underweight declined for almost every income group,[16] although the wealthier quintile experienced a bigger reduction than the poorest one. The proportion of children underweight in the richest quintile dropped by 6%, from 25.4% to 19.4%, while for the poorest income group incidence decreased by 2.9%, down from 50.7% to 47.8% (Figure 12). Therefore, the rich–poor gap widened, going up to 28.4% in 2002 from 25.3% in 1995.

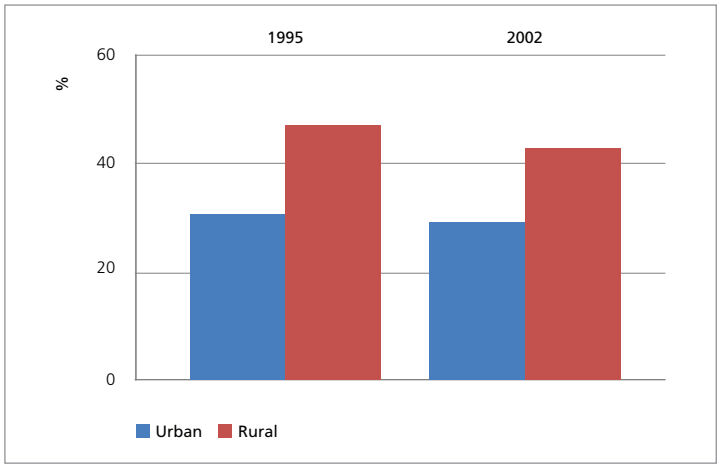
Figure 13: Children underweight by gender, 1995 and 2002



Source: Authors' calculations based on DHS data.

16. The proportion of underweight children in the third quintile increased by 1.7% in the period analysed.

Figure 14: Children underweight by region, 1995 and 2002



Source: Authors' calculations based on DHS data.

Figure 14 clearly shows that in 2002 the proportion of boys underweight (40.3%) was larger than that of girls (36.5%), while in 1995 the situation was the opposite, with 42.4% of boys underweight compared with 45.2% of girls.

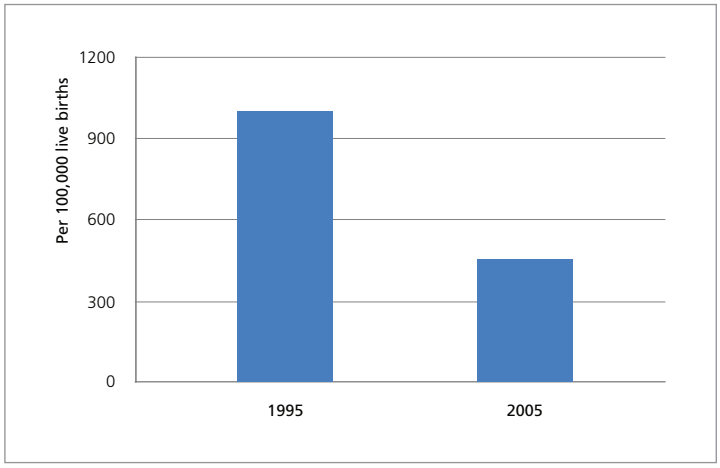
When comparing children's underweight by place of residency, underweight in urban areas remained at roughly the same level (31% in 1995 compared with 29.1% in 2002), whereas children in rural areas improved their nutrition status by 8%, with the proportion of children underweight dropping from 47.1% in 1995 to 43.1% in 2002 (Figure 14).

3.5 Maternal health

3.5.1 Maternal mortality

Eritrea has reported remarkable progress in reducing maternal mortality, in just 10 years more than halving its maternal mortality ratio (MMR), which went from 998 per 100,000 live births in 1995 to around 450 in 2005 (Figure 15). However, the rate is still very high, considering the MDG target for 2015 has been set at 250 per 100,000 live births (WHO, 2009). Assessment of progress across income groups or between rural and urban areas is constrained by lack of data on MMR over time.

Figure 15: MMR, 1995 and 2005

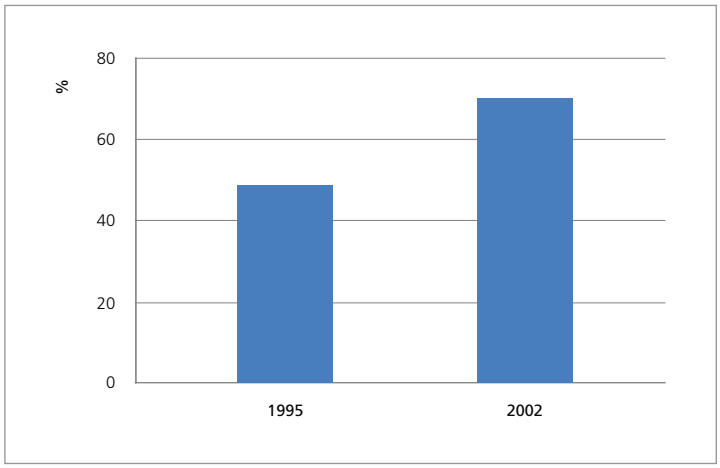


Source: WHO (2009).

3.5.2 Antenatal care coverage

Antenatal care (ANC) not only progressed from 1995 to 2002 but also did so in an equitable manner. Over this period, the number of pregnant women who made at least one ANC went up to 70.3% from a previous level of 48.9%. ANC among the poorest women improved by 24.5% (from 31.8% to 56.3%), compared with an increase of 3.3% among the wealthier women in Eritrean society (from 88.9% to 92.3%). The greater improvement among the most vulnerable women in society contributed to a narrowing of the rich–poor gap in ANC.

Figure 16: Antenatal care coverage, at least one visit, 1995 and 2002



Source: MDG data.

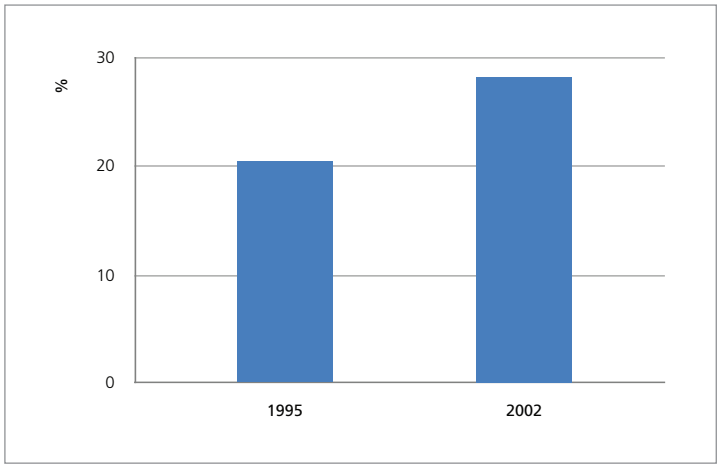
3.5.3 Birth attended by skilled health personnel[17]

Professional attendance at delivery reached 28.3% in 2002 compared with 20.6% in 1995, which represents an improvement of 37%. Although there has been important progress, this figure is still very low. A total of 24.7% of deliveries are by relatives or friends (NSEO, 2003).

Despite the fact that attendance among women from the lower quintile improved by 46% during the period analysed – compared with an increase in attendance of 19% for the richest women – access remained extremely unequal. While 83.2% of births were attended by skilled personnel for women from the richest quintile, the figure drops to 6.8% for women from the poorest quintile (Figure 18).

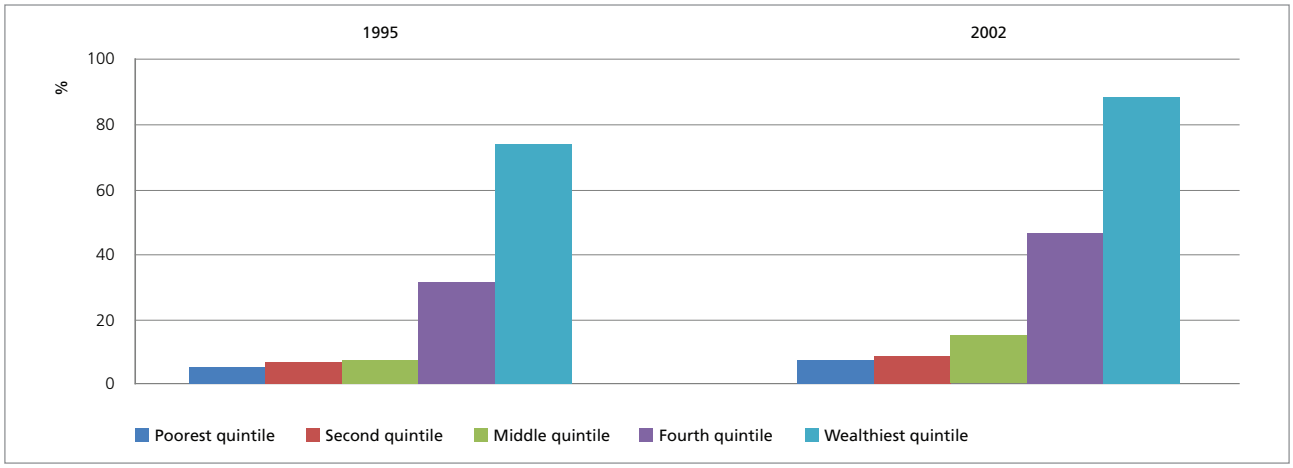
17. Skilled attendance at delivery is defined as assistance provided by a doctor, nurse or midwife (www.who.int/making_pregnancy_safer/topics/skilled_birth/en/index.html).

Figure 17: Proportion of births attended by skilled health personnel, 1995 and 2002



Source: MDG data.

Figure 18: Proportion of births attended by skilled health personnel by income quintile, 1995 and 2002



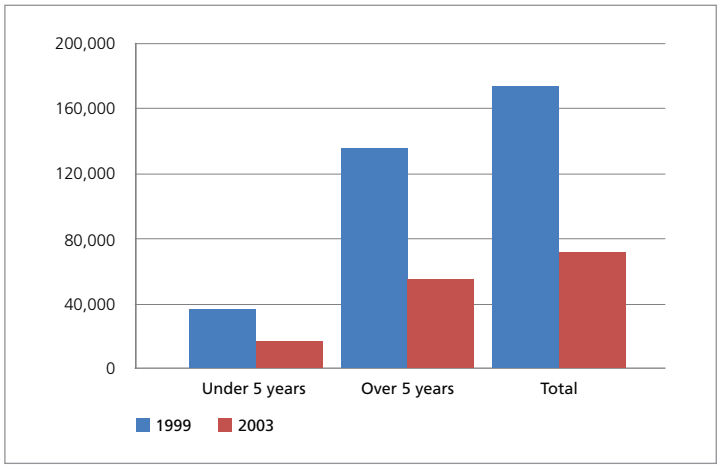
Source: Authors' calculations based on DHS and MICS data.

Although the proportion of women living in rural areas attended by medically trained staff increased by 24% (as opposed to an 8% improvement among city women), the gap in attendance in 2002 between rural and urban women was still high: almost 70% of urban women were attended by medical staff in comparison with just 11% of rural women (NSEO, 1995; 2003).

3.6 Malaria

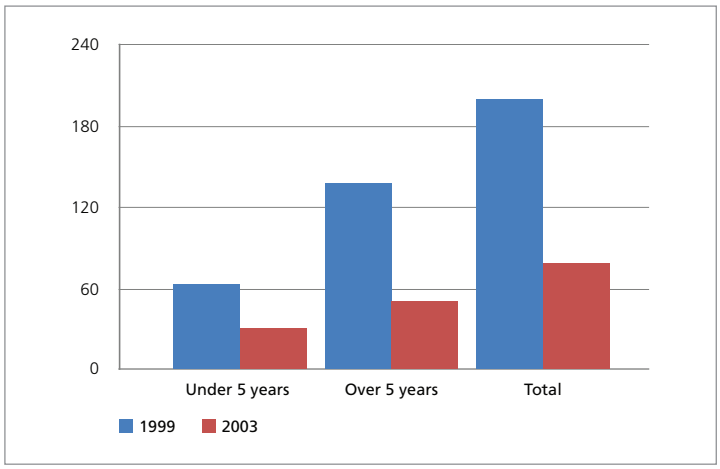
In Eritrea, about two-thirds of the population lives in malaria-endemic or epidemic-prone areas where the disease is seasonal. Malaria was one of the leading public health problems in Eritrea until the introduction of the Roll Back Malaria (RBM) Initiative in 1999.[18] Malaria morbidity and mortality have been reduced to less than 80% of 1998 levels (WHO, 2009).

Figure 19: Malaria cases by age group, 1999 and 2003



Source: Graves (2004).

Figure 20: Deaths attributed to malaria, by age group, 1999 and 2003

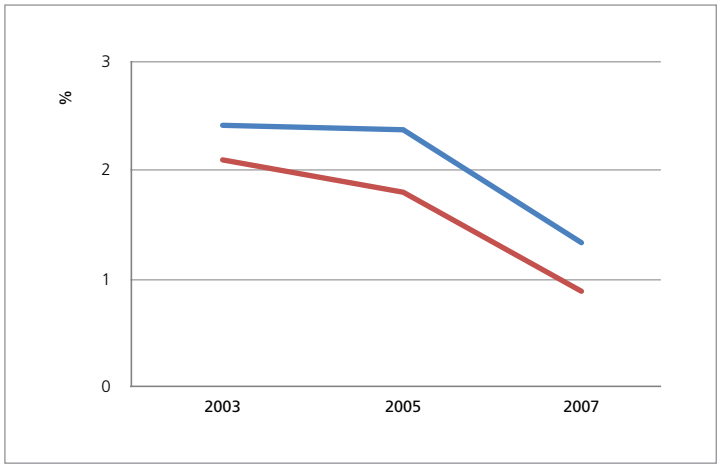


Source: Graves (2004).

As Figures 19 and 20 show, the number of malaria cases dropped by more than half from 1999 to 2003 among both children under five years old and the population as a whole (54% and 59%, respectively). Malaria mortality follows the same trend, with a reduction of 53% for young children and 61% for the overall population (Graves, 2004).[19] By 2006, malaria morbidity had decreased by 74%, mortality by 85% and the case fatality rate by 78%. The number of cases per 100,000 people plunged from 7,546 to 568 between 1998 and 2006, representing a drop of 92% (World Bank, 2009).

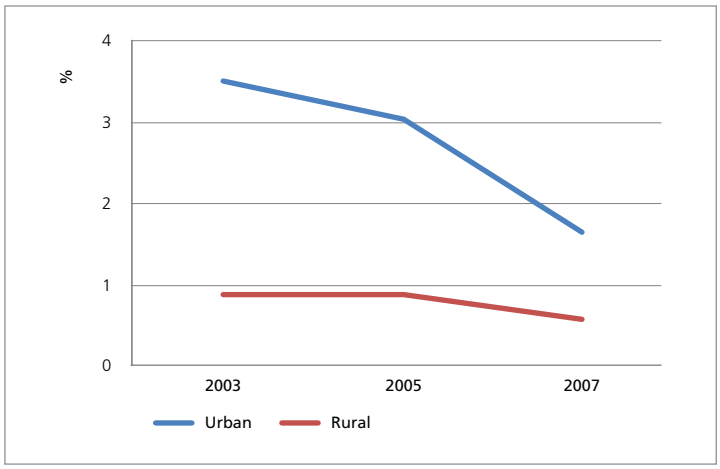
18. In 1997 and 1998, Eritrea experienced a series of malaria epidemics that produced more than 424,000 cases, with over 500 inpatient malaria deaths in 1998 alone (RTI International, 2005).
19. This is believed to be an underestimate as data were collected at clinics with more than 90% reporting (Graves, 2004).

Figure 21: HIV prevalence at ANC sentinel sites by age, 2003-2007



Source: UNGASS (2010).

Figure 22: HIV prevalence at ANC sentinel sites by area by residence, 2003-2007



Source: UNGASS (2010).

3.7 HIV prevalence

The first HIV infection was reported in 1988 at the port town of Assab. The HIV epidemic in Eritrea is considered a generalised one with some population groups considered most at risk (UNGASS, 2010).

Figure 21 shows that prevalence among pregnant women attending ANC services has experienced a reduction of 45%, going from 2.42% in 2003 to 1.33% in 2007. The decline in prevalence is greater among younger women (15-25 years old), with a sharp decline of 58% for the same period (from 2.1% to 0.88%).

As Figure 22 indicates, there are significant rural–urban disparities, with HIV prevalence among the urban population considerably higher than in rural communities. While rural settings account for a lower rate of infection, urban areas have shown greater progress in reducing HIV prevalence, which dropped by 52.6% between 2003 and 2007 compared with by 35.6% among rural communities.

Anti-retroviral therapy (ART) is available in 17 health facilities, including at military medical centres. By 2009, out of a total of 7,184 eligible people, 73.3% had started receiving treatment (UNGASS, 2010). An increase in voluntary counselling and testing (VCT) sites is noteworthy: by 2007, there were 110 VCT sites in place, up from only 3 in 2003. Prevention of mother-to-child transmission (PMTCT) is estimated at 95% and anti-retroviral (ARV) coverage at 46% (WHO, 2009).

3.8 Health infrastructure and personnel

GoE has made extensive improvements in terms of physical infrastructure to increase access to health services throughout the country, focusing specifically on rural areas. At independence, the health infrastructure in Eritrea consisted of 16 hospitals, 4 health centres and 106 health stations (MoH, 2004). Currently, there are 25 hospitals, 52 health centres, 180 health stations and 113 clinics,[20] providing improved quality and expanded functions, with a health care network that is currently three times larger than in 1991 (WHO, 2009). As a result, by 2000 it was estimated that about half of children under the age of three were living within 5km of a facility providing child health services including immunisation, and by 2004 more than half of the population lived within such a 5km ratio.[21]

Additionally, the pharmaceutical industry that started functioning underground during the war of liberation has expanded, and nowadays over 60 different medicine products are produced locally. Alongside this there has been a vast improvement in terms of health equipment (WHO, 2009).

Although the number of physicians has more than doubled, from 0.02 to 0.05 per 1,000 population, compared with the rapid increase in the health infrastructure the sector still suffers from serious shortages of skilled personnel (World DataBank).

3.9 Broader development impact and inter-/cross-sectoral contribution

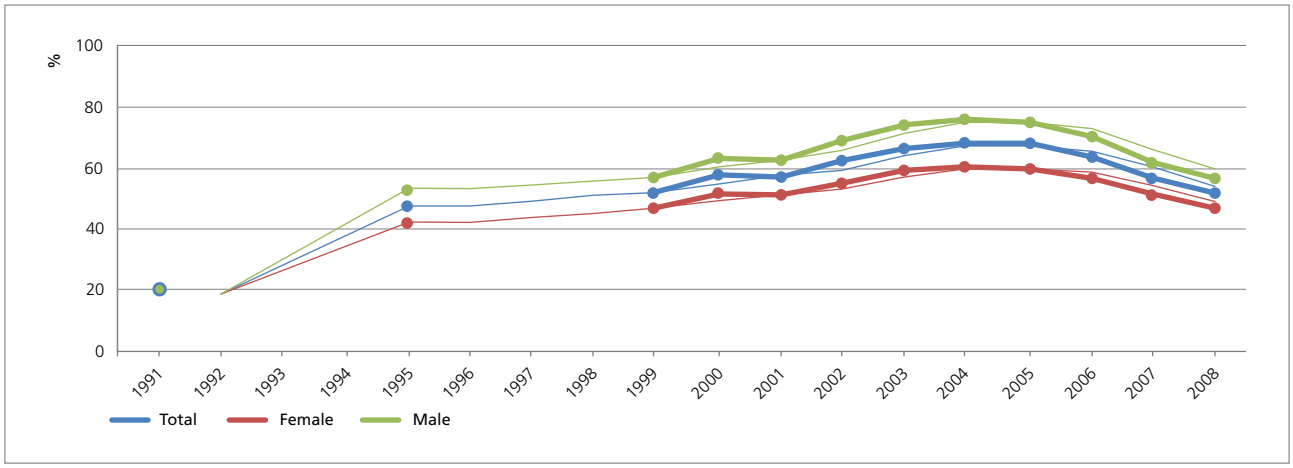
Parallel, complementary and mutual reinforcing sectoral improvements have taken place in Eritrea. In particular, progress made in education and in water and sanitation are closely related to improvements in the health sector.

3.9.1 Progress in education

Education is a key determinant of good health, as it leads to healthy behaviours and gives people the ability to better process health information (World Bank, 2006). Since the liberation war, education has been seen as a strategic tool and a vehicle for development and social transformation. The EPLF built schools in liberated areas, set up education and training programmes and provided education in the camps. Frontline combat units routinely met in the trenches to study language, mathematics, geography and other primary subjects (Connell, 2001; Hoyle, 1999). By the end of 1988, the EPLF Department of Education had established 165 schools throughout the liberated and semi-liberated zones of Eritrea, with a total student population of 27,000. After independence, major efforts to improve accessibility, coverage and relevance were considered essential to the promotion of equal educational opportunities. Education is provided free at basic level and in the respective mother tongues of each ethnic group. Middle- and secondary-level education is in English (MoE, 1999). From 1991 to 1999, schools were built at a yearly rate of 19.4% (MoE, 1999).

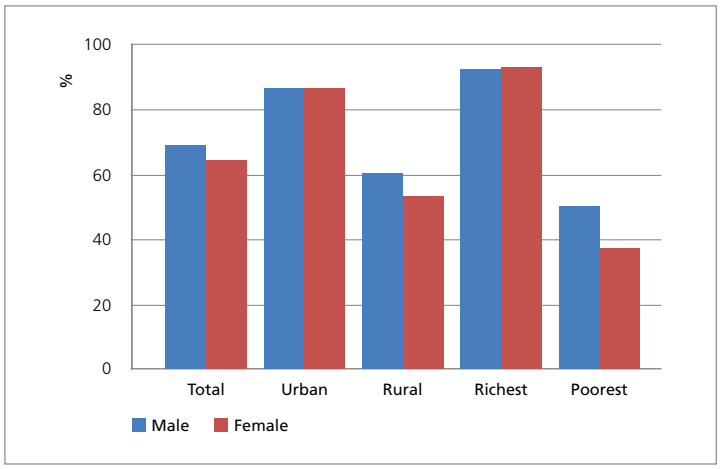
20. Health clinics and centres have been built especially in rural and periphery areas.
21. MoE (1999); World Bank (2004); interviews.

Figure 23: Primary school gross enrolment ratio, 1991-2008



Source: World DataBank.

Figure 24: Primary net attendance ratio by gender, 2002



Note: Primary net attendance ratio relates to children of primary school age in primary school or higher.
Source: UNICEF (2008b).

Figure 23 shows that, since independence, the primary school net enrolment ratio has been growing steadily, reaching a peak in 2004/05 at 68.6%; it then started declining and by 2008 the level was at 57.3%. A similar trend occurred for the female and male net enrolment ratio. The sharp drop after 2005 may be attributed to the beginning of the conflict with Ethiopia.

The progress made was particularly impressive in the first five years after independence, when the net enrolment ratio more than doubled. In spite of the decline in enrolment from 2004/05 to 2008, the net enrolment ratio increased at a yearly rate of 6.4%. However, progress has not been distributed equally between boys and girls. While in 1991 the ratio was almost the same for boys as for girls, the gender gap increased and by 2008 56.9% of boys were enrolled in primary school compared with 47.2% of girls. However, data for 2002 show that gender differences depend on the place of residence and the economic status of children: while there is no difference between genders in urban areas or in the wealthiest sector of society, in rural areas, as well as for the poorest, the net enrolment ratio for males is higher than that for females (Figure 24).

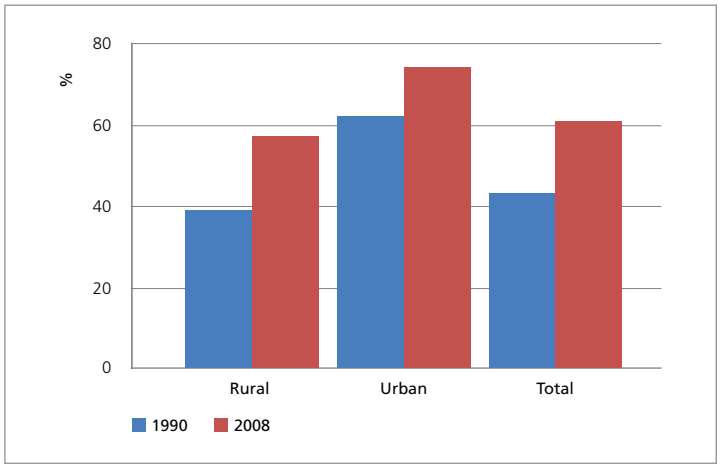
3.9.2 Progress in water and sanitation

Access to safe water and adequate sanitation is a major challenge in Eritrea. Recurrent droughts affect the availability of safe water (Fraser, 2010). Safe drinking water, as well as improved sanitation, is a basic precondition for good health. Access to unsafe drinking water can lead to diseases such as diarrhoea, cholera and typhoid. To reduce the burden of waterborne diseases, and associated morbidity, GoE has made increasing efforts to improve access to affordable and sustainable water supply and sanitation services and to improve hygiene behaviour.

Although progress has been slow, access to improved drinking water sources has increased by 42% since independence, and in 2008 61% of Eritreans had access to safe drinking water. Increased access to improved drinking water sources has been greater in rural areas: from 1990 to 2008, access increased by 46%, from 39% to 57% of the rural population; for urban areas the increase in coverage was of 19%, reaching 74% of urban dwellers (Figure 25).

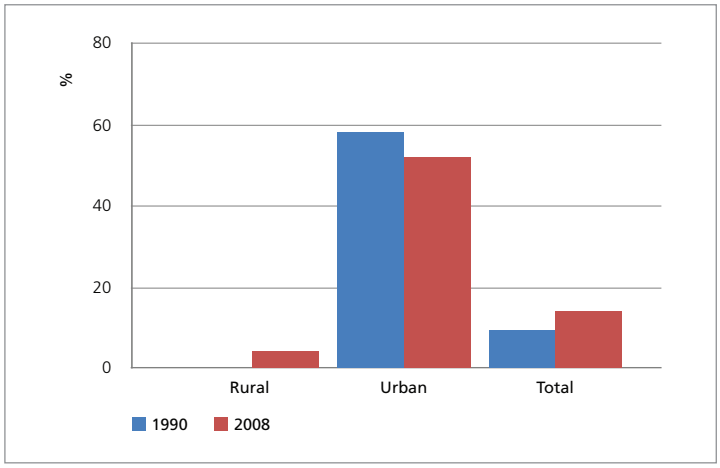
Although access to sanitation facilities remains among the lowest in the world, this figure nearly doubled between 1990 and 2008, from 9% to 14% of the population. In 1990, no Eritreans in rural areas had access to sanitation; by 2008, 4% had improved access. Surprisingly, the situation in the cities has worsened, with coverage going down to 52% in 2008 from a previous level of 58%, possibly as a result of increasing rural–urban migration and urbanisation more generally (Figure 26).

Figure 25: Population using improved drinking water sources, 1990 and 2008



Source: WHO (2010).

Figure 26: Population using improved sanitation facilities, 1990 and 2008



Source: WHO (2010).

Over the past three decades, Eritrea has built many small, medium and large dams, as well as diversion structures to harvest water from fog, store water wells and ponds; it has developed solar-powered pumping systems, piped water supplies and boreholes and carried out terracing and tree planting throughout the country. Awareness campaigns and sanitation and hygiene promotion activities, including training of communities about safe water handling and good sanitation and hygiene practices, have also been put in place (Fraser, 2010; IRIN, 2009; 2010; Tesfamariam, 2008b). Nevertheless, progress is slow, not least because of the persistence of droughts.

4. Drivers of progress

What explains the progress achieved in the health sector in Eritrea when other sectors in the country remain stagnant or have even deteriorated? Eritrea's subsistence agriculture economy has been subject to the severe effects of successive droughts and famine, keeping most of the population under the poverty line. There is also a constant fear of violence as the country still teeters on the verge of conflict with Ethiopia. It is in this context of extreme adversity that it becomes important to understand how the health sector has managed to achieve what it has.

A number of crosscutting and interrelated factors seem to have contributed to progress:

- National commitment and capacity to adapt to adverse circumstances;
- Leadership commitment and a long-term perspective through investment in human capital;
- The role of the diaspora;
- An inter-sectoral approach to health;
- Successful interventions involving community participation;
- Ownership of policies and partnerships with donors.

4.1 National commitment and capacity to adapt to adverse circumstances

These two crosscutting features underlie many aspects of Eritrean society and are closely related to the legacy of the war of liberation. Motivated by the spirit of self-reliance, Eritreans have developed a strong sense of nationhood. At the same time, encouraged by the nationalist messages of the EPLF and later the PFDJ,[22] and regardless of their ethnicity or religion, they seem to hold a generalised collective responsibility and willingness to contribute to the development of their country. Observers note that the diaspora as well as national citizens are engaged in community and reconstruction projects, with an emphasis on the community over the individual (Hoyle, 1999). Influenced by years of military order, Eritreans seem to be characterised by a high level of discipline and compliance (Dorman, 2003; interviews). Through a '"surprisingly functional social order" Eritrea is said to have "achieved a degree of non-coercive social discipline" by implication, unusual for Africa' (Kaplan, 2003, in Dorman, 2003).

Political leadership, coupled with years of war and seclusion, have led Eritreans to be flexible and to innovate when faced with adverse circumstances. For instance, while routinely being attacked by air raids, they were able to develop an efficient way to continue with their day-to-day lives by building schools, hospital and factories underground. Faced with the challenge of assisting remote populations in contested areas, they developed a system of mobile clinics able to meet such people's needs. After independence, this approach to tackling problems remained. Facing the challenge of rebuilding a country with almost no resources and little help from outside, Eritreans put together a large-scale demobilization programme, involving a large proportion of the military in development and reconstruction projects (Bereketeab, 2002). On the health front, shortage of personnel was tackled by training community members and teachers as health workers (see below) as well as by capitalising on expatriate contributions for the purpose of capacity building.

22. Already part of the national folklore, stories of the war of liberation relate how the Eritrean people fought for self-determination and how nothing – famine, lack of arms, repeated defeats or absence of international support – persuaded them to yield. The new government regularly draws on this claim of a tradition of steadfastness to inspire citizens to persevere in the arduous and frequently frustrating task of national reconstruction (Hoyle, 1999: 406).

4.2 Leadership commitment and a long-term perspective through investment in human capital

The leadership of Eritrea used the strife with Ethiopia to unite Eritreans against the common enemy and to strengthen the party and the army. The commitment of the EPLF to improving the well-being of the population during the conflict years and, after independence, in its role as government, appears to be an important factor contributing to progress in the health sector. For the EPLF, the war of liberation was not limited to fighting to liberate Eritrea from Ethiopian occupation, but was also a social revolution against 'illiteracy, ignorance, disease and backwardness' (Findlay, 1989). Key informants confirm that, with this parallel war in mind, the EPLF's long-term focus was on the development of human capital through the provision of health care and educational services as the basis for a progressive society.

Thus, foreseeing what would later be needed in building the country, the EPLF saw health and education as essential investments in the country's future, focusing on children as a top priority. According to the EPLF, children and young people needed to be healthy and educated: 'though many youth were eager to fight, rebel leaders encouraged them to attend school so human capital would be available after independence' (World Bank, 2008; interviews). Education was understood in the broad sense, with concepts of hygiene, health and nutrition incorporated into the curricula at an early stage (World Bank, 2008; Tesfamariam, 2008a).

Health and education programmes have survived over the years in spite of the protracted war, drought, famine and a general lack of resources. Leadership commitment over the long term is evidenced in determination and creativity to overcome such obstacles. After independence, this was reflected in the importance given to health and education programmes, which the donor community has acknowledged, despite increasingly criticising the political situation in the country: 'The commitment of the Government and people of Eritrea towards long-term goals as well as accountability in the use of donor funding related to specific programmes or agreements constitutes the drive for donor support' (WHO, 2009: 9).

Government programmes in health have put a strong emphasis on capacity building. MoH, through its many colleges and schools, trains health care professionals, and in 2004 GoE opened the first medical school (Orotta School of Medicine and Dentistry), with the first batch of doctors educated in the country graduating in December 2009 (31 doctors in general medicine and 8 paediatric specialists). It has now a total of 291 students (Ghebrihiwet, 2009). In addition, the Asmara College of Health Science, which opened in 2005, offers course in various fields of study, including Nursing, Clinical Laboratory, Medical Technology, Public Health, Pharmacy and others (Ghebrihiwet, 2009).

The PFDJ's long-term investment in human capital is institutionalised in the Macro Policy: 'The overall vision of Eritrea's future progress is ultimately to tone up the human capital, particularly through strengthening the education and health sectors (GoE, 1994, in Rena 2008: 43).

4.3 The role of the diaspora

A characteristic of the Eritrean diaspora has been this group's high levels of commitment to and engagement with their homeland. Extremely politicised, either supporting or opposing the different liberation movements and later on the EPLF/PFDJ, Eritreans in exile formed 'mass organisations' or joined existing ones; isolated from any other source of support, these have played a role in mobilising and organising the diaspora community (Bereketeab, 2007). Beyond their financial and political commitment, members of the diaspora have also contributed with their skills and knowledge. All of this has been important role to the country's social transformation.

Their input into the area of health has taken different forms. A significant contribution has come from the professional cadres. During the war of liberation, many medical professionals contributed their expertise by organising field trips, when they helped not only by providing medical care but also by training fellow colleagues and barefoot doctors. Many of them returned to Eritrea after completing their education to join the war of liberation (Bereketeab, 2007). Others returned after independence to contribute to the reconstruction of the country[23] (Kibreab, 2007; interviews).

Diaspora groups have also promoted and facilitated collaboration between the EPLF/GoE and medical organisations, universities and doctors from developed countries. Doctors from different parts of the world travel regularly to Eritrea to work there; at the same time, they contribute to the formation of skilled professionals. They come from medical associations, foundations or NGOs or simply as individuals, impressed with Eritreans' ability to work with minimal resources and equipment (Tesfamariam, 2008a; 2008b; interviews).

23. The return was not easy. Ex-combatants did not always receive them with hospitality as they felt returnees ran away while they stayed fighting and came back only when the war was over (Kibreab, 2007).

Diaspora groups also build partnerships between expatriates and MoH. Among the most well-known is the collaboration between MoH, George Washington University Medical Center and Physicians for Peace (PFP) to set up Orotta Postgraduate School, which officially opened in December 2007 to train students in paediatrics and surgery. The German Hammer Forum Association has been conducting heart surgery in Eritrea with the collaboration of MoH since 2002.

4.4 Inter-sectoral approach to health

During the years of the EPLF, the 'zero school'[24] was created behind enemy lines. The programme involved training barefoot doctors who doubled up as teachers (Findlay, 1989; Tesfamariam, 2008a; 2008b). As a result, a strong bond developed between MoH and the Ministry of Education (MoE) during the war. The link between the sectors continued after independence and was formalised into the inter-sectoral School, Health and Nutrition Project (SHNP) (World Bank, 2008). This starts from kindergarten and continues through elementary and secondary school.

Facing a severe shortage of medical staff and recognising the challenges involved in sending large numbers of doctors to and setting up hospitals in every remote village, the government decided to use schools and teachers, the only institution that existed in almost every remote village, to help provide health services. Regarding children as top priority and with an emphasis on prevention, schools were regarded as the perfect environment to implement health interventions. Thus, based on their experience during the war of liberation, GoE started training teachers to play the role of health workers too (World Bank, 2008).

> *'You can't build a hospital in one year, you can't produce doctors in six months, you can't produce nurses in one year'* (Saleh Meki, former Minister of Health, in World Bank, 2008).

Every school has a health focal point teacher who, together with the school director, attends a training course at the regional capital, at which representatives of every school in the area gather to receive intense training on the provision of health care to children. When they return to their villages, these health focal point teachers are in charge of training their fellow teachers. Teachers are trained to screen children for basic health problems, such as skin, ear and eye infections and dental cavities, as well as to recognise undernourishment by checking weight and height. As part of the education curriculum, teachers lecture on health education, covering prevention, nutrition, hygiene, HIV/AIDS and life skills.

Each teacher is responsible for the health of the children in his/her class: when they find children with a health problem they explain the seriousness of the problem and the need to get treatment before it worsens. They issue a referral form that ensures treatment for free in the nearest clinic or health station. Many infections and basic health issues are treated easily with medicines held in such clinics. Additionally, teachers monitor children's growth on a bimonthly basis. If they find a child suffering from under-nutrition, they are able to provide them with vitamins as well as nutritional food or therapeutic feeding. Children with more serious problems are taken to the nearest health station (World Bank, 2008).

Depending on the region, the programme incorporates additional components in order to meet the different needs of the population. Anaemia is a big problem in the Northern Red Sea area so, in every school (which are often very rudimentary, set up next to mosques in this predominately Muslim area), teachers provide iron tablets on a weekly basis. This supplementary measure has contributed to a decrease in anaemia incidence from 14% to 4%. Within the cities, teenagers face increased risk of STDs, unwanted pregnancy, alcoholism and smoking. In order to tackle these issues, a system of peer education has been implemented in which teachers give assignments on life skills topics for the teenagers to discuss in groups (World Bank, 2008).

The training of teachers means that problems can often be caught before they become serious and thus can be treated in the local clinics, avoiding more expensive treatments in the future. Hence, the integration of health and education at school level is a cost-effective solution based on prevention rather than cure. Additionally, the SHNP has a high impact on health outcomes through two channels. On the one hand, it takes advantage of the strong tradition of deference within Eritrean society, in which persons such as village elders or teachers are generally not to be questioned but rather must be followed and respected (Hoyle, 1999). On the other hand, as the health education given to the child is transferred to the parents, the family and in turn the whole community, the programme can spread health messages from the school to the community (World Bank, 2008).

24. An EPLF boarding school that managed to have up to 4,000 pupils set in a narrow valley of the liberated zone. Students were mostly orphans, fighters' children and children from the civilian population living on the base. The zero school was actually a rough shelter covered in foliage to camouflage it against aerial bombardment (Findlay, 1989).

4.5 Successful health interventions involving community participation

4.5.1 Community involvement and outreach programmes

GoE has paid special attention to improving access to health services in rural areas, with a strong focus on prevention and PHC. Building on its experience with barefoot doctors during the conflict, and as a way to tackle the medical staff shortage, it has involved the community in its programmes as an effective and affordable way to prevent disease and promote health. In this way, it has raised awareness and brought health services to the community while removing barriers to health seeking. All the interventions listed below have made intensive use of community participation and outreach practices, which have proven very effective in accessing hard-to-reach populations.

4.5.2 Immunisation campaign

The EPLF started an immunisation programme in 1980 during the war of liberation, although, as we have seen, this could not have a real impact until the conflict was over. Now, the Expanded Programme on Immunization (EPI) is the keystone of the PHC strategy in Eritrea, working as an entry point into communities for maternal and child health interventions. The programme aims to eliminate, eradicate and control vaccine-preventable diseases, following WHO guidelines for vaccinating children against seven diseases (MoH, 2004).

EPI is implemented through three strategies: 1) regular delivery of vaccination at any health facility on a daily basis; 2) outreach on a monthly basis for those who are not able to go to health facilities; and 3) outreach trips of more than one day to remote villages (MoH, 2004). Delivery of services through outreach strategies is of crucial importance, as transport is a major constraint in remote villages (UNICEF, 2008a). Additionally, to address malnutrition, GoE has made the provision of vitamin A part of the national immunisation campaign for children aged 9-59 months. Women aged between 15 and 49 years old are also targeted for tetanus toxic immunisation (MoE, 1999; UNICEF, 2009).

There are more than 370 permanent and mobile vaccine-providing institutions in the country. About 90,000 children receive all the required vaccines annually: the campaign has achieved over 90% coverage. Given this remarkable success, in November 2009 Eritrea was acclaimed by the GAVI Alliance for having registered the highest vaccine coverage in the world (AllAfrica, 2009).

4.5.3 Community Integrated Management of Childhood Illness

Integrated Management of Childhood Illness (IMCI), developed by WHO and UNICEF, is a framework that provides guidelines for a simplified system of diagnosis and treatment. It is designed for use by health workers with limited training and little or no laboratory support and focuses on major illnesses that occur in children below five years, i.e. malnutrition, diarrhoea, pneumonia, measles and malaria. It combines improved case management of childhood illness in first-level health facilities with aspects of nutrition, immunisation, disease prevention and promotion of growth and development. There are three components – improving the skills of health workers, improving the health system and improving household and community practices – all of which encompass both curative and disease prevention and health promotion activities. With an acute shortage of health workers, Eritrea started implementing the IMCI framework by training community members as health workers, thus transforming it into Community IMCI (C-IMCI), which the first evaluation in 2006 found extremely successful: 'Equipped with information, education and communication materials, timers, thermometers, scales, medicines, registers and medical cards, 37 community health workers assisted more than 2,000 children and gave advice to caregivers' (UNICEF, 2008a: 24).

4.5.4 Community-based therapeutic feeding

Over 120 health facility-based and community-based therapeutic feeding centres have been set up throughout the country. Through this initiative, supplementary feeding is provided to children with mild and acute malnutrition by community health workers, allowing children and their caregivers to stay in their community and family while being treated (UNICEF, 2009). According to UNICEF, working in partnership with MoH in supporting this initiative, in 2009 84% of an estimated 1,681 children with severe acute malnutrition recovered as a result of therapeutic feeding sites in health facilities, whereas a 71% full recovery rate was observed among the 2,798 children with severe malnutrition admitted to community-based therapeutic feeding sites (UNICEF, 2009).

4.5.5 National Malaria Control Programme

In Eritrea, two-thirds of the population resides in malaria-endemic areas. The groups most vulnerable to malaria transmission are children under five years, pregnant women and non-immune individuals who migrate from the highlands to endemic areas.

In 1999, Eritrea adopted the RBM strategy, based on comprehensive and integrated interventions (Graves, 2004).[25] As part of this, the National Malaria Control Programme has adopted an approach of community empowerment, ownership and use of community health agents to promote positive behaviour change and ensure sustainability. These agents are the backbone of the programme, bringing services closer to the community thereby reducing delays in treatment.[26] Distribution of indoor insecticide spray and insecticide-treated nets, particularly to the vulnerable groups, has proved extremely successful in reducing malaria incidence (WHO, 2007).[27] In addition, the country has enhanced health promotion activities at the grassroots level and put in place awareness campaigns that use mass media, interpersonal communication, promotional materials, drama groups, films and folktales.

Another significant activity is the implementation of an annual national malaria campaign week before the arrival of the malaria transmission season (July). The full participation of all sectors of the community in this has had a positive impact in terms of behaviour change. The establishment of sentinel sites for the early detection of malaria epidemics, the spread of health facilities throughout the country, the availability of diagnostic equipment, drugs and supplies and the presence of well-trained health workers have ensured the successful management of complicated cases (WHO, 2007).

4.5.6 HIV and AIDS programming

Eritrea has mobilised an effective multi-sectoral response to cope with the HIV epidemic and its impacts on society. The national response started in 1991 with the creation of the National AIDS Control Programme (NACP). A key factor in successful policy action has been the political commitment of GoE and its capacity to implement decisions and mobilise other stakeholders.

The declining trend in HIV prevalence suggests that the country has implemented HIV prevention measures successfully. Extensive awareness campaigns among the general population and as part of the national school curriculum, as well as focused peer group sessions for target population groups (the military, sex workers, truck drivers, youth and women) have proved to be effective tools in spreading knowledge on the basic facts about HIV/AIDS, as well as delivering behavioural change messages (UNGASS, 2010). High levels of receptiveness among the population of prevention efforts have contributed to the success of prevention interventions (Müller, 2005). The effects of stigma and discrimination on people living with HIV are dealt with through public mobilisation activities and advocacy programmes at every level of the society (UNGASS, 2010).

Blood safety mechanisms, scaled-up voluntary HIV testing for all and the integration of PMTCT with ANC services have helped decrease AIDS-related morbidity and mortality and mitigate its negative effects. Free provision of ART was introduced in 2005 at selected health facilities. Treatment of opportunistic infections and home-based care started much earlier, using volunteers from community and faith-based organisations (UNGASS, 2010)

4.6 Ownership of policies and partnerships with donors

Eritrea's relationship with the international community has been marked by scepticism as to donor intentions. In line with the principle of self-reliance, GoE has developed strong ownership of policies and projects implemented. It appears to welcome international aid but emphasises that this should not threaten or weaken Eritrea's capacity to develop itself (interviews). Aid and technical assistance are accepted on the government's own terms, with several projects dropped or rejected owing to continuing difficulties and disagreements between the sides (Kreimer et al., 1998).

In the recent past, GoE has gradually increased its policy of self-reliance and embarked on deeper political isolation by tightening its attitude towards the aid community and unpredictably ceasing cooperation with development partners without much explanation. Since 2005, it has expelled several international and national NGOs and aid agencies.[28] However, GoE does not entirely reject international cooperation and continues to work with those donors that seem willing to refrain from intervention in the country's internal affairs (Bertelsmann Stiftung, 2009).

25. The RBM package components are: case management, integrated vector management, epidemic prevention, capacity building, operational research, health promotion, supervision, monitoring and evaluation and promotion of partnerships.
26. Besides formal health workers, more than 2,400 community health agents have received training. These manage about 80% of all suspected cases of malaria at community level, referring complicated cases to the nearest health facility.
27. There is a strong correlation between distribution of nets and reduction in malaria-related morbidity
28. Including the US Agency for International Development (USAID and Mercy Corps International from the US, Concern Worldwide from Ireland and the UK's Agency for Cooperation and Research in Development (ACORD), as well as an Italian diplomat and some Western peacekeepers.

The Eritrean president has been reported as saying, 'self-reliance is interpreted as an isolationist trend, which it is not at all. Self-reliance is preparing yourself for partnership, equal partnership' (in Kimball, 2008). However, the balance between self-reliance and partnership has been difficult to achieve, not only because of lack of shared vision on the development of the country but also because of other tensions with donors, such as accusations of human rights violations against the government and the international community's weak position in enforcing the border resolution.[29]

Despite this, donors seem to have appreciated GoE's commitment to health and education and have continued providing cooperation and finance to the country in general and the health sector in particular, with ODA accounting for around one-quarter of the country's GDP and up to two-thirds of public health spending (World Bank, 2009). Thus, in spite of Eritrea's rhetoric of self-reliance and controversial relationships with the international community, the combination of ownership and the selected partnerships with donors seems to be key in helping to explain the country's remarkable progress in health.

29. Observers interpreted the changes as a reaction towards the international community's soft attitude towards the border demarcation with Ethiopia (BBC News, 2006; IRIN, 2006).

5. Conclusions

Progress in health in Eritrea has occurred in extremely challenging circumstances, which had included a protracted war, deep poverty, a poor record on growth as well as at times tense relationships with the international community. Despite all this, the country has made its way towards better health conditions by holding on to a clear vision for the future and applying creativity and innovation. Although there is still much to be done, not only in terms of health but also on improving the incomes of the poor, it is important to recognise the progress made and the real improvements that have taken place for perhaps one of the poorest countries in the world.

5.1 Key lessons

- **Strong leadership with the ability to motivate and mobilise people behind a clear goal** is a key driver of progress. The EPLF managed to generate a unique sense of community among a very diverse group of ethnicities and religions by providing Eritreans with a feeling of belonging that encouraged them to fight for their right to self-determination. The involvement of the diaspora reinforced this sense of as well as making it possible to access critical financial and technical contributions and expertise.
- **Investment in human capital** has been of vital importance. The capacity of the leadership to foresee future needs and make long-term investments, such as in health and education, helps explain the rapid improvement in those sectors after independence.
- **Government ownership** of development projects and programmes is important to ensure sustainability and commitment and in building true partnerships with donors and enhancing the effectiveness of their assistance. While balancing ownership of a development agenda with outside help can at times be challenging, the government's vision in the health sector has helped catalyse international assistance, which has been instrumental in financing and explaining some of the progress made.
- Having a **strong understanding and down-to-earth assessment of the resources available** to foster development encourages both realistic actions and common sense policies. The training of teachers as health workers to overcome the acute shortage of medical staff is an excellent example of the maximisation of resources. Much of the progress made in child health in Eritrea can be attributed to this innovative programme.
- **Effective coordination** among sectors and ministries, in particular the health and education ministries, has limited duplication of efforts, allowed for cost-effective projects and enhanced opportunities to scale up services more efficiently.
- **Community participation and involvement** in health service delivery, besides helping alleviate staff shortages, has helped bring services closer to the community. This has also had an important impact on awareness of health issues at community level and, as such, has removed barriers to the diffusion of health information. Additionally, it has reinforced people's sense of belonging and of contributing towards the well-being of the country.
- While the circumstances particular to Eritrea cannot be replicated in other countries, some of its **innovative policies and programmes can serve as an example to other countries** with similar circumstances, such as limited resources, rough terrain or scattered populations. The inter-sectoral approach, for instance, is a cost-effective way to deal with the shortage of medical personal. Similarly, the community approach to the delivery of social services in remote villages can act as a model for other countries with similar geographical characteristics.

5.2 Challenges

- Despite great progress, **much remains to be done** to improve the health status of the population, particularly in the area of nutrition. Despite the positive results achieved under community-based therapeutic feeding implemented by GoE, still more than one-third of children suffer from malnutrition and 12% suffer from severe underweight.
- Another challenge that needs to be addressed is the **lack of skilled staff in the health sector**. Although GoE has been taking measures in this regard, it will need to go further terms of in training human resources, particularly to address the lack of specialists in the sector.
- Issues that fall outside the competence of MoH, such as the persistent droughts, their associated risk of famine, the scarcity of drinking water and the recurrent failure of harvests require **an inter-sectoral approach** among health, water and sanitation and agriculture ministries and institutions, in order to tackle the perspective of increasing droughts in the future. Experiences from the successful collaboration between the health and education ministries could feed into such work.
- While Eritrea has fostered human development extremely well within adverse circumstances, **other countries emerging from liberation battles** (e.g. Vietnam and Mozambique) **have done better** in terms of launching growth and addressing poverty. This also raises a question as to what would have been possible for Eritrea in the field of health if these other areas had been progressing as well.
- The need to **revitalise the economy and address poverty** is one of the country's most important challenges. This is particularly the case given that diaspora groups, on which GoE relies heavily for financial contributions, have started to feel uneasy in this regard since the second war with Ethiopia (Bereketeab, 2007). Additionally, with more than 80% of Eritreans depending on rain-fed agriculture, looking for ways to boost the economy has become essential for GoE to be able to generate alternative sources of income to maintain and further develop services provided in the field of health.
- The **ongoing conflict and tension** over the border demarcation with Ethiopia is also jeopardising the further development of Eritrea, as significant material and human resources are being diverted to the military. A peace agreement with Ethiopia is imperative for Eritrea to bring an end to the stagnation of the country's economic development.

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