

2 A CHILD'S WORLD AND LIFE CYCLE

Children require the care, love and stimulation of parents and families, as well as the best and safest of environments to survive and develop to their full potential.

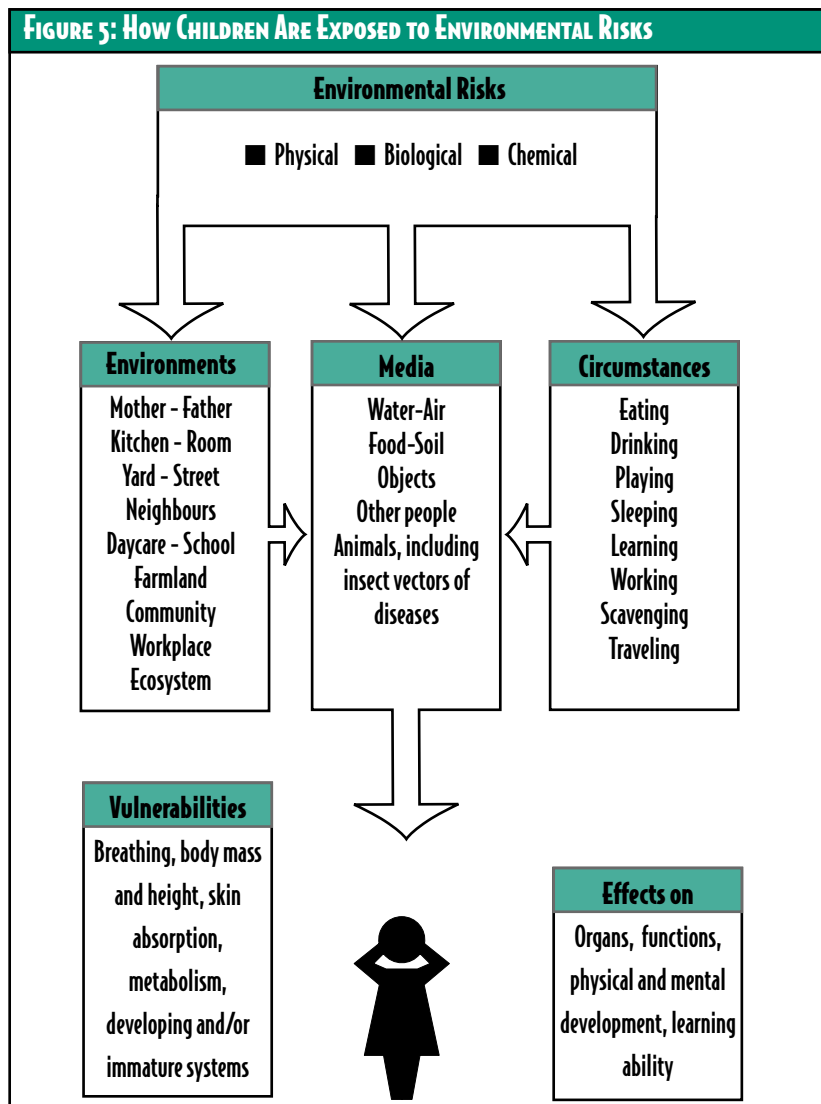
The environment influences children at all stages of their lives, before birth and in their homes, schools and communities. They are affected by media such as water, air, food, objects or soil; and they are affected by their daily activities or circumstances, including eating, drinking, working and playing (see figure 5).

As children develop and grow, they interact with and explore a world that can offer either an array of life-enhancing discoveries and opportunities or a series of perils that can cause disease and suffering.

This chapter reviews children's special vulnerability and susceptibility to environmental threats at their each developmental stage. A more detailed discussion of key environmental hazards is presented in Chapter 3.

PREGNANCY

A woman's health directly influences the health and development of her child. Ensuring that pregnancies are healthy can be of profound benefit to women, children and society at large. It is now recognized that perinatal conditions, many of which are significantly influenced by environmental conditions, account for 20 per cent of the under-five mortality rate worldwide¹. It is also recognized that a woman's well-being helps determine the well being of



Source: adapted from the World Health Organization

her entire family. A healthy mother is better able in all ways to care for her family and participate fully in the life of her society.

Protein energy malnutrition in pregnant women is a significant threat, causing anaemia, which can severely impact a foetus' growth and development. An expectant mother's malnourishment can result in long-term consequences for her child's development. It has been estimated that eliminating malnutrition among pregnant women would reduce disabilities among their infants by almost one third².

Another risk comes from the presence of parasitic worms in the pregnant woman, which can adversely affect or even kill the developing foetus. Approximately 44 million pregnant women in developing countries have hookworm infections³, which are directly related to environmental factors such as waste disposal.

Congenital abnormalities are the second leading cause of death in high-income countries⁴. In the United States, these anomalies, along with sudden infant death syndrome and premature birth, account for more than 50 per cent of all infant mortalities⁵. Approximately 3 to 10 per cent of these cases have been attributed to exogenous and environmental agents⁶.

Women can be exposed to harmful chemicals at home or through their work, and pass them to a foetus, such as in the case of lead exposure, raising the risks of abortion, birth defects, foetal growth retardation and prenatal death⁷ (See Chapter 3). Scientific studies reveal that exposure during the early months of pregnancy can lead to an increased likelihood of mental retardation and development disabilities⁸.

INFANCY AND EARLY CHILDHOOD

The metabolic functions of babies and infants are in a dynamic state of development and their nervous, immune, reproductive and digestive systems are not fully developed. A child's lungs continue to develop long after his or her first breath of air. A child's kidneys, which serve as the principal pathway for elimination of most toxicants from the body, do not reach full functional capacity until the child's first birthday⁹. Any irritants, such as air and

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water pollutants, encountered during these early stages of growth may permanently impair the development of these vital organs.

Infants may be exposed to chemical pollutants through their mother's breast milk (See Chapter 3). Yet, despite the risks of exposure to chemicals, breast milk remains the most nutritious and safe source of food for infants worldwide. Thus, the need to protect the environment where pregnant mothers live must be emphasized in order to promote healthy lactation.

Children breathe more air, drink more water and eat more food than adults do per unit body weight, and this higher rate of intake results in greater exposure to pathogens and pollutants. Children drink more than two and a half times as much water as adults do and eat three to four times more per unit of body weight than the average adult¹⁰. Therefore, if the water contains residues of pesticides or other chemicals, infants will receive more than double the dose of an adult drinking the same water¹¹. If the level of exposure to pollution continues from infancy onward, they will be at a greater corresponding lifetime risk.

Children in developing countries are some 13 times more likely to die before they reach their fifth birthday than their counterparts in developed countries. There are many biological environmental factors associated with this high toll, among them the lack of clean water and sanitation, as well as environmental-related diseases such as malaria, dengue fever and Japanese encephalitis. (See Chapter 3.)

Children are curious and learn by exploring their world. They are, therefore, in close contact with their environment. Infants, for instance, explore their world by putting their hands and objects in their mouths and are at risk from pathogens and pollutants on these surfaces. Also, because children are small, they are close to the ground, where they also crawl and play and where they can be exposed to dust and chemical particulates that accumulate on floors and soil¹². Close parental care and supervision is, therefore, crucial to the safe and healthy development of young children.

Medical and educational research has shown that the development of intelligence, personality and social behaviour occurs most

rapidly in humans during their first three to four years. It is estimated that half of all intellectual development potential is established by age four¹³. According to recent research, brain development is much more vulnerable to environmental influence than was previously suspected, and the influence of early environmental quality on brain development is long lasting¹⁴.

Psychosocial and cognitive development begins at birth and parents are the children's earliest teachers. Therefore, strengthening the ability of the mother and all family members to care for and stimulate their children and encourage them to learn, can set the stage for adult success¹⁵. However, the ability to care for children is greatly influenced by the physical environment. In many countries, particularly those where the environment is seriously degraded, collecting water, gathering firewood and tending crops take up large amounts of time and energy. When those tasks fall without relief on women, they have too little time to spend on ensuring the best possible care for their children. When parents are absent or ill, they are unable to keep children safe as they explore their world.

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CHILDREN OF SCHOOL AGE

More than 1.4 billion children from age five to 14 – approximately 87 per cent of all children – live in developing countries, where many of the biggest environmental challenges exist (see table 2).

School age children's environments expand beyond their homes and care centres, giving them frequent interaction with a wider range of people in more places than when they were younger.

Several potential environmental risks are particularly associated with children in this age period. Helminth diseases, which are caused by intestinal worms found in soils and vegetables, are one of the common health problems among school age children in developing countries. Those children commonly carry up to 1,000 hookworms, roundworms and whipworms at a time, which can cause anaemia and other debilitating conditions¹⁶. These illnesses can result in impaired learning, poor school performance and more absences from school (see Chapter 3).

Box 4: ENVIRONMENTAL SANITATION IN SCHOOLS

How sanitary can conditions be when 90 young children in a school are sharing one toilet? Or when more than half of the toilets are not functioning? According to a 1995 pilot survey of 14 countries in the developing world, the average number of children to each toilet in the urban schools is often more than 50. None of the 14 countries had increased the number of school toilets by more than 8 per cent since 1990, suggesting that they are barely managing to keep up with the rise in student populations. Inadequate sanitation and water in schools jeopardize not only students' health but also their attendance. Girls in particular are likely to be kept out of school if there are no sanitation facilities.

ource: United Nations Children's Fund, The Progress of Nations 1997. UNICEF, New York, 1997.

Injuries (usually road traffic injuries, falls and drowning) are now the number-one killer of children aged five to 14 years in developed countries¹⁷. In developing countries, environmental factors such as exposed cooking set-ups, dangerous tools and equipment, open sewers, heavy traffic, dangerous construction or electrical sites and hazardous chemicals pose threats. A child's health and growth may also be affected when he or she engages in wage-earning work or domestic chores unsuitable for his or her age and ability, such as working long hours in a field, carrying heavy loads, and walking long distances for fuel wood or water.

Asthma and childhood cancers are now major concerns in developed countries (see box 10 for asthma). In the United States, cancer is the second biggest killer of children after accidents, with the median age of child victims of cancer being six years old¹⁸. Acute leukaemia is the most common type of cancer found in children, and its incidence appears to be rising in some developed countries.



Healthful school environments can raise children's learning opportunities significantly.

TABLE 2: LEADING CAUSES OF DEATH, BOTH SEXES, 1998 (GLOBAL)				
Rank	0-4 years	5-14 years	15-44 years	45-59 years
1	Perinatal conditions	Acute lower respiratory infections	HIV/AIDS	Ischaemic heart disease
2	Acute lower respiratory infections	Malaria	Road traffic injuries	Cerebrovascular diseases
3	Diarrhoeal diseases	Road traffic injuries	Interpersonal violence	Tuberculosis
4	Measles	Drowning	Self-inflicted injuries	Trachea/bronchus / lung cancers
5	Malaria	Diarrhoeal diseases	Tuberculosis	Cirrhosis of the liver
6	Congenital abnormalities	War injuries	War injuries	HIV/AIDS
7	HIV/AIDS	Nephritis/Nephrosis	Ischaemic heart disease	Liver cancers

Source: WHO, World Health Report 1999 Database.

For more data, visit <http://www.who.int/whr/1999/en/disease.htm>

While the causes remain unclear¹⁹, certain toxic substances and radiation in the environment are believed to be factors in the cell changes that lead to cancer²⁰. Among the environmental factors that may play a role are tobacco smoke, radon, asbestos, ultraviolet light radiation, hazardous waste and some pesticides²¹.

While not all children are able to attend or remain in school, classrooms are important places for bringing about behavioural changes, promoting better health for students, and teaching about caring for the community environment. Schools have a special role in encouraging urban children to develop a relationship with the natural world. Healthful school environments can raise children's learning opportunities significantly, but often sanitary and environmental conditions in rural and urban schools can be appalling in poor areas, greatly affecting a child's health and learning (see box 4).

ADOLESCENCE

During the critical phase of adolescence, the ability of young people to develop their capacities and life skills and to participate meaningfully in society hinges on a number of cultural, socio-economic and environmental factors.

Unsafe schools pose risks for the health and development of many adolescents. Some conditions, such as the lack of proper sanitary facilities or latrines for girls, discourage young women from attending school.

In addition, adolescence is a time when young people often need to work to support their families. Poverty and resource degradation in an adolescent's community can significantly diminish employment possibilities. Hazardous working conditions are also of prime concern for this age group. Adolescents' lighter body weight and lack of skills may predispose them to injuries in the workplace.

One of the gravest risks facing adolescents is that of HIV/AIDS, a major killer in this age group, particularly in sub-Saharan Africa and Asia (see Box 5). HIV/AIDS victims reportedly suffer most from diarrhoeal diseases, to which they succumb

more readily due to the weakened state of their immune systems. An improved environment is necessary to protect infected people from other preventable diseases that are caused by unhygienic and degraded environments and further strain health conditions for people infected with HIV/AIDS.

CHILDREN IN NEED OF SPECIAL PROTECTION

Every day, children of all ages are exposed to a harsh world, with few or no protections from environmental hazards, ill health and injuries. They may be orphans, or living on the streets, begging or selling goods or even their bodies to survive. Many others labour (see box 6). There are also millions of children and adults with physical and mental disabilities who lack access to basic health, education and other social services, a denial of their rights that increases their vulnerability to environmental risks and hazards.

Approximately half of the worldwide refugee and internally displaced populations are children²². At least 10 million people are estimated to be environmental refugees, more than half of them believed to be in sub-Saharan Africa²³. These are people displaced from their homes because of weather-related catastrophes, such as earthquakes, floods and cyclones, degraded land, lack of natural resources to support livelihoods or armed conflict and land mines. In the past decade 2 million children have been killed in armed conflict²⁴. Children are hardest hit by all these catastrophes, the ensuing outbreaks of diseases and famines in refugee conditions, and the associated psychological traumas.

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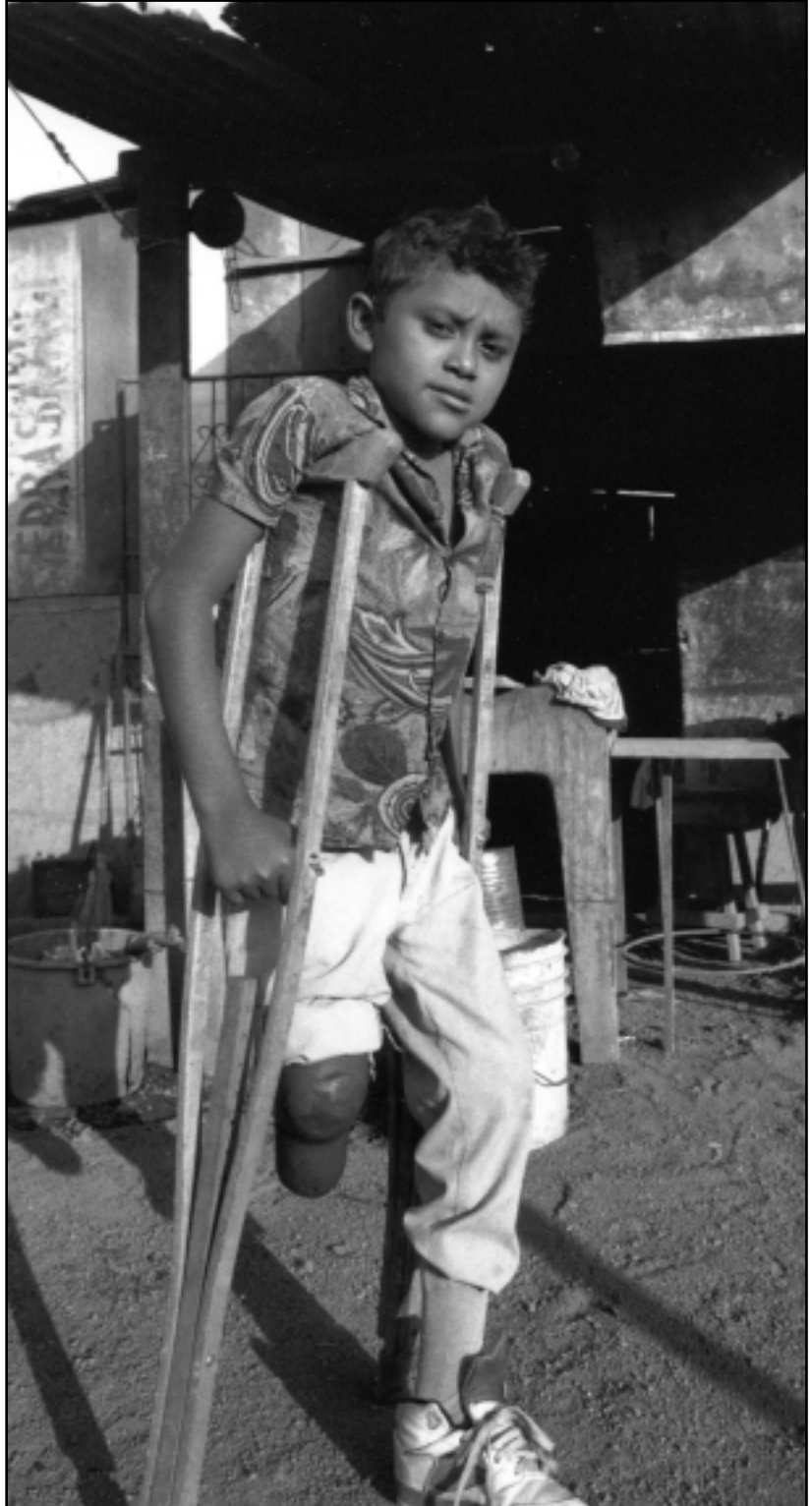
Box 5: HIV/AIDS AND ADOLESCENTS

In sub-Saharan Africa and Asia, the impact of HIV/AIDS on adolescents threatens to devastate entire communities, rolling back decades of development and progress. There are 11.8 million young people (15-24 of age) living with HIV/AIDS as of end 2001, of which 8.6 million in sub-Saharan Africa and 1.84 million in Asia. Among those HIV/AIDS affected young people, 7.3 million were women and 4.5 million men, indicating a greater risk faced by young women.

Furthermore,

- 500,000 children died of AIDS in 2000, bringing the total to 4.3 million who have died since the beginning of the pandemic.
- AIDS has orphaned at least 10.4 million children currently under 15 (that is, they have lost their mother or both parents to the epidemic).
- Half of all new infections – almost 6,000 daily – are occurring among young people under the age of 25.
- 2.5 million children at risk of HIV infection through mother-to-child transmission.
- Surveys in 20 developing countries reveal that over half of adolescents have never heard about AIDS or do not know that HIV cannot be transmitted through mosquitoes.

Sources: United Nations Children's Fund and Joint United Nations Programme on HIV/AIDS (UNAIDS), No Time to be Young in a World with AIDS, Poster, UNICEF and UNAIDS, New York, 2001; and UNAIDS and World Health Organization, AIDS Epidemic Update, WHO, Geneva, 2000.



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Box 6: CHILD LABOUR

Extreme poverty often forces children to work to help their families to survive. Work places that use child labour are often congested, dusty, inadequately ventilated and, in some instances, require the handling of chemicals.

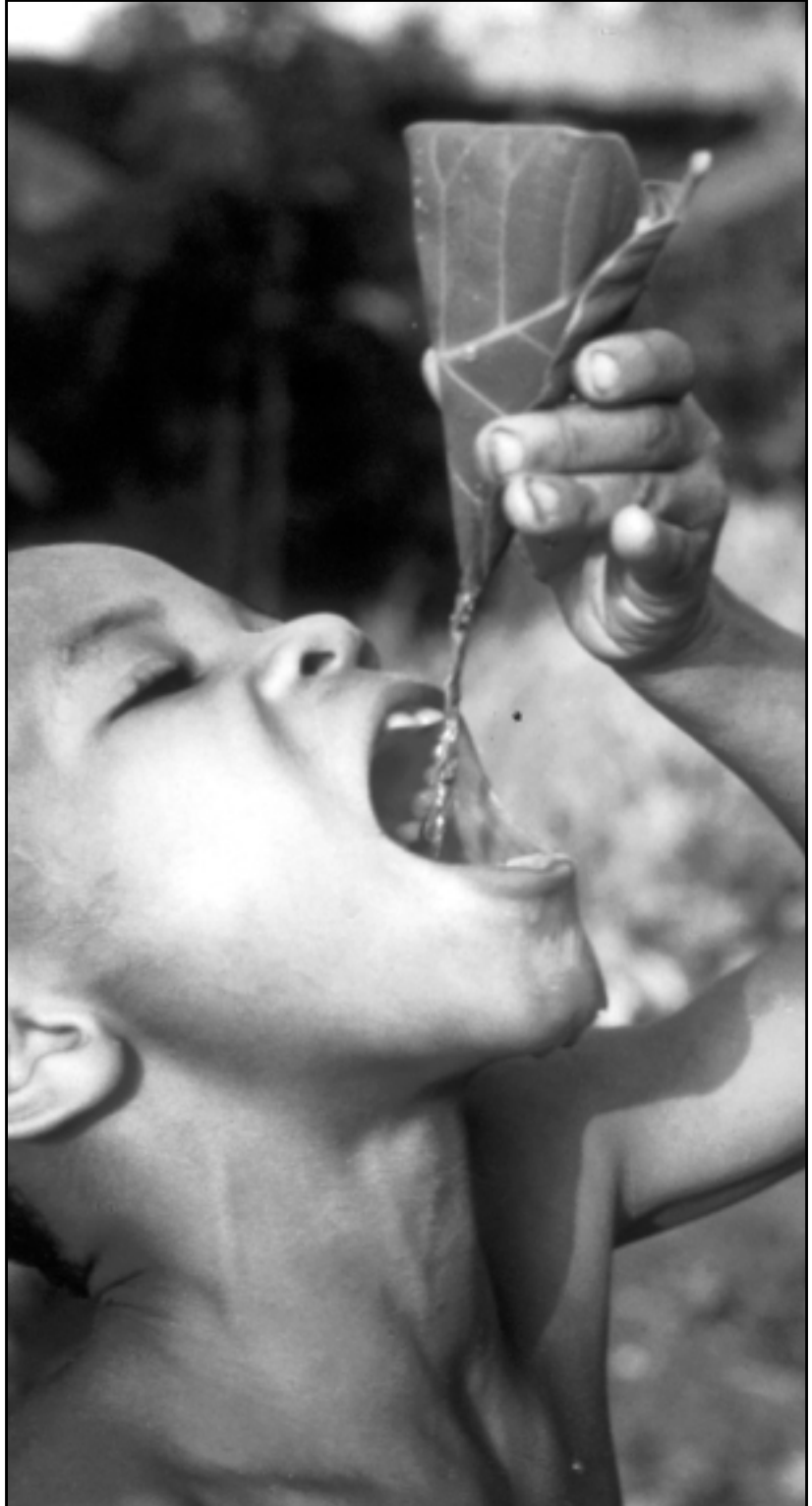
It has been estimated that during 1997-98, some 250 million children five to 14 years old were toiling in economic activities in developing countries and almost 70 per cent of them work in dangerous environments with threats to their health, safety and cultural values. For close to half of them, this work was carried out on a full-time basis, while for the remaining half it was combined with schooling or other non-economic activities. As much as 69 per cent of working children were affected by various hazards, and from five per cent to more than 20 per cent of whom suffered actual injuries, with some forced to stop working permanently.

The primary illnesses and injuries were punctures, broken or complete loss of body parts, burns and skin disease, eye and hearing impairment, respiratory and gastro-intestinal illnesses, fever and headaches from excessive heat in the fields or in factories.

Half of working children laboured for nine hours or more a day, with up to four-fifths of these children working seven days a week. The child worker has a high risk of burns, falls, chemical poisoning, lung diseases, etc. Also, because their bodies are not fully developed and their young minds perhaps unaware of the dangers, they are more likely to be injured or to become ill.

The 1999/2000 Multiple Indicator Cluster Surveys (MICS) of 49 developing countries revealed that 23 per cent of rural children (5-14 years old) worked, as compared to 13 per cent in urban areas. Saharan African countries showed the highest proportion of children working.

Sources: Statistics on Working Children and Hazardous Child Labour in Brief. International Labour Organisation; and United Nations Children's Fund, UNICEF End Decade Databases – Child work.



Water is life.