

7th Grade Challenge

Problems and Solutions for the Eastern Hemisphere Geography Readings

*Can your ideas change
the world?*



Problem one - Water/Sanitation

Problem two - Malaria

Problem three- Hunger/Sustainable Food

Problem four- Electricity

Problem five- Slums

Problem one

Water and Sanitation



How many people in world are affected by unsafe water?

What problems does it cause them?

How does poor sanitation affect people?

How are the Dhakar latrines (bathrooms) described?

How does a lack of water negatively affect women
(List ALL the ways)?

How can carrying water hurt women?

How water prevent people from attending or succeeding in school?

How does a lack of water negatively affect children
(List ALL the ways)?



answer online

Water

http://www.wateraid.org/uk/what_we_do/the_need/5899.asp



A child collects water from a contaminated source in Nsooba, Uganda.

Credit: WaterAid / Caroline Irby

One in eight people in the world do not have access to safe water.

Many women and children in rural areas in developing countries spend hours each day walking kilometers to collect water from unprotected sources such as open wells, muddy dugouts or streams.

In urban areas they collect it from polluted waterways or pay high prices to buy it from vendors who obtain it from dubious sources. The water is often dirty and unsafe, but they have no alternative.

Carrying the heavy water containers back home is an exhausting task, which takes up valuable time and energy. It often prevents women from doing vital domestic or income generating work and stops children from going to school.

Diarrhoeal diseases caused by unsafe water and poor sanitation, such as cholera, typhoid and dysentery, are common across the developing world - killing 4,000 children every single day.

People suffering from these diseases or caring for children who are ill from them are often unable to work to earn money, yet face large medical bills.

There is an urgent need for action, but all too often water and sanitation are overlooked in global development agenda, despite being consistently cited as top priorities by communities themselves.

Sanitation

http://www.wateraid.org/uk/what_we_do/the_need/5900.asp



Ruby stands by an open rubbish ditch in Balar Math Slum, Bangladesh. Hanging latrines feed in to the ditch too.

Credit: WaterAid / Abir Abdullah

Diarrhea claims the lives of 4,000 children a day. These children are dying because they do not have access to adequate sanitation or safe water. Their deaths, from common diseases, are preventable.

Where there is nowhere safe and clean to go to the toilet, people are exposed to disease, lack of privacy, and indignity.

Bad health caused by poor sanitation has a knock-on effect on the family economy and nutrition.

In many cultures women who have no access to a latrine must wait until it is dark to go to the toilet or have to walk long distances to find

an isolated spot. Where there are no toilets girls are prevented from going to school.

"This slum has existed for 10 years and is in a shocking state," explains Ruby from Balar Math Slum, Dhaka, Bangladesh.

"Hanging latrines feed straight into a rubbish-filled ditch in the middle of the slum. 5000 households here have no clean water and no sanitation.

"Many people get very ill here and I think it all stems from the open latrines. Smell the stench, it's disgusting. We get fevers, coughs and terrible diarrhea and there are no healthcare facilities that we can use."

Problems for women

http://www.wateraid.org/uk/what_we_do/the_need/206.asp



In most developing countries the task of collecting water falls to women.
Credit: WaterAid / Caroline Penn

Imagine a life without safe water flowing from your tap. Imagine then, if every morning you had to get up at the crack of dawn and walk for miles down uneven paths to the nearest water hole to collect your family's water.

Then imagine the state of the water, filthy, dirty with flies buzzing around and animals drinking at the same source. But you have no

other choice. In many countries it would take you over six hours every day to collect enough water for your family.

Having returned from this grueling journey you could start the rest of your day.

Then imagine that you had nowhere safe and clean to go to the toilet. In many cultures you would have to wait until it was dark before you could relieve yourself. This would expose you to the danger of sexual harassment, assault and animal attacks, never mind discomfort, loss of dignity and sometimes illness.

This is the daily reality of life for many women and children in developing countries. Poor access to water, sanitation and hygiene has a particularly acute impact on women and girls, affecting their health, dignity and life chances.

Women's work



*Anna Mulambe from Zambia collecting water.
Credit: WaterAid / Jon Spaul*

In most developing countries the task of collecting water falls to women. In rural Africa women often walk ten miles or more every day to fetch water. In the dry season it is not uncommon for women to walk twice this distance.

The tragedy is that, having spent so much time and effort in reaching a source of water, the water itself is often dirty, polluted and a health hazard. Unclean water causes illnesses such as diarrhea and dysentery, which are responsible worldwide for the deaths of thousands of children under the age of five every day.

The wells at the end of these journeys are often little more than waterholes dug out deeper and deeper as the dry season progresses. They can be very difficult to reach, with steep sides, which sometimes can collapse, killing women and children. The paths to these wells are narrow and slippery and many accidents occur. Imagine the frustration of walking three miles towards home with a heavy water pot and then slipping and falling - losing all the water you so carefully collected, and probably breaking the pot too.

As well as traveling such long distances, women often have to wait in turn to collect water. Waiting times can add five hours onto the journey. Some traditional sources almost dry out for several months each year and it can take up to an hour for one woman to fill her bucket as she waits for the water to slowly filter through the ground. To avoid such long waits many women get up in the middle of the night to get to the water source when there is no queue.

In urban slums without access to clean water women have to either walk long distances, use dirty water from ponds and rivers (often polluted by factories) or they are charged large amounts of money by water sellers. Women in towns need to find paid employment to keep their families and so the need to collect water becomes a drain on both their time and money.

Health problems



*The collection of water consumes a great deal of time.
Credit: WaterAid / Caroline Penn*

Water containers usually hold about 20 litres of water, which weigh 20kg, the same as the baggage allowance on most airlines. Constantly carrying such heavy weights, commonly on the head, back or hip, has severe health implications.

Backache and joint pains are common, and in extreme cases curved spines and pelvic deformities can result, creating complications in childbirth. Pregnant women sometimes keep on carrying water until the day they give birth.

However, it is ill health from the state of unsafe water and lack of sanitation that causes millions of deaths a year. Providing clean, safe water supplies, effective sanitation and helping communities understand about good hygiene means that these deaths can be prevented.

Ill-health impacts greatly on women's lives. It is usually women who nurse the sick and take the children to the doctor. Ill health adds to an already overburdened day. Women have to juggle their time to carry out all the domestic and income-generating work that they are responsible for. Collecting water consumes most of their time and leaves little time for much else.

Women are particularly vulnerable to diseases during the dry season. During this time the journey times to collect water are the longest, food stocks are lowest, the workload is highest and diseases most common.

Because of the burden of collecting water and the fact that few schools have toilets, which prevent girls attending schools particularly when they are menstruating, very few women in developing countries today have an education or are decision-makers in the community. Enabling women's voices to be heard in the decision-making process is not easy, but a crucial part of ensuring that development happens.

'Women with even a few years of basic education have smaller, healthier families; are more likely to be able to work their way out of poverty and are more likely to send their own children - girls and boys - to school... Each additional year of female education is thought to reduce child mortality by 5-10%' (DFID 2000).

For women everywhere providing clean and accessible water and toilet facilities not only prevents needless drudgery and indignity, but improves their health and that of the whole family. Women's time is freed up for agriculture or other income generating work, looking after their children or simply relaxing.

Problems for children

http://www.wateraid.org/uk/what_we_do/the_need/207.asp

Children throughout the world suffer greatly because they don't have access to safe water and sanitation. Their health, education and family relationships are affected.

In many countries children, particularly girls, are responsible for the collection of water. Girls as young as 10 years old may take the main responsibility for drawing and carrying the family's water.

The size of the water container may vary with the size of the child, but each litre of water carried weighs 1kg and may need to be carried up to three or four miles.



*Children carrying water in Kuluunda, Malawi.
Credit: WaterAid / Jon Spaul*

Carrying such heavy weights is damaging in the long term for adult women, and for girls there are even more serious implications given their physical immaturity.

In particular, there can be damage to the head, neck and spine. In extreme cases deformity of the spine can lead to problems in pregnancy and childbirth.

Effect on education



*The time required to collect water often means many children miss out on schooling.
Credit: WaterAid / Jenny Matthews*

Collecting water is not only physically stressful but extremely time consuming. One of the most serious effects is that girls are often not able to attend school.

Many children who do manage to go to school have very low attendance figures and often drop out. Both boys and girls are needed by poor families to help either farming or in doing domestic tasks at home. They have little time to play.

The lack of adequate sanitation facilities in schools also prevents girls from attending school, particularly when they are menstruating. Of the 113 million children currently not enrolled in school worldwide, 60% are girls. Girls' attendance at school is increased through improved sanitation.

For example, in Bangladesh, a school sanitation program has increased the enrollment of girls by 11% every year since it began in 1990.

Health matters



In areas where water is scarce children may not be able to wash often enough, resulting in disease.

Credit: WaterAid / Caroline Penn

Children are most vulnerable to the diseases that result from a lack of water, dirty water and poor sanitation. In developing countries each child has an average of ten attacks of diarrhea before the age of five.

Malnourished children are more vulnerable to disease, and prone to diarrhea, pneumonia, measles and malaria.

These four diseases, plus malnutrition, account for seven out of ten childhood deaths in developing countries. For example in Zambia, one in five children dies before their fifth birthday. In contrast in the UK less than 1% of children die before they reach the age of five.

Diarrhea is the second most serious killer of children under five worldwide (after pneumonia) but in most cases it can be prevented or treated.

Children's ill health places an increased burden of care on the women and girls who look after them, adding to their already heavy workload.

This and the time spent collecting water can prevent women from earning money which can in turn mean they are unable to afford to send their children to school.

A lack of water also means that children cannot wash often enough and suffer from diseases as a result.

These include skin diseases like scabies and eye infections such as trachoma, the largest cause of preventable blindness in the developing world.

In the Kongwa District of Tanzania a trachoma research project found over 90% of school children were infected with the diseases. After treatment the disease nearly disappeared but in a few months it had returned.

Their conclusion was that treatment was not a long-term solution: educating people to regularly wash their face, hands and eyes was the best preventative measure. The problem was education and lack of water.

Providing children with clean and accessible water and toilet facilities changes their lives. Their health improves, they have more time with their families and more regular and varied meals.

They have time to go to school and gain an education, sometimes they have time to simply play

Problem two

Malaria



What causes malaria?

How can it be transmitted (two ways)?

How many cases of malaria are there each year?

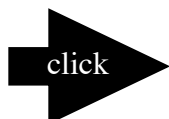
How many deaths does it cause?

What are some of complications from a malaria infection?

How was Ramadhani treated at home for his malaria?

What was he treated for when he arrived at the dispensary?

List all of the complications that the mother had to go through to get the child cured of malaria:



[answer online](#)

Pubmed Health - Malaria

<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001646>

Malaria is a parasitic disease that involves high fevers, shaking chills, flu-like symptoms, and anemia.

Causes, incidence, and risk factors

Malaria is caused by a parasite that is transmitted from one human to another by the bite of infected *Anopheles* mosquitoes. In humans, the parasites (called sporozoites) travel to the liver, where they mature and release another form, the merozoites. These enter the bloodstream and infect the red blood cells.

The parasites multiply inside the red blood cells, which then rupture within 48 to 72 hours, infecting more red blood cells. The first symptoms usually occur 10 days to 4 weeks after infection, though they can appear as early as 8 days or as long as a year after infection. Then the symptoms occur in cycles of 48 to 72 hours.

The majority of symptoms are caused by the massive release of merozoites into the bloodstream, the [anemia](#) resulting from the destruction of the red blood cells, and the problems caused by large amounts of free [hemoglobin](#) released into circulation after red blood cells rupture.

Malaria can also be transmitted from a mother to her unborn baby (congenitally) and by blood transfusions. Malaria can be carried by mosquitoes in temperate climates, but the parasite disappears over the winter.

The disease is a major health problem in much of the tropics and subtropics. The CDC estimates that there are 300-500 million cases of malaria each year, and more than 1 million people die. It presents a major disease hazard for travelers to warm climates.

In some areas of the world, mosquitoes that carry malaria have developed resistance to [insecticides](#). In addition, the parasites have developed resistance to some antibiotics. This has led to difficulty in controlling both the rate of infection and spread of this disease. Falciparum malaria, one of four different types of malaria, affects a greater proportion of the red blood cells than the other types and is much more serious. It can be fatal within a few hours of the first symptoms.

Signs and tests

During a physical examination, the doctor may identify an [enlarged liver](#) or an [enlarged spleen](#). Malaria blood smears taken at 6 to 12 hour intervals confirm the diagnosis.

Treatment

Malaria, especially *Falciparum malaria*, is a medical emergency requiring hospitalization. Chloroquine is a frequently used anti-malarial medication, but quinidine or [quinine](#) plus [doxycycline](#), [tetracycline](#), or [clindamycin](#); or [atovaquone](#) plus proguanil (Malarone); or [mefloquine](#) or artesunate; or the combination of pyrimethamine and sulfadoxine, are given for chloroquine-resistant infections. The choice of medication depends in part on where you were when you were infected.

Aggressive supportive medical care, including intravenous (IV) fluids and other medications and breathing (respiratory) support may be needed.

Expectations (prognosis)

The outcome is expected to be good in most cases of malaria with treatment, but poor in *Falciparum* infection with complications.

Complications

- Destruction of blood cells ([hemolytic anemia](#))
- Liver failure and [kidney failure](#)
- [Meningitis](#)
- Respiratory failure from fluid in the lungs (pulmonary edema)
- Rupture of the spleen leading to massive internal bleeding (hemorrhage)

Malaria Visits a Child in Africa

http://www.cdc.gov/malaria/stories/malaria_child_africa.html



Ramadhani Shida Mashaka* was only 8 months old when he got seriously ill, but it did not seem to be very bad at first. His young mother, Zainabu, noticed he had a fever one afternoon, but the child was still able to eat and play and did not seem to be bothered. "Sometimes these simple fevers can go as quickly as they come", she thought. The fever continued throughout the night and the next morning the child seemed very sleepy and his body felt very hot.

Zainabu wasn't sure what to do. She was new to the village of Njopeka in coastal Tanzania, having just moved there after her marriage last year. She had attended the antenatal clinic and taken Ramadhani for his baby shots at the free health clinic in their village. However, the clinic almost always ran out of medicines in the latter part of the month and she had very little money to go elsewhere.

What's more, Zainabu had to decide on her own what to do for the child. The boy's father, Shida, had left home about 2 months ago. He had been hired to cut logs in the forest, 90 kilometers (56 miles) to the south. Shortly after leaving home, Shida sent money back to his family but he had been unable to do so again.

Home treatment

The following day, after another night during which Ramadhani remained restless and feverish, Zainabu decided to ask a neighbor for help. Fortunately, Mama Tatu lived nearby. When Mama Tatu was a young woman she began training as a nurse, but she left the college when she got married and had children. People in the village often sought her advice when someone was ill. She didn't demand any payment but frequently her neighbors would offer whatever they could.

Zainabu was relieved when Mama Tatu told her that the boy probably just had a simple bout of malaria. Mama Tatu gave her some chloroquine tablets that she'd kept in her home. Chloroquine used to be the pill of choice for malaria, but nurses and doctors in the area said it no longer was able to cure the type of malaria found there. Thus, chloroquine was no longer available in health centers or at drug shops. (Editorial comment: Because of the widespread emergence of malaria parasites resistant to chloroquine in Africa, ministries of health in most African countries have decided not to use that drug to treat malaria anymore. They have replaced it with other, more effective antimalarial drugs; in Tanzania, this change in drug use policy occurred in 2001.) Nonetheless many of the local people still preferred chloroquine and had come to rely on Mama Tatu's supply. After giving the tablets to Ramadhani, Zainabu noticed that he seemed to improve. His body no longer felt hot and he began to play and eat as usual. For a while, it looked like the illness had passed.

Ramadhani seemed well for 4 or 5 days, but then the fever returned. It wasn't very bad when Zainabu first noticed it in the early morning, but she did not want to wait for it to worsen. Her father-in-law, Mashaka, was preparing to carry a load of cassava root on his bicycle, hoping to sell it in the shifting market at Mkiu, 12 km (8 miles) north near the end of the paved road from Dar-es-Salaam. Zainabu asked her father-in-law to help her by buying some fever medicine for Ramadhani at one of the drug shops in Mkiu. When he returned home that evening, he brought some Panadol tablets to Zainabu. (Editorial comment: Panadol is a brand name for paracetamol, a drug that alleviates fever and pain, two symptoms associated with malaria; however paracetamol has no effect on the malaria parasites themselves.) These she crushed in water and tried to get the child to swallow. By this time, however, Ramadhani was very weak and began

refusing to eat or drink. Zainabu kept trying to get the child to take the medicines throughout the night. By morning the child was still refusing to eat or drink. His breathing had become very fast.



Seeking treatment outside the home

Zainabu knew the child was very seriously ill and needed to get to a health facility right away. But the clinic in the village would have no medicines by now, near the end of the month; and the doctors would only recommend that she buy medicines from the shop or take the child to an expensive mission hospital. Again, she asked her father-in-law, and he suggested taking the boy to a larger government clinic where services would be free. One had recently begun operating 6 km (4 miles) away, just over the border in the next district in the village of Jaribu-Mpakani. In fact, the shifting market would be held there that very day.

Mashaka agreed to take mother and child to the clinic there and he would take advantage of another opportunity to sell his cassava. Zainabu bathed herself and the baby and selected their best clothing. Then she quickly slipped onto the back of Mashaka's bicycle, with Ramadhani on her back, and gripping the cassava bundle with one hand.



The dispensary

When they arrived at the Jaribu-Mpakani Dispensary there were already dozens of patients surrounding it, waiting to see the health workers. Zainabu took her place in the queue. Not long before, there had been no government health facility in any of the nearby villages. Locally elected leaders in Jaribu-Mpakani had organized their neighbors to build a small dispensary and eventually succeeded in persuading the district health officials to staff and supply it. A young clinical officer, Imani Kadula, was assigned to the post fresh out of his training college.

When it was Zainabu and Ramadhani's turn to enter the consultation room, Imani asked Zainabu about the boy's condition and what treatments they had already tried. He felt the child, looked at his hands, and counted his breathing. Imani told Zainabu that the child had a severe illness: most probably caused by malaria or pneumonia or both. Without a laboratory or x-ray, which the dispensary did not have, it was impossible to tell which. In this situation, he advised that the child should be treated for both, as well as for anemia, which had made the child pale and contributed to his poor condition. When children get malaria infection, he explained, some medicines can reduce the fever but don't affect the germs that cause the disease. While the patient might appear to get some relief from the symptoms, malaria germs continue to destroy the patient's blood cells, causing anemia and making the child very vulnerable to even minor infections. Sometimes the malaria-induced anemia can be so severe that children require a blood transfusion. (Editorial comment: Malarial anemia is a leading cause for blood transfusions in African children. Transfusions, if

not well screened, carry risks for transmission of infectious agents such as HIV, the virus that causes AIDS.)

Because the boy was too ill to swallow medicines, Imani's training had taught him to give an injection to start the treatment and to recommend that the family take the boy to a hospital at once. Zainabu explained that she had no money for transport or to pay the fees that would be necessary to get treatment at the nearest hospital — one operated by a Christian mission another 50 km (31 miles) away.

Imani understood her predicament; it's one faced by many of his patients. His training had also included provisions for what to do in situations where referral was not possible.

He proposed that they give the first doses of malaria medicine and antibiotics for pneumonia by injection immediately. Then they would watch and see if the boy improved before the late afternoon. After that Imani continued to evaluate and treat the other patients.

By late afternoon the child was improving and appeared well enough to swallow medicines. One of the nursing assistants, Bibi Kuruthumu, had worked at the district hospital for almost 20 years before being assigned to the dispensary at Jaribu-Mpakani. She was very experienced at helping mothers get their children to swallow medicines. She prepared a dose of a new combination treatment for malaria: one that included tablets of an artemisinin containing combination therapy. (Editorial comment: while the injection of quinine can act rapidly to save the life of a patient who cannot take drugs by mouth, other drugs must be added later to ensure that all the malaria germs are completely cleared from the patient's body.) She crushed the tablets and mixed them with a spoonful of water, then carefully coaxed the boy to swallow the mixture down.

Zainabu, to her relief, watched as the child swallowed the medicine without difficulty. Because it was late and Imani was still concerned about the child, he convinced Zainabu and Mashaka not to return home until morning. The small dispensary had no ward for admitting patients, but there was a cot and a bed in the labor room which was not in use. Bibi Kuruthumu encouraged Zainabu to spend the night there and loaned her some bedding materials. Zainabu's father-in-law

had managed to sell his cassava and purchased some food for them both.

A happy ending (for now)

Zainabu woke the next morning and was greatly relieved. Ramadhani had slept through the night; his breathing calmed and his body was no longer hot to the touch. When he awoke, he was alert and showed a good appetite for the first time in days. Bibi Kuruthumu, Imani and the rest of the clinic workers were delighted at the child's improvement and counseled Zainabu to continue giving the rest of the medicines until they were completely finished. Even though the child had improved, the malaria could bounce back if the whole treatment wasn't completed. More importantly, the whole 3-day course of treatment was necessary to give the child's body a chance to recover completely from the anemia. Bibi Kuruthumu showed Zainabu how to crush the tablets and patiently get the child to swallow them. She also suggested that the next time her husband sent money home, Zainabu should consider getting an insecticide-treated mosquito net. (Editorial comment: Insecticide-treated bednets have now been adopted by most African countries as an important tool for preventing malaria.) Later that morning Mashaka, Zainabu and Ramadhani thanked the clinic workers and returned home to Njopeka.

** Names of the patient, family members and neighbors have been changed. Other details are authentic and used with permission. This scenario is a very common occurrence in sub-Saharan Africa, where malaria is a leading cause of death and disease in young children.*

Problem Three

Hunger



How many calories does a person need each day? What happens when they don't get enough?

How many people in world are estimated to be hungry? Where are most of them located?

How does NATURE lead to hunger?

How does WAR lead to hunger?

How does POVERTY lead to hunger?

How does POOR INFRASTRUCTURE lead to hunger?

How does the ENVIRONMENT lead to hunger?



[answer online](#)

Hunger

<http://www.wfp.org/hunger>

What is Hunger?

Acute hunger or starvation are often highlighted on TV screens: hungry mothers too weak to breastfeed their children in drought-hit Ethiopia, refugees in war-torn Darfur queueing for food rations, helicopters airlifting high energy biscuits to earthquake victims in Pakistan or Indonesia.

These situations are the result of high profile crises like war or natural disasters, which starve a population of food, yet emergencies account for less than eight percent of hunger's victims.

Daily undernourishment is a less visible form of hunger -- but it affects many more people, from the shanty towns of Jakarta in Indonesia and the Cambodian capital Phnom Penh to the mountain villages of Bolivia and Nepal. In these places, hunger is much more than an empty stomach.

2,100 calories a day

For weeks, even months, its victims must live on significantly less than the recommended 2,100 kilocalories that the average person needs to lead a healthy life.

The body compensates for the lack of energy by slowing down its physical and mental activities. A hungry mind cannot concentrate, a hungry body does not take initiative, a hungry child loses all desire to play and study.

Hunger also weakens the immune system. Deprived of the right nutrition, hungry children are especially vulnerable and become too weak to fight off disease and may die from common infections like measles and diarrhoea. Each year, almost 11 million children die before reaching the age of five; malnutrition is associated with 53 percent of these deaths (source: Caulfield et al., The American Journal of Clinical Nutrition. 2004 July)

Number 1 risk to health

In the final quarter of the 20th century, humanity was winning the war on its oldest enemy. From 1970-1997, the number of hungry people dropped from 959 million to 791 million -- mainly the result of dramatic progress in reducing the number of undernourished in China and India.

In the second half of the 1990s, however, the number of chronically hungry in developing countries started to increase at a rate of almost four million per year. By 2001-2003, the total number of undernourished people worldwide had risen to 854 million and the latest figure is **925 million**.

Today, almost one person in six does not get enough food to be healthy and lead an active life, making hunger and malnutrition the number one risk to health worldwide -- greater than AIDS, malaria and tuberculosis combined.

Who are the Hungry

Most of the world's hungry live in **developing countries**. According to the latest Food and Agriculture Organization (FAO) statistics, there are 925 million hungry people in the world and 98 percent of them are in developing countries. They are distributed like this:

578 million in Asia and the Pacific

265 million in Sub-Saharan Africa

53 million in Latin America and the Caribbean

42 million in the Near East and North Africa

Rural risk

Three-quarters of all hungry people live in rural areas, mainly in the villages of Asia and Africa. Overwhelmingly dependent on agriculture for their food, these populations have no alternative source of income or employment. As a result, they are vulnerable to crises. Many migrate to cities in their search for employment, swelling the ever-expanding populations of shanty towns in developing countries.

Farmers

FAO calculates that 75 percent of the hungry people in developing countries, half are farming families, surviving off marginal lands prone to natural disasters like drought or flood. One in five belongs to landless families dependent on farming and about 10 percent live in communities whose livelihoods depend on herding, fishing or forest resources.

The remaining 25 percent live in shanty towns on the periphery of the biggest cities in developing countries. The numbers of poor and hungry city dwellers are rising rapidly along with the world's total urban population.

Children

An estimated 146 million children in developing countries are underweight - the result of acute or chronic hunger (Source: The State of the World's Children, UNICEF, 2009). This means that 25 percent of all hungry people are children. All too often, child hunger is inherited: up to 17 million children are born underweight annually, the result of inadequate nutrition before and during pregnancy.

Women

Women are the world's primary food producers, yet cultural traditions and social structures often mean women are much more affected by hunger and poverty than men. A mother who is stunted or underweight due to an inadequate diet often give birth to low birthweight children.

Around 50 per cent of pregnant women in developing countries are iron deficient (source: Unicef). Lack of iron means 315,000 women die annually from hemorrhage at childbirth. As a result, women, and in particular expectant and nursing mothers, often need special or increased intake of food.

Food has never before existed in such abundance, so why are 925 million people in the world going hungry?

In purely quantitative terms, there is enough food available to feed the entire global population of 6.7 billion people. And yet, one in nearly

seven people is going hungry. One in three children is underweight. Why does hunger exist?

Nature

Natural disasters such as floods, tropical storms and long periods of drought are on the increase -- with calamitous consequences for food security in poor, developing countries.

Drought is now the single most common cause of food shortages in the world. In 2006, recurrent drought caused crop failures and heavy livestock losses in parts of Ethiopia, Somalia and Kenya.

In many countries, climate change is exacerbating already adverse natural conditions. For example, poor farmers in Ethiopia or Guatemala traditionally deal with rain failure by selling off livestock to cover their losses and pay for food. But successive years of drought, increasingly common in the Horn of Africa and Central America, are exhausting their resources.

War

Since 1992, the proportion of short and long-term food crises that can be attributed to human causes has more than doubled, rising from 15 percent to more than 35 percent. All too often, these emergencies are triggered by conflicts.

From Asia to Africa to Latin America, fighting displaces millions of people from their homes, leading to some of the world's worst hunger emergencies. Since 2004, conflict in the Darfur region of Sudan has uprooted more than a million people, precipitating a major food crisis -- in an area that had generally enjoyed good rains and crops.

In war, food sometimes becomes a weapon. Soldiers will starve opponents into submission by seizing or destroying food and livestock and systematically wrecking local markets. Fields and water wells are often mined or contaminated, forcing farmers to abandon their land. When conflict threw Central Africa into confusion in the 1990s, the proportion of hungry people rose from 53 percent to 58 percent. By comparison, malnutrition is on the retreat in more peaceful parts of Africa such as Ghana and Malawi.

Poverty Trap

In developing countries, farmers often cannot afford seed to plant the crops that would provide for their families. Craftsmen lack the means to pay for the tools to ply their trade. Others have no land or water or education to lay the foundations for a secure future.

The poverty-stricken do not have enough money to buy or produce enough food for themselves and their families. In turn, they tend to be weaker and cannot produce enough to buy more food.

In short, the poor are hungry and their hunger traps them in poverty.

Agricultural infrastructure

In the long-term, improved agricultural output offers the quickest fix for poverty and hunger.

According to the Food and Agriculture Organization (FAO) 2004 Food Insecurity Report, all the countries that are on track to reach the first Millennium Development Goal have something in common -- significantly better than average agricultural growth.

Yet too many developing countries lack key agricultural infrastructure, such as enough roads, warehouses and irrigation. The results are high transport costs, lack of storage facilities and unreliable water supplies. All conspire to limit agricultural yields and access to food.

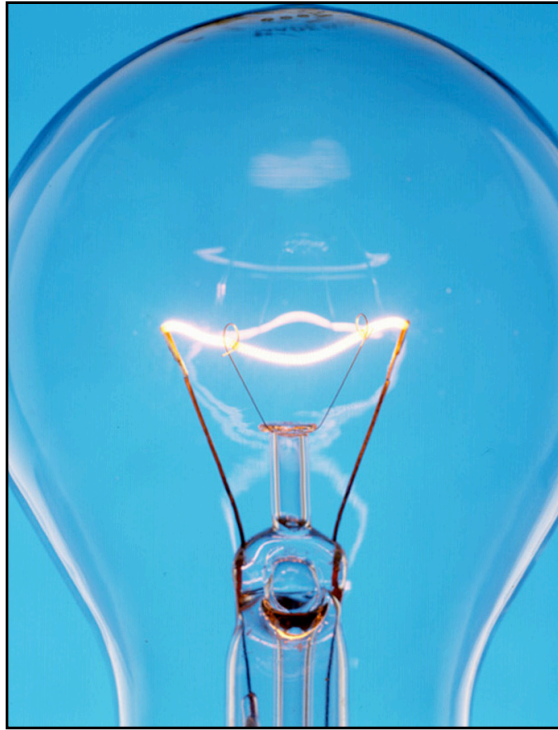
But, although the majority of developing countries depend on agriculture, their governments economic planning often emphasises urban development.

Over-exploitation of environment

Poor farming practices, deforestation, overcropping and overgrazing are exhausting the Earth's fertility and spreading the roots of hunger. Increasingly, the world's fertile farmland is under threat from erosion, salination and desertification.

Problem Four

Electricity



What types of “energy” do the energy poor often have to use?

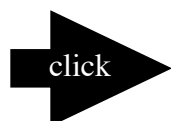
What parts of the world are most of them located in?

How did Sara charge her cell phone before she purchased a solar charger?

How did the solar charger improve her and her families lives (list them all)?

According to the UN how many people don’t have electricity?

According to the UN how many people cook with coal and wood fires?



[answer online](#)

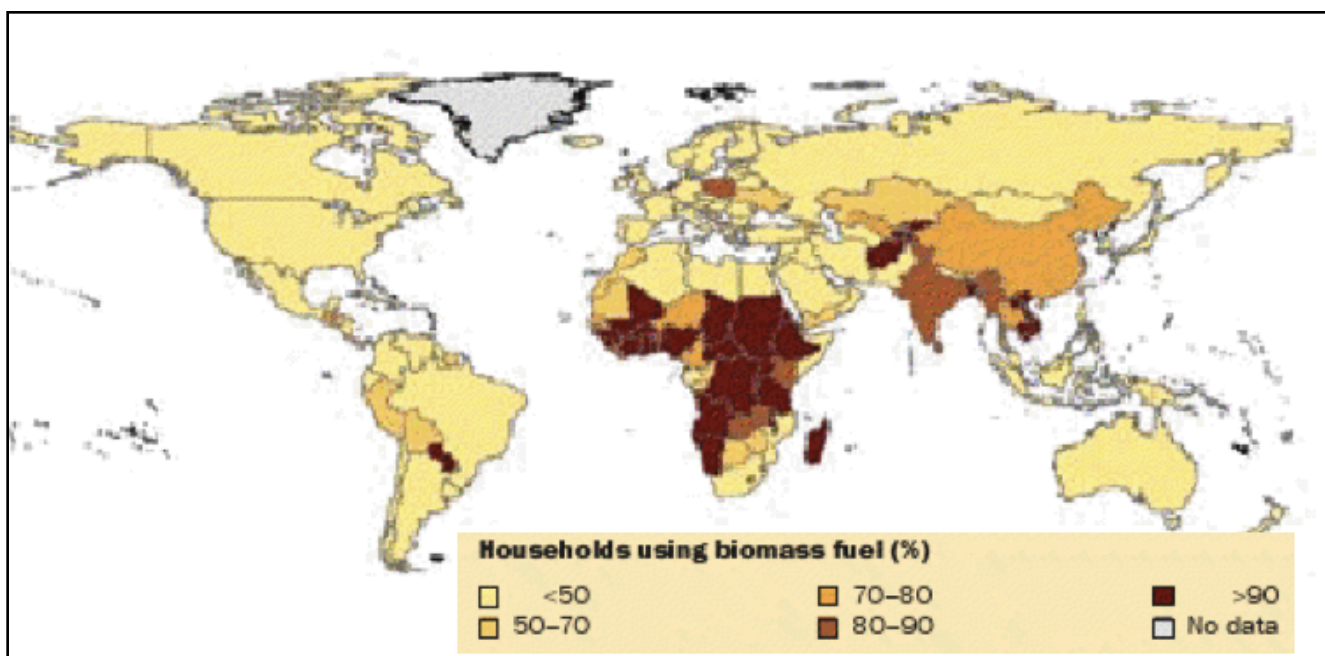
Electricity

Where are the Energy Poor?

<http://www.unmillenniumproject.org/>

In many of the poorest countries, a large fraction of the population is unable to access modern energy services at all, and those who do have access often pay dearly for energy services of much lower quality—meaning that the services are erratic and unreliable. A substantial fraction of the population relies on bio-mass or dung for cooking fuel and heat; on kerosene wick lamps, batteries, or candles for lighting; and on human or animal energy-based mechanical power for tilling and weeding land, grinding and crushing, agroprocessing, or trans- port. The poorest households spend a large portion of their total income and human resources on energy because some forms of energy are absolutely essential to meeting such basic needs as cooked food and transport. Insufficient and unreliable power limits the ability of enterprises to expand their activities, to be competitive, or to create new activities or jobs. The largest concentrations of the 'energy poor,' those people who are both poor and who also lack access to modern forms of energy, are currently in sub-Saharan Africa and South Asia.

One measure of energy poverty at the level of the poorest is the inability to cook with modern cooking fuels and the lack of a bare minimum of electric lighting to read, or for other household and productive activities after sunset.



African Huts Far From the Grid Glow With Renewable Power (excerpt)

<http://www.nytimes.com/2010/12/25/science/earth/25fossil.html>



For Sara Ruto, the desperate yearning for electricity began last year with the purchase of her first cellphone, a lifeline for receiving small money transfers, contacting relatives in the city or checking chicken prices at the nearest market. Charging the phone was no simple matter in this farming village far from Kenya's electric grid.

Every week, Ms. Ruto walked two miles to hire a motorcycle taxi for the three-hour ride to Mogotio, the nearest town with electricity. There, she dropped off her cellphone at a store that recharges phones for 30 cents. Yet the service was in such demand that she had to leave it behind for three full days before returning.

That wearying routine ended in February when the family sold some animals to buy a small Chinese-made solar power system for about \$80. Now balanced precariously atop their tin roof, a lone solar panel provides enough electricity to charge the phone and run four bright overhead lights with switches.

"My main motivation was the phone, but this has changed so many other things," Ms. Ruto said on a recent evening as she relaxed on a bench in the mud-walled shack she shares with her husband and six children.

As small-scale renewable energy becomes cheaper, more reliable and more efficient, it is providing the first drops of modern power to people who live far from slow-growing electricity grids and fuel pipelines in developing countries. Although dwarfed by the big renewable energy projects that many industrialized countries are embracing to rein in greenhouse gas emissions, these tiny systems are playing an epic, transformative role.

Since Ms. Ruto hooked up the system, her teenagers' grades have improved because they have light for studying. The toddlers no longer risk burns from the smoky kerosene lamp. And each month, she saves \$15 in kerosene and battery costs — and the \$20 she used to spend on travel.

In fact, neighbors now pay her 20 cents to charge their phones, although that business may soon evaporate: 63 families in Kiptusuri have recently installed their own solar power systems.

"You leapfrog over the need for fixed lines," said Adam Kendall, head of the sub-Saharan Africa power practice for McKinsey & Company, the global consulting firm. "Renewable energy becomes more and more important in less and less developed markets."

The United Nations estimates that 1.5 billion people across the globe still live without electricity, including 85 percent of Kenyans, and that three billion still cook and heat with primitive fuels like wood or charcoal.

There is no reliable data on the spread of off-grid renewable energy on a small scale, in part because the projects are often installed by individuals or tiny nongovernmental organizations.

But Dana Younger, senior renewable energy adviser at the International Finance Corporation, the World Bank Group's private lending arm, said there was no question that the trend was accelerating. "It's a phenomenon that's sweeping the world; a huge number of these systems are being installed," Mr. Younger said.

Problem Five

Slums



What is slum?

List ALL of the problems slum dwellers face?

How are women affected by living in slums?

How are children affected by living in slums?

How does slum living affect education?

How does slum living affect employment and getting bank loans?

How can climate change and natural disasters make slum life even worse?



[answer online](#)

Slums

One billion people live in slums. That's one in six of us. Unless urgent action is taken, 1.4 billion people will live in slums by 2020. The United Nations characterizes slums by one or more of the following:

- Poor structural quality and durability of housing
- Insufficient living areas (more than three people sharing a room)
- Lack of secure tenure
- Poor access to water
- Lack of sanitation facilities

Poor quality and overcrowded housing in slums has a significant impact on people's lives. Poor housing means diseases spread more easily, the effect of disasters like flooding are amplified, and people are denied their privacy and safety.

Slums built on marginal land prone to disasters like flooding pose a high risk for residents. Those living beside busy city roads and railways, on shorelines, river banks and on and around rubbish dumps feel the constant dangers of these unsafe environments. With no legal rights to land, slum dwellers face the threat of eviction and can find it difficult to secure a job and access credit and finance. Not having a formal, legal address can prevent slum dwellers from accessing services including healthcare, education, water and electricity. Gaining secure tenure of safe land is the first step towards building a permanent home and accessing other opportunities.

Poor sanitation and unsafe water claim the lives of many slum dwellers every year. Contaminated water supplies, poor hygiene and a lack of decent toilets and sewerage increase the spread of deadly diseases in slums. Diarrhea kills 1.5 million children under five each year. Without toilets, women suffer from the lack of privacy and dignity, and the burden of getting water (often from far away) usually falls on women and girls. The price of available water and sanitation facilities is often unaffordable.

The impacts of slums

<http://www.homeless-international.org/About-Slums/impacts-of-slums>

From gender inequality to climate change, living in a slum has significant impacts upon many lives. Through the community-led projects that Homeless International supports, slum dwellers have a say in the issues that matter to them and receive support to find lasting solutions.

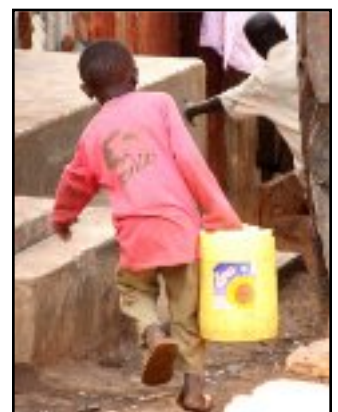
Women

Women and girls often bear the brunt of problems associated with living in slums. Women and girls are burdened with fetching and carrying water over long distances, and caring for sick family members – leaving them little time for education or to make a living. In slums where sanitation facilities are poor or non-existent, going to the toilet at night or in the early morning puts women at risk of rape and sexual harassment.



Health and child mortality

Hazardous slum conditions lead to the spread of deadly illness and disease. Illnesses like cholera, malaria and diarrhoea are prevalent in many slums. HIV infection rates in Kenya's largest slum are twice the national average. Children living in slums have a higher risk of dying from illness and disease and are more likely to suffer from pneumonia, diarrhoea, malaria, measles or HIV/AIDS. Diarrhoea kills 1.5 million children under five each year; it is the leading killer of children under five in Kenya's largest slum.



Education

Many children in slums are denied the chance to go to school. Social and cultural barriers deny slum dwellers the opportunity to complete their basic education. Many never go to school at all and few complete primary education. Female literacy rates in Dar es Salaam's slums are 50% - compared to an overall rate of 94%.



Livelihoods

How do you get a job when you don't have a permanent home? Without a secure and permanent home, work is difficult to find. Without a reliable income, slum dwellers are unable to invest in improving their homes and living conditions, making it very difficult to move out of poverty.



Finance

Banks and other finance institutions often exclude the poorest, either because banks are themselves underdeveloped in many poor countries, or because the poor are considered "unbankable". As a result slum dwellers have to resort to loan sharks who charge very high interest rates and further impoverish them.

Political exclusion

Unrecognised, ignored and excluded. Slum dwellers are often unrecognised and ignored by governments, excluding them from city development plans, voting and full protection through the law. This denies them the rights and voice that other citizens have, which in turn can lead to social exclusion.

Social exclusion

Migration from rural areas and other countries is the main driving force of slum expansion. As a result slum communities are made up of varied age groups, ethnic origins and languages. Interethnic tensions are amplified in slums, such as after the 2008 elections in Kenya.

Being denied the same rights as other city dwellers can cause further tensions between social groups.

Privacy and Dignity

1.1 billion people worldwide still have to resort to open defecation. The lack of toilets and overcrowding in slums leaves people with little or no privacy. This problem is particularly acute for women, adolescent girls, young couples, and large families.



Disasters

Disasters such as storms, heavy rainfall and earthquakes affect poor urban areas more severely than others, as poor quality houses collapse or are swept away. Poor drainage and waste management amplify the effects of disasters. The urban poor commonly live in disaster-prone areas, such as along rail tracks, shorelines, river banks, under bridges and on and around rubbish dumps.



Climate change

The majority of people at risk of sea-level rise in developing countries are slum dwellers. Low elevation coastal zones are predominantly urban and where the highest population densities are found. More than 300 million people are at risk of sea-level rise in developing countries, the majority of them slum dwellers.

