

## Case Study Source Material

- This Case Study Source Material should be issued to candidates on or after **1 May 2007**
- A clean copy of the Source Material will be provided at the start of the Unit 6 examination.

For use with **Section A**

- The material consists of five extracts (A–E) on the subject of *Approaches to solving world problems*. These extracts are being given to you in advance of the Unit 6 examination to enable you to study the content and approach of each extract, and to consider the issues which they raise, in preparation for the questions based on this material in Section A.
- Your teachers are **not** permitted to discuss the material with you before the examination.
- You may write notes in this copy of the Source Material, but you will **not** be allowed to bring this copy, or any other notes you may have made, into the examination room. You will be provided with a clean copy of the Source Material at the start of the Unit 6 examination.
- You are not required to carry out any further study of the material than is necessary for you to gain an understanding of the detail that it contains and to consider the issues that are raised. It is suggested that three hours' detailed study is required for this purpose.
- In the examination you will have approximately 45 minutes in which to answer a range of questions based on the material.

**There are no extracts printed on this page**

## EXTRACT A

**Figure 1**

### **Poverty Facts and Statistics**

- Half the world – nearly three billion people – live on less than \$2 a day.
- The combined Gross Domestic Product (GDP) of the poorest 48 nations (i.e. 25% of the world's countries) is less than the combined wealth of the world's 3 richest people combined.
- The 48 poorest countries account for less than 0.4% of global exports.
- The developing world now spends \$13 on debt repayment for every \$1 it receives in grants.
- The wealthiest nation on Earth has the widest gap between rich and poor of any industrialised nation.
- In 1960, 20% of the world's people in the richest countries had 30 times the income of the poorest 20%. In 1997, the richest countries had 74 times as much.
- A few hundred millionaires now own as much wealth as the world's poorest 2.5 billion people.
- 20% of the population in the developed nations consume 86% of the world's goods.
- Less than 1% of what the world spent every year on weapons was needed to put every child into school by the year 2000.
- Nearly a billion people entered the 21<sup>st</sup> century unable to read a book or sign their name.

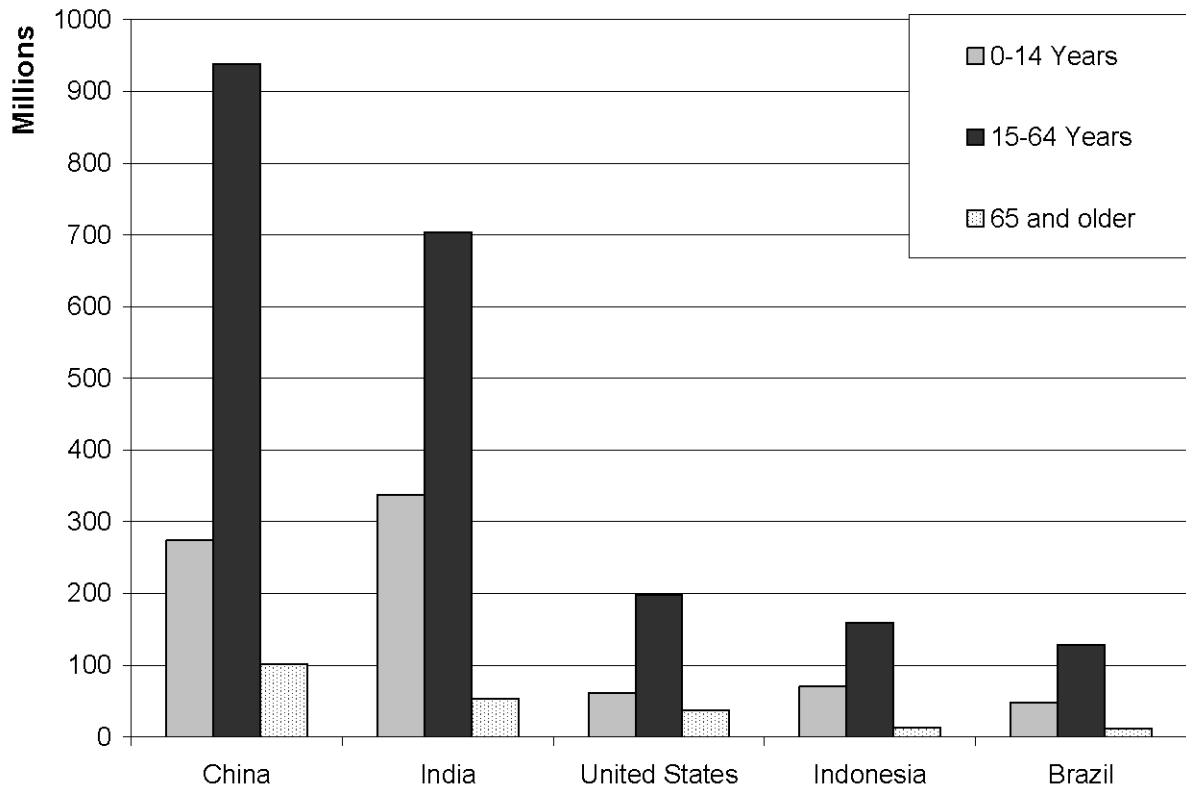
Source: Adapted from [www.globalissues.org](http://www.globalissues.org), 2006

**Turn over for the next figure**

**Turn over ▶**

Figure 2

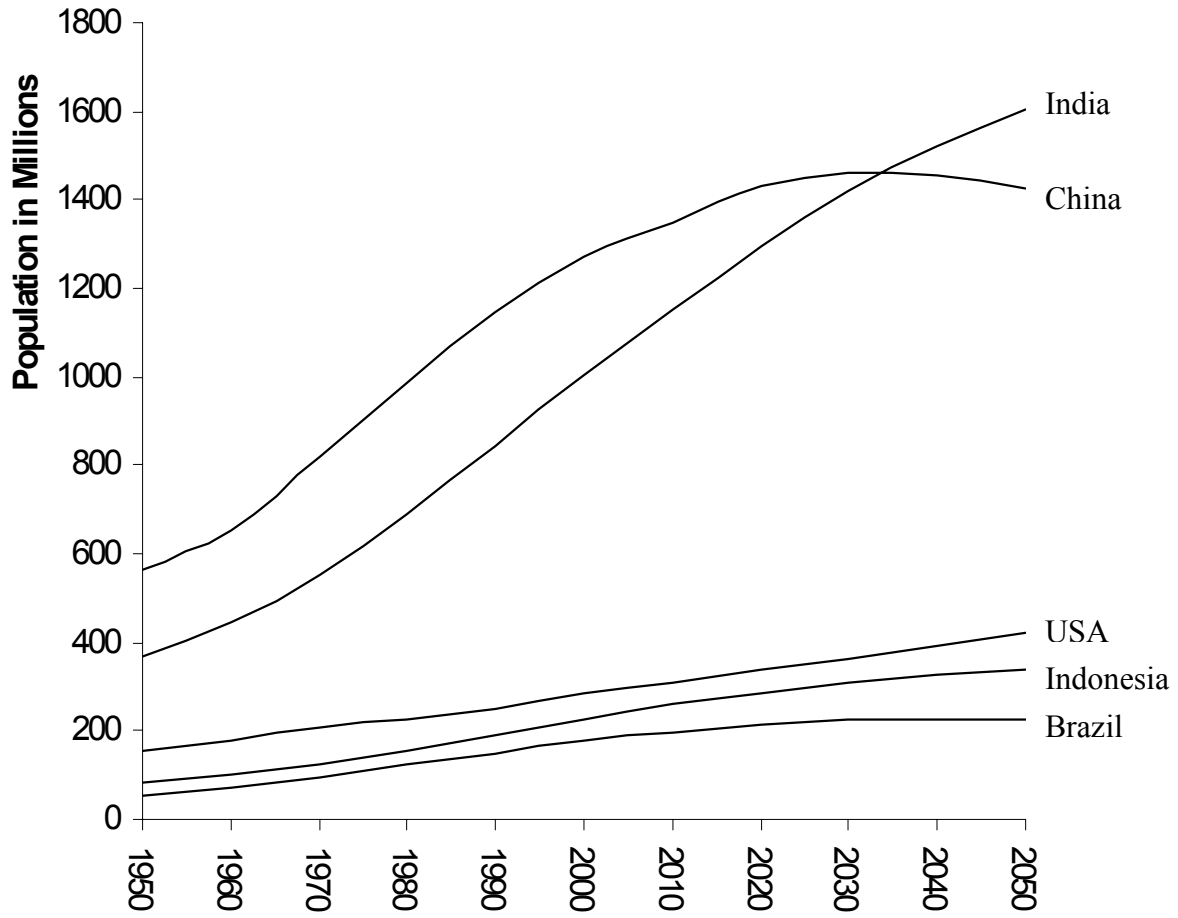
**Population: age structure of selected countries**  
**Population estimates 2005-2006**



Source: Adopted from Wikipedia, 2006

Figure 3

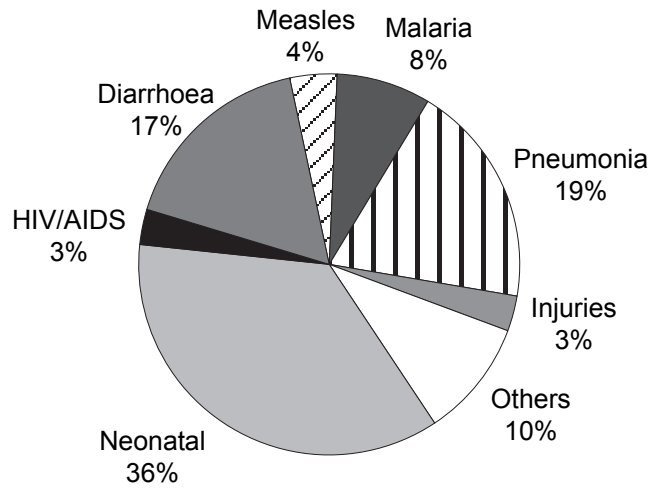
## Population development of selected countries from 1950 to 2050



Source: Figures taken from [www.geohive.com](http://www.geohive.com), 2006

Turn over for the next figure

Turn over ►

**Figure 4****Causes of death among children under 5 years of age in the world between 2000-2003**

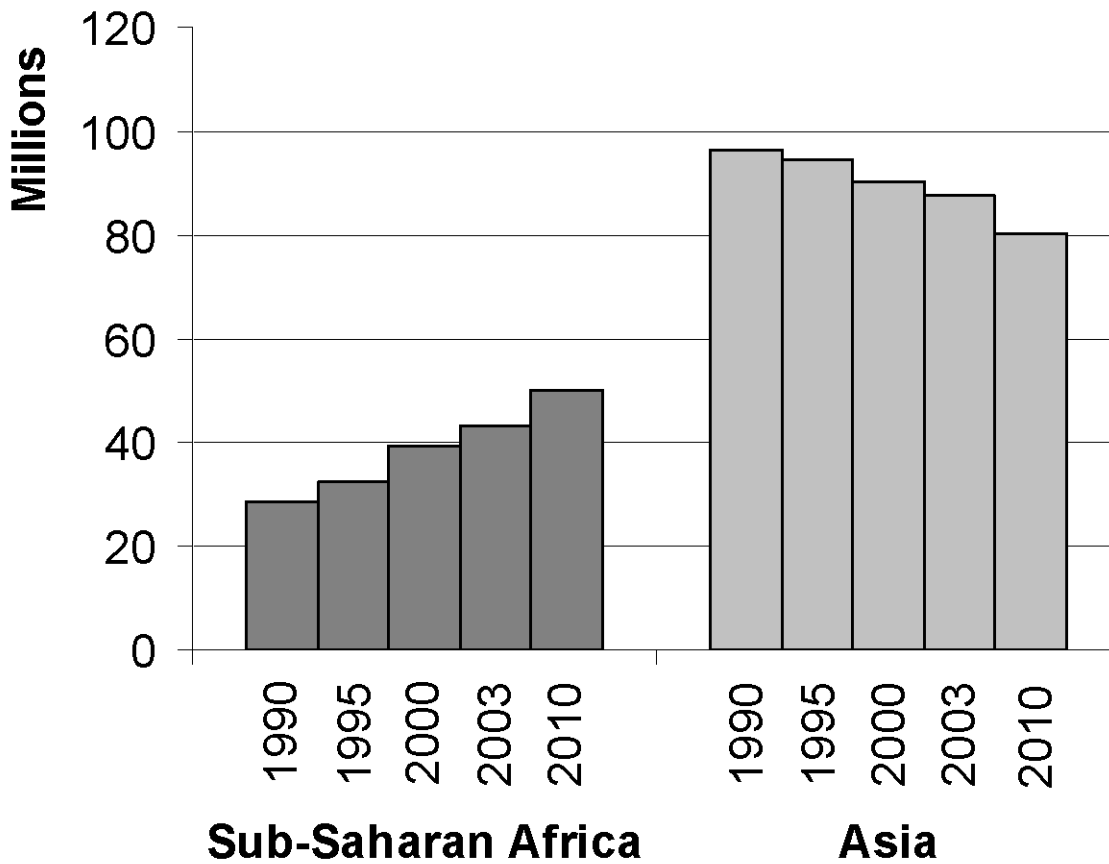
Undernutrition is an underlying cause of 53% of deaths among children under five years of age

77% of neonatal deaths result from pre-term deaths, sepsis/pneumonia or asphyxia

Source: Adapted from [www.who.int/child-adolescent-health](http://www.who.int/child-adolescent-health), 2006

Figure 5

## Orphaned children in sub-Saharan Africa and Asia



Source: Adapted from [www.childinfo.org](http://www.childinfo.org), 2006

In sub-Saharan Africa the HIV/AIDS epidemic is wreaking havoc on a scale unimagined. Home to 66% of all people living with HIV/AIDS, and 75% of people dying from AIDS, the proportion of children who have lost parents due to AIDS has risen from less than 2% in 1990 to greater than 28% in 2003. By 2010, sub-Saharan Africa will be home to an estimated 50 million orphaned children. 18.4 million children – more than one in three orphans – will have lost parents to AIDS.

**Turn over for the next figure**

**Turn over ▶**

**Figure 6****Infant mortality rates in selected countries**

The infant mortality rate is the number of deaths in the first year of life per one thousand live births in any given year.

<b>Country</b>	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2003</b>
<b>Afghanistan</b>	<b>245</b>	<b>215</b>	<b>185</b>	<b>168</b>	<b>165</b>	<b>165</b>
<b>Brazil</b>	<b>115</b>	<b>95</b>	<b>67</b>	<b>50</b>	<b>35</b>	<b>33</b>
<b>China</b>	<b>150</b>	<b>85</b>	<b>49</b>	<b>38</b>	<b>32</b>	<b>30</b>
<b>Cuba</b>	<b>39</b>	<b>34</b>	<b>22</b>	<b>12</b>	<b>7</b>	<b>6</b>
<b>Iraq</b>	<b>117</b>	<b>90</b>	<b>63</b>	<b>40</b>	<b>102</b>	<b>102</b>
<b>Mexico</b>	<b>94</b>	<b>79</b>	<b>56</b>	<b>37</b>	<b>25</b>	<b>23</b>
<b>Niger</b>	<b>211</b>	<b>197</b>	<b>191</b>	<b>191</b>	<b>159</b>	<b>154</b>
<b>Poland</b>	<b>62</b>	<b>32</b>	<b>21</b>	<b>16</b>	<b>8</b>	<b>6</b>
<b>Rwanda</b>	<b>122</b>	<b>124</b>	<b>130</b>	<b>103</b>	<b>118</b>	<b>118</b>
<b>Sweden</b>	<b>16</b>	<b>11</b>	<b>7</b>	<b>6</b>	<b>3</b>	<b>3</b>
<b>United Kingdom</b>	<b>23</b>	<b>18</b>	<b>12</b>	<b>8</b>	<b>6</b>	<b>5</b>
<b>Zimbabwe</b>	<b>97</b>	<b>86</b>	<b>69</b>	<b>53</b>	<b>73</b>	<b>78</b>

Source: Adapted from [www.childinfo.org](http://www.childinfo.org), 2005



## EXTRACT B

## Aid workers warn of another bitter harvest for Niger after season of drought and locusts

LAGOS - As farmers in Niger begin to reap their harvest and aid agencies phase out food distributions, many aid workers warn that acute food shortages could affect the country again next year.

About 3.6m people in Niger were affected this year by food shortfalls brought about by the effects of drought and locust infestations and compounded by scarce food supplies in the West African Sahel region.

The United Nations' World Food Programme (WFP), the Niger government and other agencies have targeted food to about 3m people, and the WFP hopes to finish off a final round of distributions by early October.

Many farmers have had to mortgage this year's harvest or migrate from their fields to help raise money to pay escalating food prices in the past few months. While this year's crop is expected to be an improvement, farmers could still run low on food stocks in seven months, which is normal in Niger, and simultaneously face a cash flow crisis.

The crisis in Niger, which is the world's least developed country according to the UN's development index, intensified as the Group of Eight rich countries (G8) met in Gleneagles to discuss the problems blighting Africa.

Niger is one of the 18 poor countries G8 ministers marked down for a debt write-off plan but there has been limited discussion on long-term strategies to deal with food shocks. The country is reliant on food imports in the months leading up to the yearly harvest, when stocks are normally depleted.

A government system of selling cereals at subsidised prices failed to alleviate scarcity and hold down prices at the critical time, in part due to the unwillingness of some neighbouring countries, who were facing their own food shortages, to export food to Niger.

The shortfall took the government and WFP, who were pursuing targeted as opposed to blanket food distributions, by surprise. The policy was meant to ensure food distributions without undermining farmers.

"It would have been impossible to justify doing free food distribution early on in the year. But it wasn't

clear at all that the situation would deteriorate so quickly," said Marcus Prior, a WFP spokesman covering West Africa.

But the fragility of the system was evident early on when a survey by WFP and Helen Keller International, published in April, indicated a malnutrition rate of 13.4 per cent, comparable with those seen in conflict zones or emergencies, in two of the worst affected provinces.

Squeezing money out of donors already fatigued by humanitarian catastrophes such as the Asian tsunami proved difficult.

The WFP still lacks about 40 per cent of the \$57m pledged. And the decision to introduce blanket food distributions as late as August has also pushed up costs as large-scale supplies were needed quickly to quell the sudden spread in severe malnutrition and hunger.

Médecins Sans Frontières said this month it received about 1800 severely malnourished children under the age of five at its feeding centres in Maradi province every week, more than the monthly figure a year ago.

Analysts say anti-locust programmes and assistance by the World Bank and other partners are insufficient to stem what is seen as a deepening regional crisis. This year, millions more people were affected by food shortages in neighbouring Burkina Faso, Mali and Mauritania, although not as seriously as Niger.

International Crisis Group, a think-tank, points out that development assistance to Sahelian states is being sidelined in favour of expensive plans to support a regional counter-terrorism plan. US spending on military assistance to Saharan states could amount to \$500m over the next seven years.

Meanwhile, many farmers such as Mohammed Salissou, a millet grower in Maradi province, view their slide into poverty with fatalistic eyes. "I had to sell off many animals last year to buy food. I have virtually no savings left. We will run out of food in six months, so we are at the mercy of the aid agencies now," he said.

Source: DINO MAHTANI, *The Financial Times*, 30 September 2005

Turn over ►

---

**EXTRACT C****Top of the crops: the world's population is expanding by 86 million a year – but GM rice can save us from famine**

While we in the west are preoccupied with cloning sheep, pigs, dogs and, of course, ourselves, scientists in the developing world are focused on an organism of far greater importance: rice. According to a Chinese saying, “the most precious things are not jade and pearls but the five grains”. Earlier this month the genome of one of those five grains was laid bare when the complete genome sequence of rice was published in the journal *Nature*.

Rice is the staple food crop for 3 billion people, mostly in Asia. But most of those dependent on the crop still go hungry. About 800 million people don't have enough to eat, many of them children, and about 5 million will die of diseases related to malnutrition. And with the world's population increasing at a rate of about 86 million people a year, things could get a lot worse. It is estimated that rice production will have to increase by about 30% in the next 20 years to keep pace with population growth and economic development. Where is all the food going to come from?

There are two principal ways to boost food production: increasing the amount of land under cultivation or increasing yields. Until the 1960s the favoured strategy was putting more land under the plough, resulting in the loss of much of the world's wilderness and native forest. But in the 1960s plant breeders such as Norman Borlaug pioneered a new strategy, increasing crop yields through a mixture of seed improvement and technological inputs: the green revolution. As crops of the new varieties were planted, first in Mexico and then throughout the world, particularly in Asia, harvests soared and have continued to rise at a rate of about 2% a year.

But the green revolution is grinding to a halt. There have been only small yield increases in recent years, and it is thought that rice grown on the most productive irrigated land has now achieved maximum production levels. The challenge for the future is to increase yields in more marginal lands, where much of the crop ends up in the bellies of insects or is devastated by drought or disease. Many scientists (including Borlaug) believe that the only way to provide food security for the world's poorest people is to genetically engineer crops that are more resistant to nature's ravages.

The potential value of GM crops was highlighted earlier this year with the publication of the results of a Chinese study that demonstrated a 10% increase in yield for farms that planted an insect-resistant GM variety of rice.

In a typically Chinese understatement, Professor Jikun Huang, the director of the Centre for Chinese Agricultural Policy at the Chinese Academy of Sciences, said: “The performance of insect-resistant GM rice in trials has been impressive.” Not only were yields up, but the use of pesticides dropped by 80% and farmers reported a dramatic reduction in pesticide-related health problems.

But inserting a single gene is just tinkering. What the rice genome project provides is a blueprint of the entire genome and the capability to engineer the crop to meet the needs of farmers throughout the world.

The rice genome was sequenced by the International Rice Genome Sequencing Project, a unique collaboration between researchers in Japan, China, Taiwan, Thailand, Korea, the US, Canada, France, India, Brazil, the Philippines and the UK. The project, with its insistence on making its data immediately available to scientists anywhere in the world at no cost, is a glowing example of one of the positive benefits of globalisation: internationally collaborative science that can benefit the entire world. Even before publication, researchers had already mined the rice genome data to identify novel genes.

Of course, many aid organisations – often heavily influenced by western green campaigns – have attacked the emphasis on GM technology, calling it a “technical fix” that does little to address the real social and economic causes of world poverty and hunger.

They said the same several decades ago when widespread famine was predicted to follow a population explosion. The population explosion materialised but the famine didn't. The reason was that while others argued for social reform, pioneering plant breeders launched the green revolution and saved millions from starvation. The Human Development Report 2001, commissioned by the United Nations development programme, concluded that “many developing countries might reap great benefits from genetically modified food crops and other organisms”.

Some 1.2 million people live on less than one dollar a day, and that dollar usually buys rice. But the crop is prone to many diseases, pests and unpredictable climate change. Genetic engineering of crops to generate new varieties resistant to disease, pests, drought and salinity could revolutionise third-world farming. The release of the rice genome sequence places a powerful toolkit in the hands of researchers eager to improve crop yields.

Source: JOHNJOE MCFADDEN, *The Guardian*, 23 August 2005

(The author is professor of molecular genetics at the University of Surrey and is the author of *Quantum Revolution*)

**Turn over for the next extract**

**Turn over ▶**

## EXTRACT D

## The 21st century plague

### **Mapping out a global epidemic. More than 40 million people have HIV/AIDS, the UN revealed yesterday, with Eastern Europe and sub-Saharan Africa among the worst-hit areas.**

The global number of people living with HIV has doubled in a decade to exceed 40 million for the first time. The remorseless advance of the disease, the worst in modern times, continued last year, infecting another nine people every minute, and laying waste to families, communities and economies.

It will claim an estimated 3.1 million lives this year, 570 000 of them children, according to the annual report on the epidemic published by UNAIDS and the World Health Organisation (WHO).

AIDS experts yesterday tried to put a positive spin on the carnage. 'Fortunately, we have some good news,' said Purnima Mane, policy director of UNAIDS. 'Adult HIV infection rates have declined in some countries, including Kenya, Zimbabwe, and urban parts of Haiti and Burkina Faso.'

Changes in behaviour such as increased condom use, delay in the age of first sexual experience and a reduction in the number of sexual partners were playing their parts.

In the Caribbean, the area with the second-highest HIV prevalence in the world after sub-Saharan Africa, there was cause for 'guarded optimism', with a decline in infection rates among pregnant women, increased condom use among sex workers and a rise in the numbers coming for voluntary HIV testing.

In Kenya, HIV rates have declined from 10 per cent in the late 1990s to 7 per cent in 2003, partly due to nationwide campaigns to promote condoms and encourage people to go for testing.

It was only the second time in two decades that a country had seen a sustained decrease in infection rates, Ms Mane said. The first was Uganda in the early to mid-1990s.

But the report indicated how fragile these gains are and how easily lost. HIV prevalence rates in Rakai in the south of Uganda fell sharply among women from 20 per cent in 1995 to 13 per cent in 2003. Yet researchers could find no evidence that abstinence or fidelity (two weapons used in the anti-AIDS strategy) had increased. Condom use with casual partners had increased (the third weapon in the strategy) and probably contributed to the fall in HIV.

But most of the gain, researchers found, had nothing to do with improved prevention "it came from higher death rates". HIV had spread so far within the community that victims were dying faster than new ones could become infected.

The fall in rates had also led to complacency in the local population with signs of a 'possible resurgence' in HIV infection in men and women aged 15 to 24 in Rakai and other parts of the country, the report said.

---

Peter Piot, executive director of UNAIDS, paid tribute to those countries where sustained prevention programmes had brought down infection rates. "But the reality is that the AIDS epidemic continues to outstrip global and national efforts to contain it," he said. "It is clear that a rapid increase in the scale and scope of HIV prevention programmes is urgently needed."

The steepest increase in HIV infections was in eastern Europe and central Asia, where they rose 25 per cent to 1.6 million. Here and in Latin America, injecting drug users and sex workers are the chief drivers of the epidemic. In China, 60 per cent of those infected with HIV contracted the infection through drug use. But sub-Saharan Africa remains the worst-hit region, with three million new HIV infections, almost two-thirds of the global total of 4.9 million.

Key to the success of prevention is increasing access to treatment with anti-retroviral drugs. Once treatment is available there is a reason to get tested, and once people know their HIV status they can be counselled to avoid further spread.

"Treatment availability provides a powerful incentive for governments to support and individuals to seek out HIV prevention information and voluntary counselling and testing," said Lee Jong-Wook, director general of WHO.

But the experts admitted they had failed to meet the WHO 'three by five' target to have three million people on the drugs by 2005. An estimated one million people were taking anti-retroviral drugs in low- and middle-income countries by last June, two million below target.

"Of course we are disappointed," said Andrew Ball, senior strategic HIV adviser at the WHO, "but it was an extremely ambitious target." Up to 350 000 deaths had been averted thanks to increased access to drugs, he said. But only one in 10 of those infected was being treated.

"Despite the existence of anti-retroviral drugs, three million people died last year. Most of these deaths could have been averted if they had access to these treatments. The message is clear to countries that they must invest in prevention and treatment, because without both we won't halt this epidemic," Mr Ball said.

Anton Kerr, of Christian Aid, called on governments to contribute more to the Global Fund for HIV/AIDS, TB and malaria. A conference in September heard that double the £2.1bn donated was needed to fund new prevention, treatment and care programmes in 2006 and 2007.

Source: JERMEY LAURENCE and ELIZABETH DAVIS, *The Independent*, 22 November 2005

**Turn over for the next extract**

**Turn over ►**

## EXTRACT E

## Grant withdrawal hits Burmese AIDS fight. With 46 000 people in desperate need of drugs, the loss of \$98m has struck hard

A young Burmese woman from the outskirts of Rangoon set out one day five years ago to find a job 800km away in the border town of Kawthoung, just across the border from the busy Thai fishing port of Ranong.

She soon found work singing in a bar for fishermen on shore leave. When she fell ill a few years later, doctors told her she was infected with HIV – something she had never heard of before.

"I didn't know anything – that is why I got it," the woman, now 27, said after a recent support meeting for HIV/AIDS patients at a Medecins Sans Frontieres clinic in the Rangoon suburb of Hlaingthayar.

Today, she is one of about 2000 Burmese receiving life-saving, anti-retroviral drugs from MSF Holland, which runs Burma's biggest AIDS treatment programme. She recently married another HIV patient: a 31-year-old trishaw driver, who suspects he contracted the virus during a year spent working at a plastic factory in Thailand. He too now receives anti-retroviral drugs from MSF.

Yet in military-ruled Burma, the couple are among a relatively lucky few. About 46 000 people in the impoverished country are thought to be in immediate need of the life-saving AIDS medications. But their prospects for obtaining it – and for an intensification of Burma's wider battle against HIV/AIDS – have greatly diminished since the Global Fund for HIV/AIDS, Tuberculosis and Malaria terminated its \$98m (€83m, £57m) health grant for the country.

Burma has one of Asia's most serious HIV/AIDS epidemics, according to the latest UNAIDS report this week, with HIV prevalence in pregnant woman estimated at 1.8 per cent. The Global Fund money was to have been used for much-needed expansion of availability of anti-retroviral drugs and voluntary HIV testing centres, enhanced

condom promotion, and efforts to reduce HIV among injecting drug users.

Yet nearly as damaging as the loss of money has been the Global Fund's reinforcement of Burma's international image as a country where it is impossible to provide effective humanitarian aid – a picture that UN agencies and international charities working in the country say is simply wrong.

"The loss of resources is critical, but it is the contribution to the perception that you can't work here that is really so bad," said Brian Williams, UNAIDS country co-ordinator in Rangoon.

"We can deliver services to people in need even in difficult circumstances here. But we need more resources, or a lot of those services are going to dry up."

In cancelling its Burma grants, the Global Fund publicly blamed travel restrictions imposed in July that it said would have hampered its ability to monitor how funds were used. But even before that, the Global Fund was under intense pressure from US-based critics of the Burmese junta, who vehemently opposed seeing such a large sum of money flow to the country – especially if it were used to strengthen the government's provision of public health care services.

Burma's response to its HIV/AIDS epidemic was indeed agonisingly slow. Through the 1990s, the military junta – treated as a pariah by western governments – denied or played down the disease's spread, declaring that the country's traditional morals would prevent an epidemic. But in 2001, a senior general publicly acknowledged that AIDS was a serious problem, and in 2003 the UK, Norway and Sweden committed a total of \$24m for a three-year Burma AIDS fund. The US, Australia and Japan have also increased support for selected AIDS charities working in the country.

Today, 18 international non-governmental organisations, including MSF, Care, World Vision, Population Services International, Marie Stopes International, the International HIV/AIDS Alliance, are on the front lines of Burma's campaign against AIDS.

Foreign aid workers still confront many impediments, including requirements to obtain advance permission to travel outside Rangoon, excessive red tape for crucial imports, and some resistance from conservative local authorities to their activities – especially those targeting sex workers or drug users. The health ministry's national AIDS programme faces its own bureaucratic constraints, including a tiny budget – about \$22 000 at current exchange rates.

Despite these difficulties, progress has been made. AIDS awareness has risen as authorities have allowed

explicit public information campaigns and condom adverts in state media, including television.

Condom use is up, while public access to voluntary AIDS testing and treatment for sexually transmitted infections has grown.

But the combined efforts fall far short of what is needed to contain the spread of the disease, and the loss of the much anticipated Global Fund money has cast a pall over the future.

"Things feel like they have stalled," said Mr Williams of UNAIDS. "The excitement about new plans, and scaling up, has dissipated."

The worries about resource constraints now overshadow concerns about travel restrictions, which have eased, and other obstacles.

Source: AMY KAZMIN, *The Financial Times*, 24 November 2005

## END OF SOURCES

**There are no extracts printed on this page**

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Permission to reproduce all copyright material has been applied for. In some cases efforts to contact copyright-holders have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements in future papers if notified.

Copyright © 2007 AQA and its licensors. All rights reserved.