Then the guesswork continues. Strapped by limited budgets and staff, international keepers of water data, such as WMO and the United Nations, usually have no way to verify these country-by-country statistics.

It's not surprising that water data are often a low priority for developing nations, where millions struggle simply to find shelter and food. But rich countries also lack complete data. Much of the United Kingdom, for instance, does not use water meters—a classic source of consumption data elsewhere.

Even in the United States, water information is relatively spotty. Since 1950, USGS has published national water-use data every 5 years. But the agency essentially reports each state's own estimates of groundwater and surface water withdrawals for irrigation, livestock, homes, and the like. The quality of state data varies considerably, depending on local politics and priorities, concedes Hirsch. Arkansas, for instance, has a much stronger water-data program than Washington.

On the national level, the USGS National Water-Use Information Program, as it's known, does minimal analysis of overall trends, Hirsch says, because the survey can't afford it. The program has recently applied to Congress for additional funding.

Water pressure

Without good water data today, it's hard to know what will happen tomorrow. To make matters worse, conventional water models oversimplify the dynamics of water demand—often resulting in doomsday scenarios similar to those of the last century. By 2025, according to the World Resources Institute's 2000 Pilot Analysis of Global Ecosystems, at least 3.5 billion people, or 48% of the world population, will live in water-stressed river basins. But that projection, like many others, assumes for simplicity that current water consumption patterns will continue.

Is that a fair assumption? At least in the United States, Hirsch says, annual water consumption has fallen by more than 10% since 1980. He attributes the savings to increased water efficiency, from home appliances and savvy landscaping to water pricing regulations. Europe has seen similar gains.

In fact, Gleick says, a little water efficiency can go a long way for any population, wealthy or poor. "When Mexico City replaced 350,000 leaky toilets with more efficient ones, they saved enough water to meet the needs of 250,000 new residents," he notes.

On a broader scale, such savings could add up. Factoring efficiency gains and conservation into a global water forecast, Gleick projects that total water demand in 2025 need not greatly exceed today's. "We are moving away from the assumption that increased well-being requires exponential increases in water," Gleick says. "This is the most important point in the whole question of forecasting today."

Information is key. In Sri Lanka, local water managers and scientists from the International Water Management Institute are using satellite imagery to track the amount of water used on crops and their growth, among other variables. The goal is to figure out where water is most needed—and how much is currently wasted. "Using this information, we can see our water use situation clearly," reports Sri Lankan irrigation manager H. M. Jayatillake. But Sri Lanka is just one tiny corner of a world in which water remains largely a mystery.

–KATHRYN BROWN

HIV/AIDS

Malawi: A Suitable Case for Treatment

One country's efforts to secure help in tackling its AIDS epidemic indicates the gulf between needs and the resources available to meet them

BARCELONA—One statistic haunted the international AIDS conference here last month: 40 million, the number of people estimated to be infected by HIV around the world. The unfolding catastrophe reflected in that figure had pricked the world's conscience at the previous international AIDS meeting in Durban, South Africa, 2 years ago. This year's gathering provided the first real opportunity to evaluate how well the world has responded. The resounding answer, in session after session and from protesters and panelists alike: not well enough.

There has been some progress. In January, a new multinational organization, the Global Fund to Fight AIDS, Tuberculosis, and Malaria, opened its doors. Largely through its work, the World Health Organization (WHO) predicts that anti-HIV drugs could reach at least 3 million people in developing countries by 2005—10 times the number now being treated. But that still leaves a yawning gulf. And for countries bearing the brunt of the epidemic, getting desperately needed help is turning out to be a difficult and frustrating exercise. Just ask officials from Malawi.

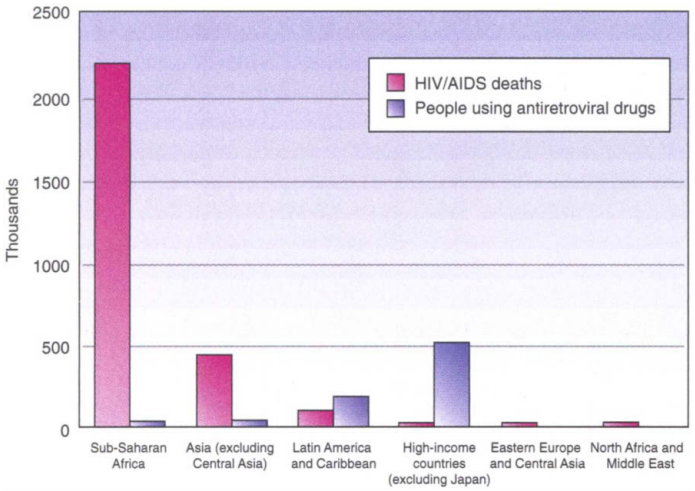
A small landlocked country in southern Africa with a per capita income of just $200 a year, Malawi is facing an unimaginable public health crisis. HIV has infected an estimated 1 million Malawians, 16% of the country's adult population. In an interview in October 2000, Malawi's vice president, Justin Malewezi, said that unless his country confronts HIV and AIDS more aggressively, "there will not be any Malawi in the future." In many respects, Malawi's experience in putting together a plan to deal with its mounting AIDS disaster symbolizes the difficulties that poor countries and international organizations face in confronting the epidemic with inadequate funds and limited health services. In the end, after repeated interactions with donor organizations and the Global Fund, Malawi was forced to whittle down an ambitious plan to one that will barely make a dent in its problems.

Crisis. AIDS patient in Malawi, where 16% of adults are infected.

CREDIT: DENIS FARRELL/AP

As Malewezi recounted in a talk here, soon after the Durban meeting, Malawi began assessing its needs and how to secure the resources to meet them. For 2 days in October 2000 an international group of experts met in Malawi's capital, Lilongwe, to begin hashing out a plan. "The first day was simply trying to break through the feeling that treatment was an impossibility and shouldn't even be considered," recalls Peter Salk, scientific director of the foundation

named after his father, polio vaccine pioneer Jonas Salk. Other participants included representatives from the Joint United Nations Programme on HIV/AIDS, the U.S. Centers for Disease Control and Prevention, WHO, Doctors Without Borders, the United Nations Development Programme, the World Bank, the University of Maryland's Institute of Human Virology, and even an AIDS advocacy group, Search for a Cure, based in Boston, Massachusetts.



Rich irony. Sub-Saharan countries such as Malawi have the greatest HIV/AIDS burden, but the fewest numbers receiving antiretroviral drugs.

By the following August—with additional input from Harvard University's Center for International Development, the Boston-based Management Sciences for Health, and the U.K.'s Liverpool School of Tropical Medicine—Malawi had a detailed proposal that called for steadily increasing treatment and prevention efforts over 7 years. In all, 300,000 Malawians would receive anti-HIV drugs, as well as treatments to prevent the opportunistic infections of AIDS. Prevention programs would be stepped up, the health system's infrastructure would be strengthened, and health care providers would receive salary supplements. The price tag: $1.6 billion.

It would be an enormous sum for a single country, but there was reason for optimism. In a landmark speech in April 2001, U.N. Secretary-General Kofi Annan urged the world to form a new fund, which he said would need $7 billion to $10 billion each year to combat HIV/AIDS alone, and international donors were discussing the creation of what eventually became the Global Fund. In mid-September, Anne Catherine Conroy, a special assistant to Malewezi, and others from Malawi took their plan to experts at WHO. They got a splash of cold water.

"The tactical advice they gave us was that just after September 11, the Global Fund is not going to even get $7 billion," Conroy recalls. The WHO experts, who also had concerns about Malawi's capacity to handle the huge influx of funds, suggested that the request be scaled back to $500 million over 5 years. That would be enough to treat only 100,000 people.

Conroy and others heeded WHO's advice. They then took their scaled-back plan to donor agencies that had long helped the country with its health care needs. "There was a real sense that antiretrovirals were not appropriate for Malawi and that we should be focusing on prevention alone," says Conroy, ruefully noting that only 25% of the budget was for treatment. Donors also worried that the proposal was "too ambitious," says Conroy, and that it overlapped some existing efforts.

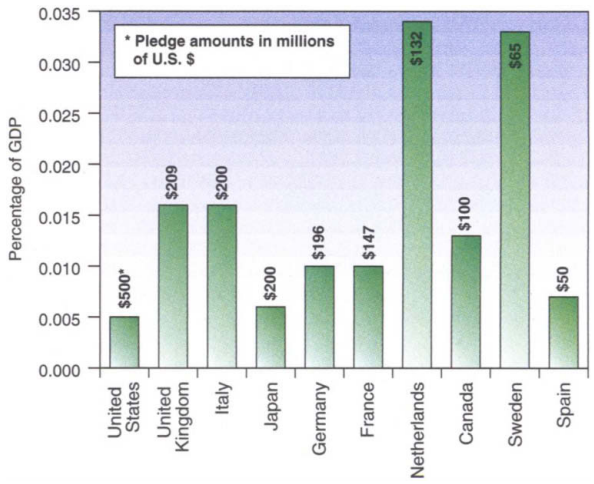
The formation of the Global Fund in January 2002 provided a new focus for Malawi's efforts. It was already clear, however, that the fund would come up well short of the $7 billion to $10 billion Annan had called for. (It has so far raised just $2.1 billion; see chart.)

The fund required each proposal to have the endorsement of a broad coalition, including the government, academics, the private sector, and donors. At the insistence of the donor representative in its coalition, says Conroy, Malawi cut back its request again, to $306 million—enough to treat up to 40,000 people over 5 years. The independent Technical Review Panel that screened proposals for the Global Fund then told Malawi to scale back further still.

The final plan, which the Global Fund expects to approve in the next few weeks, calls for expenditure of $200 million and treatment for just 25,000 people, less than 3% of Malawi's infected population. "We thought this was a serious misreading of the Malawi situation," says Conroy. But they made the changes. "Do we want to get the money, or do we want to be complaining?" she asks rhetorically. Malewezi is more blunt: "Such a limited access to antiretroviral treatment will only exacerbate tensions in the country, raising the stakes for those left out," he warned at the Barcelona meeting. "Political parties may exploit the situation, thus threatening stability and radicalizing the political landscape."

At the Barcelona meeting, health economist Jeffrey Sachs, who helped Malawi with its proposal, blasted the process. "Because the Global Fund didn't have the money, agents of the donors were out there twisting the arms of the countries saying, 'Don't ask for that much,' " charged Sachs, who recently left Harvard to head the Earth Institute at Columbia University. "We will be out in force all over the world to make sure that it does not happen again."

Richard Feachem, who became executive director of the fund in July, strongly challenges the notion that countries should tailor proposals to fit the Global Fund's budget. "The fund does not encourage country applicants or their advisers to artificially scale back the size of proposals in anticipation of what may or may not be available," says Feachem, an epidemiologist who founded the University of California's Institute for Global Health. Feachem notes that even Malawi's scaled-back proposal calls for an immediate increase of 30% in what the country now spends on health, and that figure rises to over 100% in less than 4 years. There is a real question, he says, whether Malawi's health care system could absorb a bigger infusion of cash.



Fair share? Contributions to the Global Fund as share of GDP. Actual amounts are indicated above each bar.

Malawi actually is one of the luckier applicants to the Global Fund. Of the 322 proposals the fund received for its first round of awards, Malawi was one of only 58 to make the cut. The real problem, says Feachem, is that "the Global Fund needs a massive increase in resources, and it needs it quickly." That reality now haunts everyone fighting AIDS in the developing world.

—JON COHEN

SOURCES: (TOP TO BOTTOM) WHO/UNAIDS (2002); CIA FACTBOOK AND GLOBAL FUND