East Germany Struggles to Clean Its Air and Water

In the midst of dramatic political changes, environmental planners in East Berlin draw up a scheme to restore what's left of nature

BERLIN—FROM THE TOP OF THE TV TOWER in East Berlin, 365 meters above the city, you can see the past, and it is dirty. A shroud of haze veils the suburbs, and on the streets below the two-stroke Trabant cars puff dark exhaust smoke. Far to the south the giant power plants around Leipzig pour more dust and sulfur dioxide into the air than you'd find in any other country in Europe. In fact, 92.6% of the population of Leipzig suffers some sort of health problem caused by sulfur dioxide; 85.7% suffer a problem caused by dust. In Berlin, where there is less industry, the figures are lower, although still substantial—upwards of 40%. So clearing up air pollution must be the German Democratic Republic's first priority, correct?

Incredibly, East German scientists are even more worried about something else: "Actually, water quality is number one," says key state environmental planner Hans Lütke. That was only one of several surprises he divulged in a recent interview in his office overlooking the river Spree, which forms part of the border between East and West Berlin. Lütke heads the Department of Environmental Analysis and Measurement in the Ministry for Nature Protection, Environmental Protection and Water Economy. For months he has been working on a report—commissioned by the previous government of Hans Modrow—detailing the state of the environment in East Germany and a strategy to improve it.

The person who will have to put the strategy into action is Karl-Hermann Steinberg, newly appointed environment minister. Steinberg, a 48-year-old professor of chemistry, is a Christian Democrat who entered the Modrow administration in December 1989 as deputy minister for heavy industry. But though heavy industry is responsible for most of East Germany's environmental ills, Steinberg is no villain. He sat on a joint committee of the ministries of industry and environment which drew up emergency plans to cut pollution by closing plants.

Catherine Maigatter, an aide to Lütke, welcomed Steinberg's appointment. "He knows the problems of industry," she said. "He knows the problems of energy, he is a good man." He will need to be better than good to meet the challenge of East Germany's environmental problems.

A start has already been made on tackling the most pressing problem, water, which unlike air is in very short supply; East Germany receives only 1085 cubic meters per person per year, giving it the most overstretched water budget in Europe. That is why even the hard-line communist government had been trying to do something.

Cleaning up rivers like the Saale, which received vast quantities of waste from the behemoth chemical and industrial works in the south, has been a preoccupation. Industrial concerns have always taken priority over domestic use, and even now industry discharges waste water so dirty that only 20% can be made drinkable with normal technology. More complicated—and expensive—processes are needed to purify a further 35%. The remaining 45% cannot be recovered. Lütke says that for the past 10 years fully half the country's investment in environmental protection has been spent on sewage and waste treatment. New two-stage plants use mechanical and biological processes to remove up to 70% of the wastes, but there are not enough of the plants.

Around Berlin, the bigger problem has been human waste. More than two-thirds of Berlin's sewage—East and West—used to go straight into the rivers and canals with minimal treatment. Pundits predicted that watercourses would soon be choked with plants blooming on the wastes, and oxygen had to be bubbled into waters to keep alive the microbes that degraded the sewage. That is why East Berlin built five modern sewage plants, each of which has added a third step to the processes being used around Leipzig: a system devised by East German scientists that uses a combination of aerobic and anaerobic bacteria to get rid of excess phosphates.

The new plants proved impressive enough to persuade West Berlin to pay East Berlin to clean up some of its sewage. Indeed, so good is East German sewage technology that newer U.S. Coast Guard vessels incorporate waste treatment systems built in the GDR. It's a development Lütke is proud of: "In environmental technology, there are some things we have to give to others."

Unfortunately, though East Germany has sold its sewage technology abroad, most of the country has been left behind Berlin and the U.S. Coast Guard: more than half the country's sewage is still discharged without any filtering and the total organic matter in the water is the same as in West Germany, which has four times as many people.

Most of this ecological ruin is due to the ousted communist government's policies, which favored economic self-sufficiency over everything else, regarded waste-water treatment as a luxury, and prompted East Germany to burn mountains of the brown coal dug out of the ground around Leipzig. More than 90% of the country's electricity comes from this brown coal, accompanied by prodigious quantities of dust and sulfur dioxide: almost 6 million tonnes of sulfur dioxide and more than 2 million tonnes of dust in 1988.

East Germany enjoys some of the cheapest energy in the world, and the world's

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Patrick Piel/Gamma Liaison

A planner and his problem. *Key East German environmental planner Hans Lütke in his office during a recent interview with* Science. *Next to him are the smokestacks of the Espenhain power station, south of Leipzig.*

third highest energy consumption per capita, behind the United States and Canada. Naturally, it also suffers awful air quality and health problems. There are two cures: cut down on consumption and clean up on generation. The country is trying the first on its own, but will need help with the second.

Industry is also responsible for the country's airborne ills. In pushing for industrialization, East Germany used the plants it inherited after World War II, placed in southeast Germany to avoid Allied bombers. Chlorine manufacture, aluminum smelting, petrochemical refining—processes that use vast amounts of energy—have continued ever since, with outdated equipment and "with no heed for the environment," says environmental planner Lütke. Calls throughout the 1960s and 1970s to shut down the worst offenders went unheeded, and actually backfired. Threats of closure meant that "they spent no money on environmental equipment." Pollution grew.

No new science and technology is needed to fight the filth, just investment in modern factories and equipment. The East Germans have, for example, installed western-built scrubbers to clean smokestack fumes—but at only two power stations; it was all they could afford.

"It's a question of money," says Wolfgang Mundt, director of the Institute of Atmospheric Research and Geomagnetism. Mundt fears that an expanding economy will require more—not less—energy and that as supplies of lignite are becoming exhausted, East Germany is moving to even dirtier fuels.

Although he recognizes a short-term problem, Lütke is hopeful that investment by the West will create new, energy-efficient factories. The West German environment ministry has set aside DM 1 billion ($600 million) over the next 4 years for joint projects to upgrade industry and reduce emissions. The money is intended to entice private investment, not replace it. One of the first projects is a DM-7-million contract for smog detectors to be made in West Germany and fitted in East Germany, helping industry there to comply with recent antismog legislation.

On the generating side, nuclear power cannot help replace brown coal, for political reasons. East Germany has four Soviet-built reactors, but two have already been shut down as a result of pressure from West Germany. "They are not up to western Europe's standards of security," Lütke admits. A spokesman for the West German environment ministry said a joint team was investigating the reactors to see whether they could "reach the same standards as our reactors. They may have to be shut forever. There is no question at the moment of building new nuclear reactors." Other substitutes for brown coal may be developed. Lütke foresees a shift to oil and gas, even though those resources will have to be imported. "Our country will be able to make new products for the world markets, and then we will be able to import gas and oil," says Lütke, who is nothing if not optimistic.

While they wait for investment and new technology to help them clean up their act, the East Germans have not been idle. As an emergency measure the recent interim government quickly shut down the worst offenders. An aluminum plant, a viscose manufacturer, and a copper and silver refinery have closed down in the past year. Several more are slated to stop in the next few months. That will reduce energy consumption. The overall plan calls for lignite production to be cut from 300 million tonnes last year to 200 million tonnes this year.

He is less sanguine about the effects of East Germans replacing their ancient automobiles. East Germany has roughly one car for every five people, compared to West Germany's one for every two people. (The U.S. boasts one for every 1.5.) Lütke reckons it will take 10 years to reach West Germany's level of auto engineering. Long before that, as standards of living rise, East Germans will trade up, mostly to older cars from West Germany. That fleet will seem cleaner than the present one, but will need costlier fuel and create more problems than it solves. New old cars, probably drop-outs from West Germany's ever more stringent emissions tests, could give environmentalists an entirely new headache in the form of nitrous oxides. At present, Lütke says, the dirty exhaust contains mostly soot and carbon monoxide; nitrous oxides are not a major problem. But they may become one.

The overall environmental plan includes more waste management and a new series of national parks and reserves, an interesting portion of the peace dividend as the army gives up some of its training grounds. Will all this come about? Lütke concedes that in the past ministries other than his had the upper hand. "We have been in second place, and the state of our environment shows that. But," he adds, "industry is starting to see that the way of the last 20 years cannot be the way of the next 10."

Steinberg, the new minister, though not ready to talk about plans for East Germany's environment, is believed to be sympathetic to Lütke's report. A spokesman for Steinberg's party, the Christian Democrats, which gained the most seats in March's elections, said: "First we have to form a government. Then we will see about policies." ■ JEREMY CHERFAS

NIH: The Endless Search

The search for a new director of the National Institutes of Health that began last summer may finally bear fruit as this summer begins. While a special panel of advisers to the Secretary of Health and Human Services (HHS) has been trying to redesign the top spot at NIH to make it attractive to an attractive candidate (*Science*, 9 March, p. 1176), the search committee has produced its second short list of men for the job.

Included are David Korn, dean of medicine at Stanford, and Leon Rosenberg, dean at Yale. *Washington Fax*, a biomedical newsletter, reports that Claude Lenfant, director of the National Heart, Lung, and Blood Institute at NIH, and Carl Kupfer, director of the National Eye Institute, are on the list. Another "insider" candidate is rumored to be Frederick Goodwin, head of the Alcohol, Drug Abuse, and Mental Health Administration. However, speculation about the latter three "candidates" is tempered by the fact that a number of search committee members want someone from the outside for the director's job.

The advisory committee that has been working to restore to the NIH directorship authority that has eroded as HHS officials assumed more decision-making control will hold its third and final meeting within the next couple of weeks. James O. Mason, assistant secretary of health, has agreed that the job will not be offered to anyone until that committee has its last shot at writing a new job description for the post.

Earlier efforts to recruit a director came to a miserable end when a mid-level staffer in the White House personnel office asked the search committee's previous nominee, Washington University chancellor William Danforth, about his views on abortion. Declaring that such a litmus test was utterly inappropriate, Danforth withdrew. The White House has since said that abortion will no longer be the key determinant in evaluating candidates for NIH.

That pledge may soon be put to the test. On sensitive issues like abortion and fetal research, Rosenberg and Korn are clearly liberals by the Administration's standards. ■ BARBARA J. CULLITON