

Metals and the Wealth of Nations

International agencies such as the World Bank and Asian Development Bank have often presented mining to poor countries as a key to development. Mining, in this view, can attract substantial foreign investment. Mining can drive economic growth. And indeed, there are some national mining sectors that would appear to support this idea in one way or another. Mali, for example, shifted its main export from cotton to gold after undergoing World Bank-supported mining reforms. In Chile, copper production has been an important driver of economic growth; in Botswana, diamonds have played a similar role.⁵⁶

But this apparent success can come at considerable cost. In Chile, as elsewhere, mining areas have suffered extensive environmental degradation. Success can also be very difficult to reproduce. Botswana's diamond production is closely linked to the DeBeers cartel, which keeps diamond prices artificially high. Very few if any other mined products have a similar history of high, stable prices.

When you look at the industry's general economic record, the picture is actually quite grim. For the most part, mineral-rich developing countries have some of the slowest growth rates in the world, and the highest poverty rates—a phenomenon economists call “the resource curse.” (See the table for examples pertaining specifically to mining.) Harvard economists Jeffrey Sachs and Andrew Warner studied 95 developing countries that had high ratios of natural resource exports relative to gross domestic product (GDP) for the period 1970 to 1990. They found that the higher the dependence on natural resource exports, the slower the per capita growth.⁵⁷

There are several reasons why mining is a poor bet for economic growth. In the first place, despite its

colossal environmental and social deficit, and its gargantuan appetite for energy (which claims, as noted earlier, up to 10 percent of the world's energy supply), metals mining accounts for only a very small share of world economic output—less than 1 percent.⁵⁸

And when it comes to particular deals, the tax breaks and other incentives awarded to large corporations for establishing mines are often so large that the industry is practically

exempted from contributing to national coffers. In the United States, for example, mining companies extracted \$11 billion worth of gold, silver, and other minerals from federal lands between 1993 and 2001, but paid the government only a tiny fraction of that in fees. In developing countries, it is often impossible to know how much revenue a mine is actually generating. In a recent study, the International Monetary Fund dryly noted “significant gaps” in the Malian government's accounting of gold exports.⁵⁹

Of course, mineral exports can generate some foreign exchange, but they do not usually do so in a very reliable way, because international metals prices fluctuate greatly. In many countries, these unstable trading

Mineral Dependence and Poverty Rates: Selected Countries, 1990s⁵⁵

Country	Share of Total Export Value from Non-Fuel Minerals (%)	Population Below National Poverty Line (%)
Guinea	71	40
Niger	67	63
Zambia	66	86
Jamaica	53	34
Chile	43	21
Peru	40	49
Democratic Republic of Congo	40	na
Mauritania	40	57
Papua New Guinea	35	na
Togo	30	32

na: not available

Close-Up: Your Cell Phone

The latest cell phones boast glowing screens, a multitude of ring tones, and face plates to match just about every shirt in your closet. But it's the materials behind the face plate that determine the phone's environmental impact. Among those materials are many different metals. The batteries, for example, contain cobalt, nickel, zinc, and copper. (There's more copper in the battery charger—that lode of copper is likely to be the largest mass of metal in the product.) But the biggest variety of metals is in the circuit board. About one-third of the circuit board is likely to be metal; another third is ceramic and glass; the remaining third is plastic. Among the metals on the circuit board are copper, gold, arsenic, cadmium,

lead, nickel, palladium, silver, zinc, and tantalum.

Tantalum production is a very troubled business. The electronics industry depends on this highly heat-resistant metal to make capacitors, tiny components that regulate the flow of current on circuit boards. Tantalum comes from coltan, short for columbite-tantalite, an ore that is mined in Australia, Canada, Brazil, and the mineral-rich Democratic Republic of Congo. Coltan mining in Congo's Okapi Reserve is destroying the habitat of the endangered lowland gorilla. It's also fueling regional conflict. During 1998 and 1999, Rwandan troops and their rebel Congolese allies took control of 1,000 to

1,500 tons of coltan stocks. They forced Congolese farmers off coltan-rich lands and arranged for Rwandan prisoners to mine coltan in exchange for reduced sentences. But coltan is hardly the only "conflict mineral." Armies in the Congo and elsewhere have fought over lands rich in gold, copper, cobalt, diamonds and other gemstones.⁶³



Sketch: Chris Engnoth

prices have contributed to a deepening of the national debt. When prices are high, governments can find it hard to resist pressure to borrow against the export revenue; when prices fall, as they inevitably do, it may become difficult to pay interest on the new debt.

Yet another shortcoming of the sector is its employment record. Metals mining is no longer a strong generator of jobs. The formal sector employs just 2.75 million people—just 0.09 percent of the global workforce—and that number is in rapid decline. According to the ILO, one-third of all mine workers in 25 major mineral-producing countries lost their jobs between 1995 and 2000. (The downsizing is due primarily to increasing mechanization.)⁶⁰

Nor is the industry very effective at stimulating production in other economic sectors. Almost all of the metal extracted in poor countries is exported as the ore itself. But most of that ore's economic value is realized in subsequent stages of processing and, of course, in manufacturing. These activities rarely take place in poor mining countries.

Heavy dependence on mining also correlates strongly with

a wide range of serious social problems, such as high levels of poverty, low levels of education, and poor health care. Nearly half of the world's poorest countries show this dependency: mining is their biggest export sector. And over the past couple of decades, the poverty in these mining-dependent countries appears to have deepened: according to the UN Commission on Trade and Development, the proportion of people living on less than \$1 a day in poor mineral-exporting countries rose from 61 percent in 1981–1983 to 82 percent in 1997–1999.⁶¹

And finally there is the link with corruption and violence. A study by the International Monetary Fund found a strong connection between heavy dependence on mining and government corruption. That finding correlates with the "Annual Corruption Index" of the UK-based organization Transparency International: the index rated 26 of 32 mineral-dependent countries as corrupt or highly corrupt. And a recent World Bank study found that countries with a high degree of dependence on primary commodities like minerals have a risk of civil war that is 40 times greater than countries with no primary commodity exports.⁶² ■

Paying for the Clean-Up: No Guarantees

The aftermath of a large-scale mining operation is generally a landscape of devastation: thousands of hectares of poisoned, rubble-strewn land drained by acidified streams that will likely remain too polluted to support their full complement of life for thousands of years to come.

In many developing countries, the companies that have enriched themselves through this destruction are under no binding obligation to attempt to mitigate it. The Meridian proposal for Esquel, mentioned on page 11, is typical: Argentinean regulations have not required the firm to plan for the mine's closure or to deposit any cash to cover the eventual clean-up.

Wealthier countries like the United States usually attempt to avoid this end game by requiring (at least in theory) that the mining company set aside a certain amount of money up front to cover expenses necessary to meet environmental standards—money for water treatment, tailings pond liners, and so on. But these funds have fallen far short of the actual costs of even basic reclamation work around defunct mines, some of which are among the world's most contam-

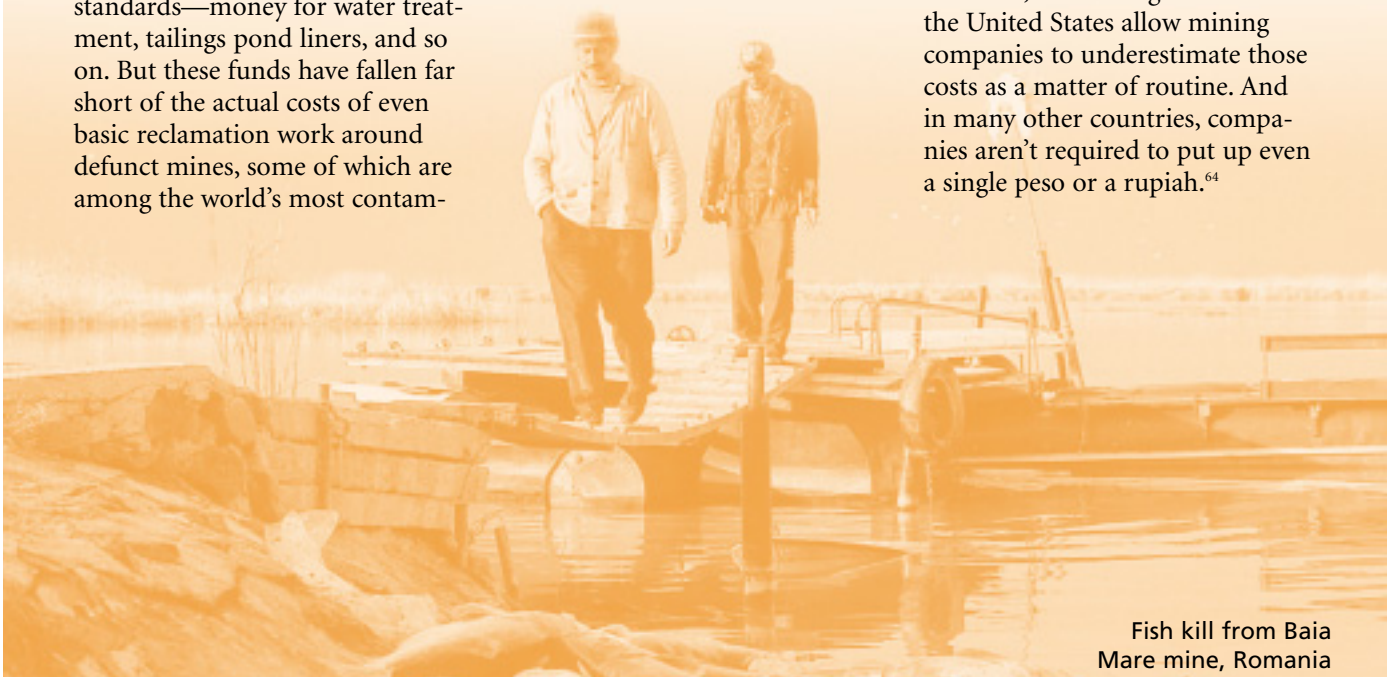
inated places. Mining companies in the United States, for instance, have thus far underestimated the costs of closing their operations by as much as \$12 billion, according to a 2003 estimate.

And when the deposit runs out, the taxpayers have to step in to pick up the tab. That's what happened in Colorado in 1992 at the Summitville gold mine, when the Canadian owner, Galactic Resources, declared bankruptcy and walked away, sticking US taxpayers with a \$200 million reclamation bill. The 3,300-hectare mine had been leaking cyanide into the Alamosa River since its first week of operation; by the time it closed, it had destroyed 25 kilometers of the river. Galactic had mined \$130 million worth of metals at Summitville—a sum so small it wouldn't even cover the mess it left behind.

Or consider what happened in January 2000, at the Baia Mare

mine in Romania, when a tailings dam failed, releasing more than 100,000 tons of wastewater laden with cyanide and heavy metals into the Tisza river. The toxic plume made its way into the Danube, killing 1,240 tons of fish and contaminating the drinking water of 2.5 million people. Faced with skyrocketing cleanup costs and only partially covered by its insurance, Esmeralda Exploration, the Australian company that held the principal interest in the mine, went into a form of bankruptcy to protect its shareholders. Unfortunately, the citizens of the countries affected received no such protection.

Taxpayer-funded reclamation is an enormous, hidden subsidy of the mining industry. "Subsidy" may not be the official term for such liability, but that's how it is treated, even in the mining regulations themselves. Despite decades of experience with reclamation cost overruns, current regulations in the United States allow mining companies to underestimate those costs as a matter of routine. And in many other countries, companies aren't required to put up even a single peso or a rupiah.⁶⁴



Fish kill from Baia Mare mine, Romania