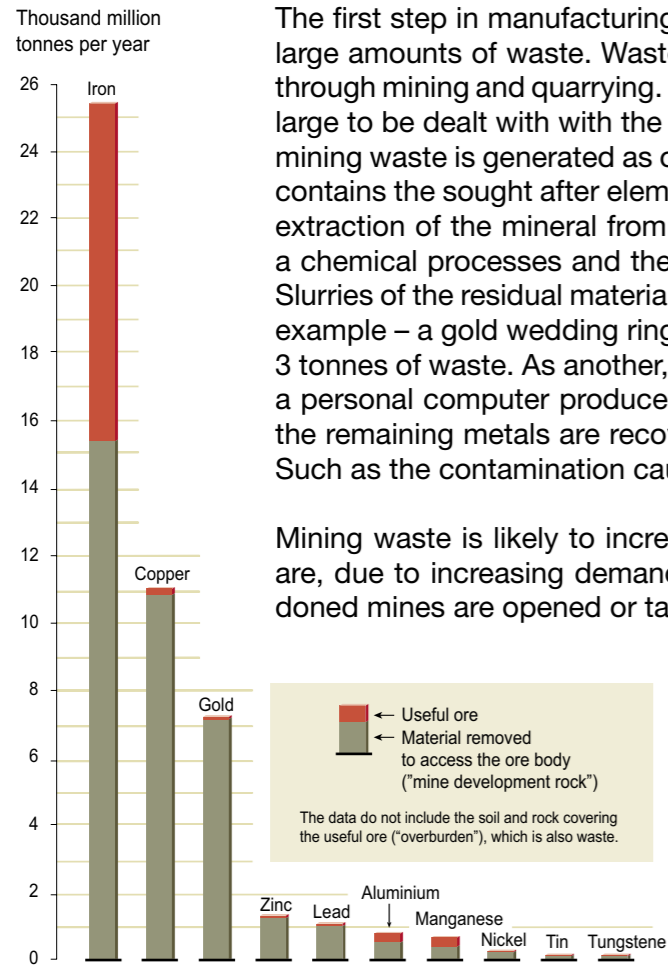


Mountains of altered rock, lakes of gleaming liquids



Source: Worldwatch Institute, 1997 (figures for 1995).

Mining waste takes up a great deal of space, blights the landscape and often affects local habitats. By its very nature it can constitute a serious safety hazard. Poor management may allow acidic and metals containing drainage to the environment, it can result in contaminated dusts be spread by the wind, and can also pose a physical risk. Indeed, the failure of structures such as dams built to contain mining waste has led to many accidental spills with extremely serious consequences.

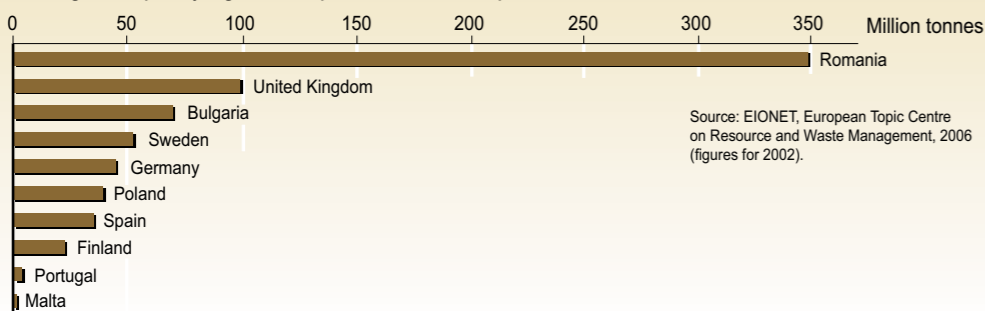
The first step in manufacturing any product – mining raw materials – produces large amounts of waste. Waste statistics do not usually include waste created through mining and quarrying. Far from being negligible the volume is simply too large to be dealt with with the usual waste management instruments. So much mining waste is generated as only a proportion of the material removed actually contains the sought after element – and then often in small concentrations. The extraction of the mineral from this material then requires both physical and/or a chemical processes and then again leaves residues in significant quantities. Slurries of the residual material (tailings) are channelled into tailing ponds. As an example – a gold wedding ring containing five grams of gold would often leave 3 tonnes of waste. As another, the extraction of the various metals contained in a personal computer produces a total of 1.5 tonnes of waste. In many places the remaining metals are recovered and reused. However, there are problems. Such as the contamination caused by mixing them.

Mining waste is likely to increase in the future as prices for natural resources are, due to increasing demand, on the rise, and new and or previously abandoned mines are opened or taken into operation again.

Densely packed technology and a global problem

In 20 years mobile phones have shrunk from 5 kilograms to less than 100 grams. We can use them to make phone calls of course, but also to take snaps, watch films and generally entertain ourselves, quite forgetting their ecological footprint. Many precious metals (cadmium, mercury, tungsten, etc.) are used in various parts of the device. One of the most damaging is tantalum (obtained from coltan ore). It is found in Australia, Canada and Brazil, but also the Democratic Republic of Congo (RDC). Unscrupulous coltan mining practices have been condemned by the United Nations. It is cheaper and cleaner to recover precious metals from used mobile phones whenever possible.

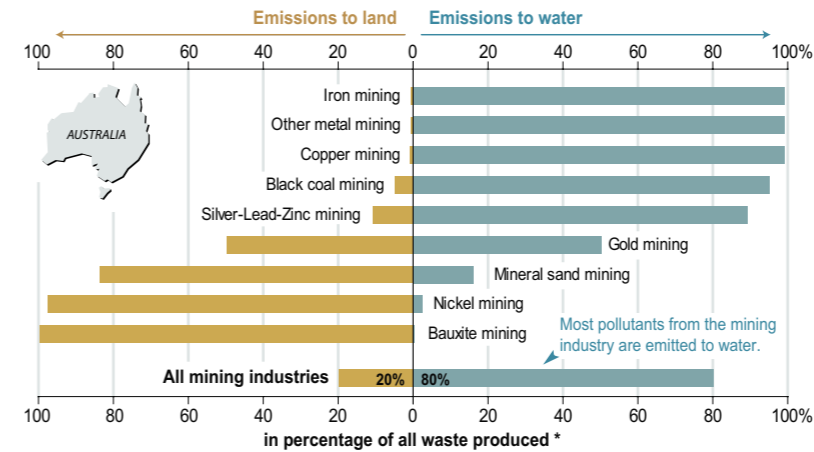
Mining and quarrying waste quantities in Europe



Source: EIONET, European Topic Centre on Resource and Waste Management, 2006 (figures for 2002).

At 29 per cent of total wastes generated and with over 400 million tonnes of materials, mining and quarrying account for the largest stream of waste generated by countries that are members of the European Environment Agency.

Mining waste emissions to land and water in Australia



* Emissions to air are not taken into account (they are not considered as "waste" per se). Source: Australian National Pollutant Inventory, 2006 (figures for 2004).

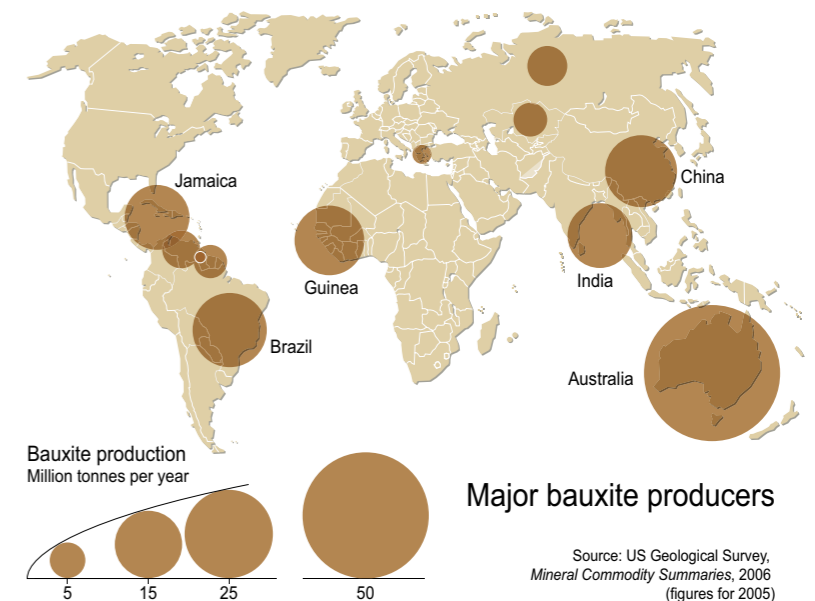
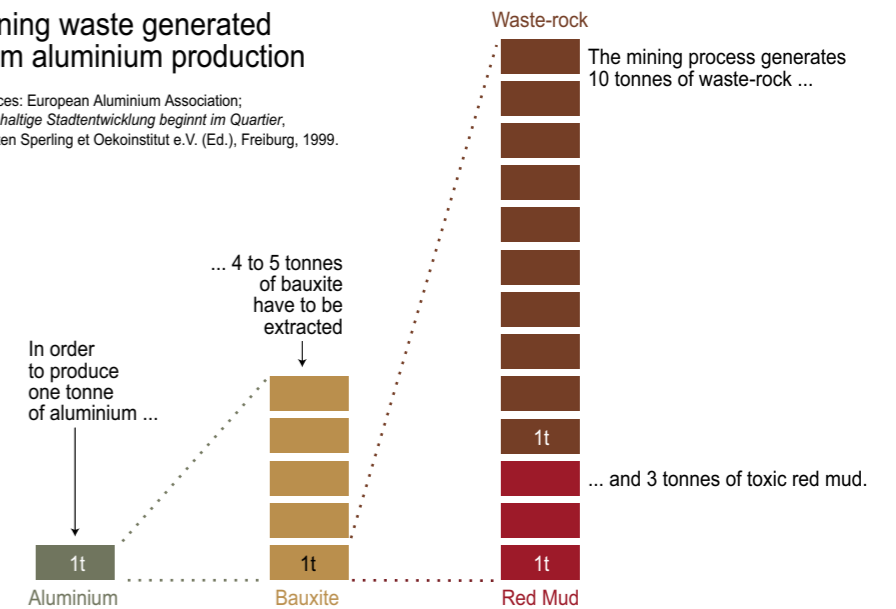
PRTs (Pollutant Release and Transfer Registers) are databases of chemical releases to air, land and water from factories or other sources. Targeting a broad public audience, they support our right to information on toxic waste and air pollution. The Australian National Pollutant Inventory (NPI), for instance, not only provides the public with free access to data on its website but also helps facilities estimate and report emissions.

The production of aluminium involves three main stages: mining bauxite ore, refining bauxite to alumina (Al₂O₃), and then smelting alumina to produce aluminium. Bauxite comes from open mines mainly located in tropical and subtropical regions. On average it takes 4 to 5 tonnes of bauxite to produce 2 tonnes of alumina, yielding 1 tonne of aluminium. The main solid by-product of the alumina extraction (Bayer process) is red mud and roughly 3 tonnes is left for every tonne of alumina.

Recycling 1 kilogram of aluminium saves 5 to 8 kilograms of bauxite, 4 kilograms of chemicals and 14 kilowatts of electricity. It also produces 95 per cent less air pollution. As much of the bauxite is mined in the tropics and some in tropical forests; the recycling of aluminium also helps save tropical forests.

Mining waste generated from aluminium production

Sources: European Aluminium Association; Nachhaltige Stadtentwicklung beginnt im Quartier, Carsten Sperling et Oekoinstitut e.V. (Ed.), Freiburg, 1999.



Source: US Geological Survey, Mineral Commodity Summaries, 2006 (figures for 2005)

ON THE WEB
 The UNEP/OSCE/NATO/UNDP publication on sustainable mining practices: www.envsec.org/see/pub/mining-fullb.pdf
 European Commission on mining waste: ec.europa.eu/environment/waste/mining