Ten reasons to be cheerful, part 4: Resources [1]

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The mantra is "The world is running out of scarce resources; we are leaving none for our children." It is not true, and resources are my fourth reason for optimism.

4. Resources

In a famous 1980 scientific wager, Julian Simon invited Paul Erlich, author of "The Population Bomb," to choose 5 resources he thought were being depleted, and bet they would fall in price over the decade. Erlich chose copper, chromium, nickel, tin and tungsten, and duly paid up when their price fell over a decade, indicating relative abundance rather than scarcity.

We are indeed using resources, but our ability to extract new sources is advancing faster than our rate of use, meaning that they are becoming relatively more plentiful, and therefore falling in price over the decades. Two things happen as we use resources. If they become more scarce the price rises, motivating us to find new sources of supply and to use less. We also develop cheaper substitutes.

Famously in the case of copper we developed fibre optic cables to convey our signals as copper rose in price. We use plastic pipes instead of copper ones to convey liquids because they are cheaper. The falling demand for copper means that world reserves are now estimated at between 25 and 60 years (depending on assumptions about growth rates), whereas at the time Erlich wrote, it was much less.

This is not to suggest copper will suddenly run out in 25 or 60 years. If it becomes scarce it will become more expensive, and people will use other things in its place. The reason the world is not running out of scarce resources is that the technology to locate and extract them is advancing year by year, and market prices motivate us to use it.

The Earth is nearly 4,000 miles from surface to centre, and we have barely scratched its surface. There are plenty of resources; all it takes is technology to tap them, and an incentive to do so. It also takes technology to develop substitutes, and carbon fibre, laminates and plastics are less resource-intensive than their predecessors.

It is not only our ability to tap new sources that advances: or skill at reclaiming and recycling previously used resources is also advancing. And crucially, our technical advances now enable us to stretch our resources further, using less of them to achieve the same effect. It all means that resources are not running out.

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