

We need to take a hard look at the Availability of Critical Minerals

written by Jack Lifton | January 20, 2023

Faith is accepting something as true that you can't prove or disprove. But anthropogenic climate impact enthusiasts rise from faith to fanaticism, because they refuse to even contemplate disproof.

A few years, or even a few centuries of non-reproducible, and therefore non-verifiable, temperature data, accepted on faith even though it cannot be repeated or verified, can be used to model a system, but not to prove that it accurately describes the future of the system. Any model must use only verifiable data collected, and the model must be tested successfully and repeatedly giving the same results each time in order to represent a true model of nature.

Most scientists until just a century ago believed that atoms were only a descriptive model designed by men to simulate the real world by reducing observable phenomena to entities whose properties could be treated as mechanical objects and the motions of which could be calculated by the as then developed mathematical systems of the calculus and statistics.

The properties of gases could be described and analyzed this way, but only by very few men who had mastered the mathematics and Newtonian dynamics, and this was done in successive additions to conceptual schemes until the systems broke down in contradictions. Thus the atom of antiquity became the atom of Dalton, then of Mendeleev, then of Rutherford, Bohr and Moseley, and beyond. We call the practical workers with atoms and their

combination "chemists." Today we accept their conclusions as true if and only if their equally qualified companions agree with them. We call this validation, "peer review."

For several centuries now students of nature have first mastered the work of those great minds that went before them and then spent most of their lives teaching others to do the same thing. A few of them go on to expand our knowledge and understanding of the world, and the great engineers sometimes work out how to devise uses derived from that understanding, so that even ordinary people could master in their daily lives devices such as the telephone, radio, television, the personal computer, the personal mobile phone, the automobile, the airplane, and so on.

Scientists and engineers rarely begin a project by examining the availability of critical materials necessary for the mass production of a technological device. They only want to prove a concept, either that the science allows the technology to function or that the device can be manufactured or mass produced at a cost the consumer or industrial buyer can afford.

Journalists and politicians and most bureaucrats and academics today are simply not specifically well educated enough to judge the availability of critical materials. Nor are they clever enough, generally, to know who to ask if a natural resource can be produced in sufficient quantity, economically, to support a mass produced technology.

The mineral abundance data is out there. We have extensive surveys of the mineralogical makeup and concentration of most discoveries of critical minerals that have been made, but for some reasons, more and more I believe, "political reasons," policy makers do not want to ask whether we have access to sufficient economically recoverable mineral deposits, or if there is economic processing capability and capacity to put them

into end-user form.

Those who tell us that we must change the world to survive or face extinction have been around for a long time. But rarely have they had the ability to destroy our civilization through mandating very bad choices.

The critical minerals for the technologies to reduce the emissions of carbon dioxide by changing the way we produce and use electrical energy are not infinite in supply. Mines are not organic; they live and die when the grade (concentration) of the mineral falls below human technology's ability to produce it economically.

We can moderate our use of fossil fuels, but there are no technologies known or plausible that can replace them.

We need to take a hard look at what we're doing to our energy economy and how we can balance energy reality with energy fantasy. Critical minerals drive the ability of our society to manufacture the technologies for alternate production and use of electrical energy. Their availability is a very big part of that. It's time we took a very hard, informed by experience and data, look at it before we waste all of the time and effort it took to achieve a low-cost energy economy.