

Disasters Avoided

AVOIDING EXISTENTIAL DISASTERS

Some disasters could lead to human extinction.

- Some threats are said to be existential, but the potential for human extinction is low.
- Other low-probability threats have the potential for human extinction.

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Some threats are suggested as leading to human extinction, but are unlikely to do so:

1. Human-caused climate change, in the absence of actions known to avert the problems, is on track to make human lives and livelihoods difficult, including extensive mortality. No scenario of human-caused climate change seems to produce a climate more extreme than in the geological past. The worst scenarios still leave extensive tracts of the planet available for the remaining human population.
2. Similarly, Ice Ages are inevitable due to the Earth's orbital cycles. Significant societal difficulties with extensive human mortality are likely. Yet extensive tracts of the planet would remain available for survival of the remaining population.
3. Space objects, such as asteroids and comets, hitting the Earth have been implicated in previous mass extinctions. An impact could wipe out hundreds of millions of people immediately and lead to a major global cooling, killing many more hundreds of millions. Billions of people are likely to survive to help rebuild.
4. Similarly, flood basalts have previously covered India-sized areas with lava dozens of metres deep over tens of thousands of years, rapidly changing the climate and being implicated in mass extinctions. Casualties would be high, but enough humanity would be expected to survive to rebuild.
5. A supervolcanic eruption would likely kill extensively right away and from subsequent climate change, but leave plenty of survivors.
6. The Earth's magnetic field flips regularly. When it next does so, most of our current electronics, including information and communications systems, would be adversely affected, as would many animals. Our society would be forced into a different trajectory with huge disruption and extensive deaths, but not likely human extinction.
7. Similar consequences would result from a major geomagnetic storm.

Some threats have the potential to cause human extinction:

8. Some stars suddenly emit radiation bursts or die in powerful explosions. They would blast the Earth, with little prospect for human survival. These phenomena might have led to previous mass extinctions.
9. A mini black hole would be hard to detect at times. It could force the Earth into a different orbit or it could collide with and destroy our planet.

Threats 2, 4, 5, 6, 8, and 9 are entirely from nature and their consequences cannot currently be avoided. From these, threat 2 is the only one known to provide ample warning. Planet-wide vulnerabilities cannot be reduced to these threats, so they might produce "natural disasters".
