



The DART team cheers after receiving confirmation that its spacecraft had successfully collided with the asteroid moon Dimorphos.

It's time to step up planetary defence

After NASA's DART asteroid-deflection experiment, a fully funded asteroid-detection telescope is an equally pressing priority.

It was a crash for the ages. On 26 September, 11 million kilometres from Earth, NASA's Double Asteroid Redirection Test (DART) spacecraft met a spectacular end as it hurtled into a tiny asteroid moon named Dimorphos. This was the first test of whether humanity can alter the orbit of a space rock, by accelerating Dimorphos in its orbit.

Both Dimorphos and its parent asteroid are harmless, but NASA wanted to test whether it's possible to deflect a dangerous space rock, should one ever head towards Earth. Researchers should know the answer relatively soon. But, at the same time, DART has shed discomfiting light on the world's faltering efforts in asteroid defence – particularly in locating the asteroids that could be dangerous.

The risk of such an errant body crashing into Earth and causing major loss of life is small, but not zero – scientists estimate that relatively large space rocks strike every few centuries to millennia. An event with catastrophic consequences – even if it is very unlikely to happen – must be taken seriously. After all, the dinosaurs died out 66 million

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years ago when an asteroid blasted what is now Mexico.

That's why it's time for NASA to take the next step to protect the planet from killer space rocks. The agency needs to fully fund the Near-Earth Object (NEO) Surveyor, a space telescope that will hunt for dangerous asteroids.

As the space agency of the world's leading spacefaring nation, NASA has ended up with the overwhelming responsibility of hunting for asteroids and saving civilization from such threats. In 1994, the US Congress instructed NASA to look for any potentially threatening asteroids that are at least 1 kilometre wide. The agency completed that task in 2010. NASA-funded scientists are now using several telescopes around the world to find smaller space rocks that are at least 140 metres across (Dimorphos measures some 170 metres in diameter). The smaller rocks are still dangerous: they could cause regional devastation. The researchers have found nearly 30,000 of them so far. But, with current resources and instrumentation, it will take three decades to finish the job.

The small – but non-zero – risk of a dangerous space rock popping up sooner means this is not good enough. NASA has been slow-walking the development of a custom-built space-based telescope to search for near-Earth objects for many years. It had given small amounts of money to a predecessor mission before embarking on the first stages of NEO Surveyor in 2019. But earlier this year, just as scientists were preparing to finalize the mission's design, NASA proposed slashing its budget for the current fiscal year from an expected US\$170 million to \$40 million. That would effectively delay the telescope's launch from 2026 to 2028, if not later.

In a rare (and welcome) moment of bipartisan agreement, Congress has indicated that it will restore some of the proposed budget cuts. But this funding would go only partway, providing around \$80 million or \$90 million for NEO Surveyor – not enough to keep the project moving forward effectively. The longer it takes to build the telescope, the more expensive it will be in the end.

Last month, NEO Surveyor passed a preliminary design review, an important step in confirming the mission's viability. By the end of this year, NASA needs to decide whether it will commit to launching the telescope. In April, an expert panel on US planetary-science priorities gave NEO Surveyor a full-throated recommendation to proceed. Other nations are unlikely to step up and undertake such a mission. For the sake of the planet, it is time to support the mission whole-heartedly and get it launched.

Laggard countries risk slowing the fight against AIDS, malaria and TB

The United Kingdom and Italy need to renew their commitments to banish these major infectious killers from the world.

For many people, the money that flows from the Global Fund to Fight AIDS, Tuberculosis and Malaria quite literally makes the difference between life and death. The fund is estimated to have saved 50 million lives in low- and middle-income countries in the two decades since it was established by the leaders of the international community, researchers and philanthropic funders. A conference held last month to replenish the fund received US\$14.25 billion in pledges from donors – a record, although still considerably short of the \$18-billion target.

Before the pandemic, the annual death toll from malaria, AIDS and tuberculosis (TB) was around 2.4 million. But there are fears that this number might since have risen, owing to the diversion of resources to treat COVID-19, and difficulties people faced in accessing treatment during lockdowns.

Despite these challenges, the Global Fund continued its work. In 2021, it provided more than 23 million people with antiretroviral therapy, treated over 5 million people for TB and distributed some 133 million insecticide-treated mosquito bed nets to protect against malaria.

A pandemic, climate change and escalating global instability all offer a perfect opportunity for infectious diseases to resurge. But the Global Fund says that if it can



India has the world's highest burden of tuberculosis.

Now is not the time to go slow.”

reach its current target, another 20 million lives could be saved and 450 million infections could be averted over the next 3 years. On top of that, six countries could eliminate malaria by 2026.

Most existing governmental donors (and some new ones) have stepped up with pledges for the latest funding round, covering 2023–25. Many pledges are 20–30% higher than those made during the previous round, which covered 2020–22. France has said it will donate \$1.59 billion, Germany \$1.29 billion, Japan \$1.08 billion, Canada \$904 million and the European Commission \$710 million. The United States, the fund's largest donor, has so far pledged \$6 billion. At last month's conference, US President Joe Biden pledged to donate \$1 billion for every \$2 billion that the fund receives from elsewhere. Among philanthropic donors, the Bill & Melinda Gates Foundation is pledging \$912 million. But the funder list contains two notable omissions: Italy and the United Kingdom.

In the last funding round, the United Kingdom pledged \$1.7 billion and Italy \$178 million. If both countries were to commit these same amounts – and ideally more, to match the increased commitments made by others – that could potentially unlock more from the United States, bringing the fund considerably closer to its target.

Both Italy and the United Kingdom are going through political transitions, a factor that is delaying spending decisions. Last month, Italy elected a new government and the United Kingdom changed its prime minister. The two countries have just a few weeks to confirm their support, and the Global Fund has said in a statement that it is assured of the United Kingdom's commitment. Both countries need to state their intentions clearly, and quickly. We know from the experience of high-income countries that AIDS, malaria and TB can be controlled or eliminated.

Twenty years ago, the international community took the bold step of helping to establish the Global Fund to eliminate these diseases from the world. Now is not the time to go slow.