The only source of energy sufficient on its own

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To face the changing climate the world must forgo the medium- and long-term use of fossil fuels and stop deluding itself that renewables controlled by the vagaries of the weather can be a reliable replacement. We have long neglected the provision of the science education that would ensure that everybody trusts the workings of the natural world around them. Consequently, fossil fuel interests still dictate investment decisions that endanger human survival. Only nuclear energy, welcomed by a confident and better-informed population, offers a viable way forward.

As I write (29/4/22) the temperature in Delhi reaches 46C, nine degrees above body heat. That is life-threatening. As the temperature rises, all should realise that the Industrial Revolution powered by fossil fuels has reached its terminus. Furthermore, wind and solar energy sources are far too weak and unreliable to power the modern world with its current population. These renewables were rejected as inadequate already in the 18th Century, and no amount of technological wizardry can produce energy when it is not there. Today the financial heft of the dying carbon industries is a problem. In its last gasp of self-interest it is encouraging investment in huge solar, wind and hydro plants. These smother nature and our fellow creatures, fail to deliver the 24/7 energy required and are vulnerable, by their very size, to the extreme weather events that a changing climate brings.

Faith has been placed in electric batteries to store the intermittent energy produced by renewables. These are beneficial for short term and small-scale storage. Despite massive investment over many years these batteries still fall short in two respects. Firstly, the duration and scale of storage remains a factor of 100 too small. From 21st to 28th March 2022 the output of all UK offshore wind generation fell from 10 GW to an average of 1.5 GW. Because the power of the wind depends on the cube of the wind speed, such a shortfall happens if the speed halves. To make up the missing power over that week required 1500 GW-hours of energy, if not from a standby fossil fuel plant, then from a fully charged battery. That is a huge amount of energy – as much as 1700 explosions the size of the one that devastated Beirut in August 2020. But that could never happen? That brings up the second point. Current Lithium-ion batteries do cause dangerous fires, even on the scale of regular goods, as noted by shippers, and of e-bikes, by the London Fire Brigade. The largest grid storage battery in Australia had a serious fire in July 2021, and others have occurred in South Korea, Beijing, Liverpool and Arizona, some with explosion and loss of life. Such is the desperation of the authorities to be seen supporting large batteries that proper regulation of their planning and safety is notably absent.

Not only are renewables and large scale batteries unable to do the job, but they are unnecessary. Nuclear fission can provide all the benefits of fossil fuels, but without any environmental impact or safety problem. Safety? Consider: nuclear science was pioneered and then applied in medicine by Marie Curie. It is used in every clinic throughout the world to diagnose and cure disease and has been for 120 years. It is well established that low and moderate exposures to radiation are harmless to life, because life evolved in an environment with a large range of exposure to natural radiation. If it had not acquired effective protection, we should not be here.

If nuclear fission is so beneficial, why is it avoided with a mixture of horror and disdain? A number of interlocking reasons have ensured that few people know anything about it beyond the sensational headlines. Fear is self-sustaining, for instance for animals who run away from fire. But humans suppressed their fear and studied fire. That was a major step forward for the human race. But in the

case of nuclear energy, people still want to run away! If instead they studied it, they would learn how it is safer than fire, in part because it is not contagious or inclined to spread.

Since the 1950s fossil fuelled interests have had good reason from their perspective to discourage competition from nuclear energy and a recent lengthy study published by the Health Physics Society has shown how thoroughly they did so. Many prosperous careers have been built on exploiting the general apprehension of nuclear radiation. Expertise in radiation protection is an industry, sanctioned by the UN and predicated on bogus science. After more than 70 years it is well dug in like the fossil fuel industry, though not in the common interest.

For a simple view of radiation safety, consider the fate of the wildlife in the radioactive Evacuation Zone at the site of the Chernobyl nuclear accident. The animals, spared the influence of the nuclear horror narrative, are seen to be thriving and enjoying the absence of humans.

When the earthquake and tsunami struck Japan in March 2011, everyone knew that they should do as they had learnt and practiced at school. So, despite the destruction and loss of nearly 20,000 lives, society recovered. However, when the tsunami caused an accident at the Fukushima Daiichi nuclear plant, nobody had a plan. The public had been reassured that it would never happen – a dangerous public policy that offers apparent stability in a hierarchical society. In the event, nobody at all died from the radiation, but 1600 people died in the panic and chaos of the unplanned evacuation. The lack of education and trust was mirrored around the world. In Japan unwarranted sums were paid in compensation and there, as elsewhere, costly safety upgrades were made to plants without justification. Other plants were closed and plans shelved, with power to be sourced from fossil fuels. That was the industry that benefited, as it has again now with Russia's invasion of Ukraine.

But the fossil fuel industry should be shut down. Nobody knows how uninhabitable the environment may become in 50 or 100 years, but, if places like Delhi are to have any chance of viability, nuclear should be the primary source for all future energy supplies worldwide. First should come a reform of education. Everyone in the world should be able to appreciate how nature provides the energy that he or she uses, instead of leaving it to experts. Everybody already learns about fire, human waste and sunbathing from an early age – each of which, evidence shows, is more life-threatening than nuclear technology. Such widespread education should be pitched to attain a spirit of trust and confidence in society and the physical world. It's fear that kills and ignorance that allows it to happen.