

Ten positive events in 2023 - Change? Yes, for the better

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It's the time of year for reflection. Let's face it, globally, we have been hit hard economically and geopolitically. The Russia-Ukraine war and now the Israeli-Palestine conflict – with the horrendous loss of life and wanton



destruction – have impacted families and businesses all around the world.

A constant diet of doom and gloom is depressing and unproductive. We have tried to find a hint of reassurance in the year's events and here's a quick summary of some of the global positives that may have passed you by - in no particular order.

Breakthroughs in quantum computing: Everyone wants to be unhackable, and we are closer than ever to developing communication channels that could make this possible. Quantum computing has continued to evolve, with advancements in both hardware and software. These breakthroughs are paving the way for solving complex problems far beyond the reach of classical computers, potentially revolutionising fields like cryptography, materials science and pharmaceutical research. The emerging field may enable exponentially faster, more time- and energy-efficient machine learning algorithms. This, in turn, could yield more effective algorithms for identifying and defeating cyberattack methods.

Advancements in AI and machine learning: The doom-mongers would have us believe that artificial intelligence is purely negative. But AI and machine learning are used in a wide range of applications that many of us have come to rely on - from personal assistants like Alexa and Siri, to cars, factories, farming and healthcare. Although not perfect, AI has the power to make massive improvements to our quality of life.

Significant progress in the capabilities of AI, especially in natural language processing and understanding, includes more sophisticated AI models that can process and generate human-like text and improve decision-making in businesses. AI Agents are now capable of efficient collaboration with teams to address a variety of prompts and queries, to complete tasks, manage workflows and boost productivity. This is great news for businesses who are nimble enough to take advantage of these developments.

Plastic-digestion bacteria: Academics at Hokkaido University, in collaboration with the Mitsubishi Chemical Group, have discovered a marine bacterium that can degrade a plastic that only biodegrades to a limited extent in marine environments. The researchers identified several types of marine bacteria capable of degrading PBS and have isolated the enzyme responsible for this degradation, named PBSase. Plastic pollution in the ocean is a global problem and this is a step forward in gaining new understanding of plastic behaviour in this environment and new technologies to deal with the pollution.

Another team of scientists – this time at the Royal Netherlands Institute for Sea Research – have conducted experiments showing that the bacterium *Rhodococcus ruber* can digest plastic. In a laboratory setting with artificial seawater, they demonstrated that this bacterium could break down about 1% of the fed plastic per year into CO₂ and other harmless substances. This study provided the first direct evidence that bacteria actually digest plastic into CO₂ and other molecules.

Our planet's greatest carbon sinks: Britain is backing a moratorium on commercial deep-sea mining, following criticism from scientists, MPs and environmentalists of its previous stance in support of the emerging industry. This will put an end to industrial-scale exploitation which is detrimental to marine life and the ocean's ability to absorb carbon dioxide.

Marine conservation: In the Congo, the government has approved the extension of the Conkouati-Douli National Park towards the Atlantic Ocean. This decision will strengthen the conservation of marine fauna, in particular marine turtles, dolphins and humpback whales.

Cultivation, drought prevention, water conservation: A Moroccan startup called Sand to Green is growing crops in the desert by transforming a patch of desert into a sustainable and profitable plantation in five years. The innovative and regenerative agroforestry model offers a sustainable solution to the challenges of advancing deserts, land degradation, food security and pressure on primary forests.

In Arizona, the Gila River Indian Community is constructing the country's first solar-over-canal project in an effort to address the ongoing drought that is affecting the Southwestern states. This new technology fits and supports their culture and tradition and marks a significant step towards future sustainability.

And, as part of the 'String of Wells' water conservation project, 163 defunct and abandoned open wells in the Virudhunagar district of Tamil Nadu, India, have been rejuvenated and beautified. This project aims to prevent rainwater stagnation in the area and raise awareness of the importance of conservation of open wells. Locals are seeing water percolation inside the wells for the first time in years.

Anti-poaching efforts: South Africa's all-female anti-poaching unit, the Black Mambas, is a success story on two fronts. Their stated aim is about local wildlife conservation efforts – and, as they raise awareness of this and other environmental issues, they are also improving women's social standing and helping them gain economic independence.

Solar power accessibility: Solar power is now accessible for low-income households in Oakland, California, thanks to federal and state programs. This represents a significant shift as previously, only wealthier residents were able to take advantage of solar power.

Prevention of breast cancer: For many years, the hormone treatment anastrozole has been used to treat breast cancer and has now been licensed as a preventative option too. Recent trials show that it can reduce the incidence of breast cancer by almost 50% in post-menopausal women at moderate or high risk of the disease. Since anastrozole is off patent, it can be distributed cheaply. Win-win.

More Vitamin C than an orange: A women's group in Colombia's Amazon is successfully leading a sustainable and profitable business by harvesting Camu Camu, an acidic wild fruit with more vitamin C than any other food on the planet, according to researchers. Found in flooded areas of the Amazon rainforest, it may just be the next superfood to hit North American markets. Will we soon be taking Camu Camu tablets each morning?

Conclusion

We cannot undo the destructive and inhumane acts seen in various parts of the world throughout this year. We can, nonetheless, find some hope in the fact that there are those who seek to make positive differences to our planet and, in turn, to our lives. Now is a good time to reflect, to be at peace, to be grateful and to honour our fellow beings.

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