Gadgets that give back: awesome eco-innovations, from Turing Trust computers to the first sustainable phone

How to give your old tech new life in Africa – and more

Students with Turing Trust computers at Prabon Junior High School in Ghana's Ashanti Region © The Turing Trust

The juicy new range of near-warp-speed MacBooks announced last month may well have your clicking finger

hovering over the “buy” button during the holiday period – the more so since we have all spent the best part of a year completely dependent on our computers for work, socialising and entertainment.

But what to do with your old computer? You could keep it as a backup machine, but there’s only about a one per cent chance you’ll ever need it. Trying to sell it is to invite a world of pain – fraudulent claims from buyers that it arrived damaged, attempts by dodgy people to extract the remains of data, and more gruesomeness. Nobody needs that.

So how about donating your old computers to an Edinburgh-based charity that does them up and gives them new life building digital literacy in villages in Africa? The Turing Trust even has a touch of technology stardust about it – it’s run by the great-nephew of Alan Turing, the founder of modern computing.

James Turing is the 29-year-old grandson of Alan’s solicitor brother, John, and also – he’s pretty sure – the only Turing involved professionally with computing. He came up with a brilliant formula shortly after he finished secondary school and went to Edinburgh University to study civil engineering and architecture. His solution to the routine wastage of working, but slightly outdated computers, is a triple philanthropic whammy: the computers give people who couldn’t possibly afford to buy their own machine the

chance to learn digital skills. The donated equipment – around 2,000 computers a year – is saved from being prematurely junked, with the environmental benefits accruing from that. And local volunteers, mostly young, who come for work experience at the Turing Trust's warehouse learn so much that dozens, James says, have gone on to careers in IT.

The Turing Trust asks for working PCs and Macs (laptops and desktops) under six years old, and also tablets and smartphones with chargers. It requests donors to send at their own expense, unless you are giving a large number of machines (the Scottish government is one such), in which case the Trust will arrange pick-up. And on the tricky subject of data security, if you're unsure how to permanently delete everything, it will do it – and provide you with a data-destruction certificate. To have the work done by a relative of the genius of Bletchley Park inspires confidence in me. *turingtrust.co.uk*

The Fairphone 3 is made entirely from recycled and Fairtrade materials

A phone for life?

It’s one thing to like your smartphone and to love the convenience, the utility and entertainment it gives you, but it would be a rare thing to be proud of a phone and have no guilty twinges about its inbuilt obsolescence, no concerns over awkward environmental truths around it and no worries about the labour practices where it’s made.

This, from an Amsterdam company, is the latest iteration of the first sustainable smartphone. The amply featured Fairphone 3 is made with wholly recycled and Fairtrade

materials, and buyers are promised that all involved in the production are paid properly.

The crucial point about Fairphone 3 and the bigger £425 Fairphone 3+ is that Fairphones are modular. So the battery and most other parts are replaceable and upgradeable as technology improves. And you can do most repairs yourself with basic tools. The price of the spare parts is an eye-opener, in a good way. A new display for the Fairphone 3 is £82; a battery, £27. Anyone who has smashed a big manufacturer's phone screen will know these are extraordinarily decent prices.

The phones themselves are uncompromisingly good, if not likely to get you too excited. And you get built-in bragging rights. *Fairphone 3, £389, fairphone.com*

Put your computer to work

One of the unexpected spinoffs of the internet is what's called distributed computing, whereby thousands of home computers across the world can be harnessed in their downtime to churn away together to solve some scientific problem.

ClimatePrediction.net, based at Oxford University, uses it for the massive job of making sense of climate data. The project has 14,000 computers signed up on every continent,

including Antarctica. The Oxford team allows other climate projects to piggyback on its network, and just signed up is an Exeter University endeavour, ArctiConnect, which will shortly start studying Arctic weather data, with a view to helping explain and predict extreme weather events caused by climate change.

But as the project leader, Exeter climate-scientist Professor James Screen, says, the more computers that are signed up, the quicker and better the research will be. You can just let your computer whirr away crunching data in the background or be more involved and participate in online forums. If you use a lot of computer power in your line of work, you can fine-tune the app to cut in only when your machine is idle.
ArctiConnect, climateprediction.net/projects

The Eos Bioreactor uses algae to capture and contain excess CO2

Algae with appetite...

If you want not just to reduce the carbon footprint of your home or business but proactively to capture and sequester excess CO2 and put yourself in carbon credit, you could plant large numbers of trees and wait a few decades.

Or you could just wait until some time next year and buy one or more of these American fridge-sized CO2-eating machines from Hypergiant. The Eos Bioreactor is based on the insatiable appetite certain species of algae have for CO2. Hypergiant says these are 400 times more effective than trees at extracting carbon from the atmosphere. Algae are, however, prone to growing into unmanageably massive bodies. The Eos uses AI to regulate the light, temperature and air flow so as to optimise its intake of CO2 while keeping the plant's rapid growth under control. The first version – which, when it's ready, can be shipped from the US – is designed to be hooked into an HVAC heating and air-conditioning unit. Hypergiant says a freestanding unit, which could work directly with whatever air is wafting around, is also coming. *Eos Bioreactor, about $10,000, hypergiant.com/green*

@thefuturecritic