

The smartphone has fast become an essential and almost unavoidable feature of modern life. In 2008, around [17% of people in the UK owned a smartphone](#), but a decade later that figure reached 78%, and 95% for those aged between 16-24 years old.

WHAT TO LOOK FOR WHEN BUYING A MOBILE PHONE:

- **Is the phone modular?** Modular phones are made so that the user can easily repair any problems or broken parts themselves. This is an important sustainability feature as it extends the life-cycle of your phone.
- **Did the brand receive our best rating for conflict minerals?** Conflict minerals are mined in areas of armed conflict. Children and heavily exploited workers have been used to mine these minerals, while the money has been found to fund armed groups and prolong the conflict. Companies who received our best rating had strong policies in place to source these materials responsibly.
- **Is the phone second-hand?** It is far more sustainable to buy a second-hand or refurbished phone than a new one.

[Fairphone](#) is our only best buy company for this guide. The company leads the way when it comes to a number of important issues, notably conflict minerals, supply chain management and producing a modular and repairable phone.

Our other best buy recommendation is a second-hand or refurbished phone. Creating new products always comes with an environmental cost so it is more sustainable to buy second hand where possible.

Although there are issues with **Apple**, such as [accusations of large-scale tax avoidance](#), it was the only company to receive our best rating for its policies on both conflict minerals and toxic chemicals.

WHAT TO AVOID WHEN BUYING A MOBILE PHONE:

- **Did the company receive our worst rating for its supply chain management?** Labour exploitation has been rife in the production of electronics goods. Make sure that the brand you buy has received our best rating for supply chain management.
- **Did the brand receive our worst rating for toxic chemicals?** Harmful chemicals such as Phthalates, PVC and brominated flame retardants have been heavily used in the electronics sector. Choose a brand that has received our best toxic chemicals rating for phasing out the use of these substances.

Companies to avoid

The issues of conflict minerals and toxic chemicals are particularly important in the electronics sector. Try to avoid companies that received our worst rating for conflict minerals and use of toxic chemicals:

- Doro
- HMD Global (Nokia)
- HTC
- TCL (Alcatel, Blackberry)
- ZTE

Brand	Score(out of 20)	Ratings Categories
Fairphone 3 [S] Company Profile: Fairphone B.V	14	<ul style="list-style-type: none"> • Environment • People
Nokia Mobile phone Company Profile: HMD Global Oy	9	<ul style="list-style-type: none"> • Environment • People • Politics
Doro mobile phone Company Profile: Doro AB	8.5	<ul style="list-style-type: none"> • Environment • People • Politics
Alcatel mobile phones Company Profile: TCL Communication	8	<ul style="list-style-type: none"> • Environment • People • Politics
Blackberry Mobile Phones Company Profile: TCL Communication	8	<ul style="list-style-type: none"> • Environment • People • Politics
LG mobile phones Company Profile: LG Electronics Inc	8	<ul style="list-style-type: none"> • Environment • People • Animals • Politics
HTC smartphones Company Profile: HTC Corporation	6.5	<ul style="list-style-type: none"> • Environment • People • Politics
Huawei smartphone Company Profile: Huawei Investment & Holding Co. Ltd	6.5	<ul style="list-style-type: none"> • Environment • People • Politics

Lenovo Mobile Phone	6.5	<ul style="list-style-type: none"> • Environment • People • Animals • Politics
Company Profile: Lenovo Group Limited		
Motorola smartphones	6.5	<ul style="list-style-type: none"> • Environment • People • Animals • Politics
Company Profile: Motorola Mobility Holdings Inc		
Sony Xperia mobile phones	6.5	<ul style="list-style-type: none"> • Environment • People • Politics
Company Profile: Sony Corporation		
ZTE mobile phone	6.5	<ul style="list-style-type: none"> • Environment • People • Politics
Company Profile: ZTE Corporation		
iPhone smartphone	6	<ul style="list-style-type: none"> • Environment • People • Politics
Company Profile: Apple Inc		
Google Pixel smartphone	5	<ul style="list-style-type: none"> • Environment • People • Politics
Company Profile: Google LLC		
Samsung mobile phones	3.5	<ul style="list-style-type: none"> • Environment • People • Politics
Company Profile: Samsung Electronics Co Ltd		

Our Analysis

In this guide, we have ranked 15 mobile phone brands against our ethical criteria.

There are two stand-out issues: conflict minerals, and the pollution and harm caused by electronics waste and manufacture.

An exciting development, shortly before the publishing of this guide, was the release of the Fairphone 3, the latest model in the [Fairphone](#) line. It is this phone that tops our list and is really the only brand in our guide which truly aims to put people and the environment before profit.

CONFLICT MINERALS

As we saw in our last guide to mobile phones (in 2016), the market is very much split when it comes to conflict minerals. Some companies go to great lengths to make sure that they are sourcing potential conflict minerals responsibly, whereas others have made little progress.

Best	Middle	Worst
Alphabet (Google), Apple, Fairphone, LG, Lenovo*, Sony	Motorola*	Doro, HMD Global (Nokia), HTC, Huawei, Samsung, TCL (Alcatel, Blackberry), ZTE

Fairphone leads the pack, having taken great measures to map out its suppliers, even down to the fourth tier. It is the first smartphone company to integrate Fairtrade gold into its supply chain and has also publicly disclosed a detailed list of its suppliers: 76 for the Fairphone 3. This level of public disclosure regarding a company's supply chain is rare in any sector, but we argue it should be the norm.



Conflict minerals miners as young as 11 in eastern Congo

However, it isn't an easy task. In fact, an article published by Fairphone demonstrates how it was not possible to effectively trace the supply chain of gold used in their phones beyond the Shanghai Gold Exchange, where all component suppliers in China sourced their gold.

To compensate for this, the company pays for an equivalent quantity of gold from certified [fairtrade](#) refiners and allows this to then be traded on the Exchange. The example shows how a company can proactively overcome barriers to ensure that its products do not support the conflict minerals trade.

Interestingly, the two American companies in this guide ([Alphabet](#) and [Apple](#)) both have very good conflict mineral policies, whereas two out of three of the European companies ([Doro](#) & [HMD Global](#)) receive our worst rating – the other European company, Fairphone, received our best rating.

Publicly listed US companies are required by the Dodd-Frank Act to report on the sourcing of conflict minerals, but European companies have not yet been subject to the same legislative pressures. This highlights the importance of government legislation in pushing companies towards more ethical practices.

SUPPLY CHAIN MANAGEMENT

Good supply chain management systems are essential for upholding workers' rights throughout a company's supply chain. This is especially important in sectors such as electronics where production is primarily based in countries that lack strong workers' rights legislation, such as China.

Best	Middle	Worst
Fairphone	Apple, Huawei, Lenovo, Motorola, LG	Doro, Google, HMD Global (Nokia), HTC, Samsung, Sony, TCL (Alcatel, Blackberry), ZTE

Our findings show that most companies do not have strong supply chain management policies. Over half received our worst rating, and only one company, Fairphone, received our best rating.

Toxic chemicals management

The majority of companies received our worst rating for their policies around the phasing out of phthalates, PVC and brominated flame retardants (BFRs).

The last time we researched Mobile Phone, in 2016, Fairphone received our middle rating as it had made efforts to reduce the use of PVC, phthalates and BFRs. But in the research for this guide, Ethical Consumer could not find any information on the Fairphone website, nor did we receive any response from Fairphone, regarding their policies around these issues. For this reason, it received our worst rating.

Best	Middle	Worst
Apple, Huawei	Alphabet (Google), Lenovo, Motorola, Samsung, Sony	Doro, Fairphone, HMD Global (Nokia), HTC, LG, TCL (Alcatel, Blackberry), ZTE

[Huawei](#) and [Apple](#) were the only brands to receive our best rating. Huawei stated that it had banned the use of six harmful substances in its phones, tablets and wearables, including BFRs, PVC, and phthalates. Apple also did not use any BFRs or PVC.

[Motorola](#) stated that its "[*entire mobile device product range is now free from brominated flame retardants \(BFR\) and contains no PVC or phthalates.*](#)" However, as the company did not appear to have phased out these substances from their other products, nor have targets for doing so, it received our middle rating.

TCO and smartphones

TCO Certified is a global sustainability certification for IT products.

In the previous mobile phone guide we gave a positive sustainability mark to any phones that were [TCO certified](#). At the time, this was only the Samsung Galaxy Note 4. This time when Ethical Consumer searched the TCO Certified online database it found that no mobile phones currently on the market were certified.

This came as a surprise, especially as the same database listed 182 TCO certified notebooks, 133 desktops and 7 tablets. Many of the materials and processes used to make computers and phones are very similar and so should be easily certifiable in many cases.

We contacted TCO Certified asking why no smartphones were currently accredited. TCO stated:

One reason for the lack of commitment from the smartphone industry could be that the majority of smartphones are purchased by individuals rather than through procurement in large quantities by professional buyers... This means that the pressure on the industry is less powerful and coordinated for this product group.

In the market for mobile phones, the [network service provider](#) acts as an intermediary between the end customer and the mobile phone brand.

They are the most important customers for mobile phone brands, purchasing large numbers of phones in order to sell them on to you as a customer, usually as part of a network/handset bundle. The presence of an intermediary actor means that there is less opportunity for end-users to put direct pressure on mobile phone brands to improve sustainability, unlike in other electronics goods markets such as desktops and notebooks.

A large organisation, such as a city council or a big business, that bulk buys desktops and notebooks for their staff will likely also provide their workforce with mobile phones. Their demands, as large purchasers of mobile phones, would carry some weight so, in theory, they could put pressure on network service providers to supply phones that meet sustainability certifications.

So why is this not the case? this is what TCO told us:

“We have seen that many organisations purchase phones in a different way than other IT products. For example, many make a deal with the service provider that allows the staff to choose a phone within a certain price range.

Here it would, of course, be possible to request that the staff could only choose between more sustainable phones, but this is often not considered. One reason could be that the organisation considers it as if it is purchasing a service rather than a product. The focus is then on the monthly cost and conditions of the service rather than the products.”

TCO Certified suggests a simple way of trying to resolve this problem: service providers should have a section of their website dedicated to the sale of more sustainable phones. This would make it easier for a consumer or organisation who wants to buy a more sustainable product and it would send a clear message to the phone industry to start improving the sustainability of the phones and to certify them to prove this.

As there are currently no phones that receive TCO certification, we recommend opting for Fairphone. Greater demand for Fairphone sends a message to other brands that sustainability is increasingly important for consumers.

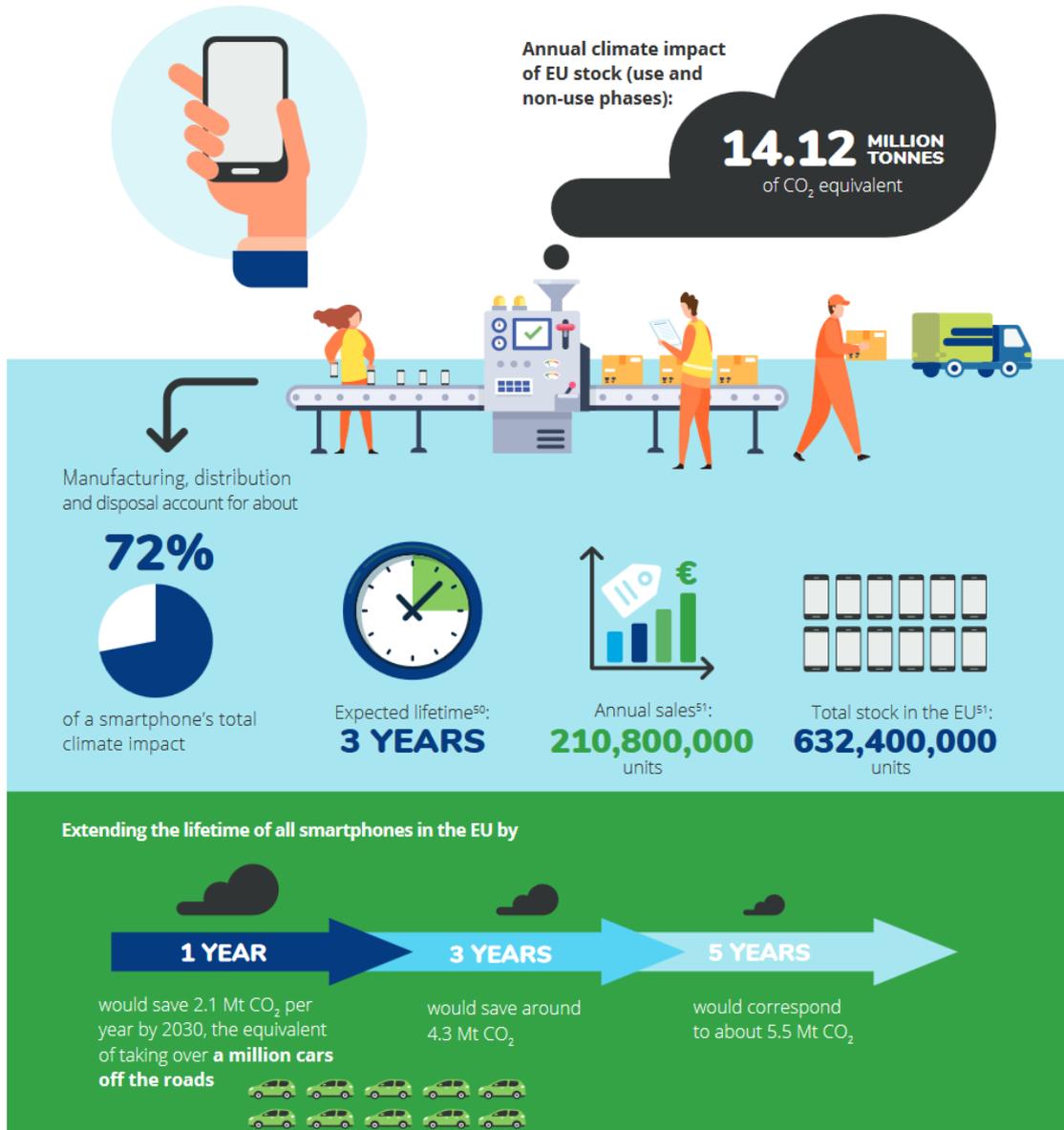
ENVIRONMENTAL IMPACT

In the EU, around 211 million smartphones are sold annually. Our insatiable hunger for new products is putting an ever-greater strain on the environment, primarily through the demand for raw materials, the use of harmful chemicals, the creation of waste, and the production of carbon.

A 2019 study stated that the annual climate impact of all EU phone stock was 14.12 million tonnes of CO₂ equivalent. Extending the life of smartphones is a vital way of reducing their impact.

SMARTPHONES: SUMMARY

Manufacturing Europe's smartphones has the largest climate impact of the products analysed in this study. This is because the production of their components, containing rare and critical materials, is material and energy intensive.



The reporting of greenhouse gas emissions has come to be regarded as an important step in the fight against climate change. Some companies, depending on their size and country of incorporation, are required by law to report on their emissions, while others do so voluntarily.

The Greenhouse Gas Protocol provides an international standard for reporting, categorising reporting into 3 different 'scopes'.

- Scope 1 covers direct emissions produced by a company's own facilities.
- Scope 2 accounts for the emissions caused by electricity use of the company.
- Scope 3 takes into account all other indirect emissions, including those produced in the supply chain, product use and disposal as well as other activities such as business travel.

Although much more difficult to measure, Scope 3 emissions generally account for the largest share of a company's carbon footprint. This is particularly true for electronics manufacturers, where so much energy use occurs outside of each company's direct control.

No emissions reporting	Scopes 1 and 2	Scopes 1, 2 and 3
Doro, Fairphone, HTC, Nokia (HMD)	Alcatel and Blackberry (TCL), Huawei*, LG*, ZTE	Apple, Google (Alphabet), Lenovo (and Motorola), Samsung, Sony

**Reported limited data defined as Scope 3 such as employee travel, but did not include supply chain or product-use emissions.*

Despite this, we found that not all companies we assessed measured and reported on scope 3 emissions. The level of reporting by each company is shown in the table above.

As the table illustrates, the mobile phone companies in our guide are quite evenly split in regard to the extent of their reporting.

Properly reporting emissions can be costly, so it is not particularly surprising that those companies with the lowest turnovers, Doro and Fairphone, have not reported on their emissions.

THINGS YOU CAN DO

Buy second hand

As with nearly all goods, it is better to purchase second hand than to buy new, as this does not increase demand for raw materials, nor require energy and labour for manufacture. It could be argued that, to some extent, the second-hand phone market relies upon the overconsumption of those ever-upgrading consumers in the new market. However, it is unlikely that avoiding second hand will discourage others from purchasing new phones. So, while there are perfectly good used phones available, it is advisable to purchase these if possible.

Second-hand phones can be purchased in a number of places. Many brands will sell refurbished phones which come with a product guarantee. There are also a number of sites on the internet that sell second-hand phones. Or you could try to acquire one from one of the many people who have an old phone stashed away in their drawer following their latest upgrade.

For more info, see our guide to [buying second-hand technology](#).

Recycle your old phone

Your phone contains a host of precious minerals and materials and so it is important that these are recycled rather than ending up in a landfill. There are many places you can recycle or sell your phone. Here are a couple of ideas:

[Oxfam](#) offers to recycle old phones, laptops and other such devices. To find out more take a look at [the information on their website](#).

[Fairphone](#) operates a recycling scheme for old phones. If you send a phone that can be turned on, Fairphone or other, you will receive money off the purchase of a Fairphone 3.

Smartphone or feature phone?

Feature phones are a cheaper alternative to smartphones and have more limited capabilities. Feature phones typically provide voice calling and text messaging functions, in addition to basic multimedia and internet capabilities. Because they have fewer functions, they consume less energy.

Smartphones basically do everything you could do on a home computer or laptop, but the more a phone does, the more energy it consumes, hence the ongoing need to regularly recharge your smartphone battery.

If all you really want from your mobile is a cheap phone to make calls, send texts and have a long-lasting battery, a feature phone is for you. They're really easy to use and don't come with loads of extra features that you might be unlikely to use. Alcatel, Doro, [Samsung](#) and Nokia all make feature phones.

The Fairphone

Fairphone tops our rankings table by a long way and is our Best Buy for this guide. The Dutch social enterprise began in 2009 as a campaign around conflict minerals but, in 2012, it took the plunge and began actually producing phones.

The company is leading the way on supply chain transparency, which is essential if the rights of those working within them are to improve. It has spent years mapping its supply chains in order to ensure that the minerals in its phones have been responsibly sourced and that labour rights are upheld throughout its supply chains. On the company's website, you can find a document that lists, with addresses and other details, all the manufactures, smelters and refineries that the company has located within its [supply chain](#).

It lost a whole mark under our Environmental Reporting category because its report did not contain at least two dated and quantified environmental targets. The setting of publicly disclosed, measurable targets is considered by Ethical Consumer to be an essential element of monitoring and improving environmental sustainability.

It also lost a mark under our Pollution and Toxics category because the company no longer appeared to have a policy relating to the phasing out of brominated flame retardants, phthalates or PVC.

Fairphone 3

The Fairphone is now in its third iteration. The first two versions made great gains in sustainability and ethics, but the functionality was a problem for some users. The Fairphone 3, however, seems to have made great gains in the latter as well as the former.

At the time of writing, the Fairphone 3, having only just been released, was receiving great reviews online, including a 4/5 from The Guardian, and a 10/10 for repairability from iFixit.

The phone comes equipped with a screwdriver tool so that it can be opened up and parts of it replaced, with spare parts available on the company's website.

The phone is available in the UK from [the Phone Co-op](#) or directly from [the Fairphone website](#).

What's in a phone?

A smartphone is about 40% metals, 40% plastics and 20% ceramics and resin.

As well as the 'conflict minerals' tungsten, tin, tantalum and gold, phones also contain: silver, nickel and lead in the circuit board; cobalt, zinc and copper in the battery; as well as arsenic, chromium and selenium, all of which can leak during production and disposal.

Unless recycled metals are used, they must all be mined, and this can mean communities are displaced, biodiversity destroyed, and vast amounts of water and fossil fuels are used for processing and extraction.

Mobiles and Health

There has long been concern about the effects of mobile phone use on health. However, according to the NHS, research suggests it's [unlikely that mobile phones or base stations increase the risk of health problems](#). However, they do acknowledge that there is still uncertainty over the effects of long-term, decades-long use and that more research is needed.

The biggest risk of using a mobile phone is using it while driving, which can increase your chances of having an accident by up to four times.