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GREEN INSIGHTS

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Smartphone and the Environment

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GREEN INSIGHTS
July-September 2015

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FOREWORD

Mobile Phones have become - an indispensible part of our daily lives – almost an extension of us, so to say.

The past decade has witnessed, globally, a rapid rise in ownership of mobile phones, and consequently, generational advances in technology. Consumer enthusiasm generated by the latest devices has led to a dramatic shift in modes of personal computing and communication. This shift is characterised by consumers moving away from traditional desktop computers in favour of their mobile phones. The consumer enthusiasm and the degree of shift in the way computing is done can be felt by observing not just the sheer volume of mobile devices sold around the world, but also the frequency with which the consumer discards old technology in favour of upgrades. For example, roughly one million units of the iPhone 3G model were sold worldwide in the first weekend of its launch. Similarly, over three hundred thousand iPads were sold on the first day of its release. This excitement inevitably means that the number of these devices is increasing rapidly.

The new smartphones we have today are better. They can vibrate, rock out, show HD movies, take photos and videos, check email, go underwater, navigate with global positioning systems and surf the Internet.

According to Ericsson – the world's largest supplier of mobile networks, the number of smartphone subscribers will reach 5.9 billion in another five years against about 1.9 billion smart phone subscribers at the end of 2013. According to the report of Ericsson, India alone will have at least 1.4 billion mobile subscribers by 2020. There is, as yet, no unifying or international rating or certification to judge the impact the smartphone has on the environment. The environmental impact of these devices needs to be viewed across their entire lifecycle in terms of the resources and the energy they use.

As per a report by Greenpeace International, despite increasing awareness about the environmental impact of electronics, there have not been any significant initiatives from within the industry to address the increased threat to the environment that arises from a business model based on ever-increasing levels of consumption. However innovation by some industries like the Fairphone project and Phonebloks has tried to reduce electronic waste in an innovative manner. The Dutch designer Dave Hakkens has designed and created Phonebloks, an open-source modular smartphone concept. Consumers can replace these bloks to upgrade or to expand the functionality in a specific direction. Fairphone - an ecofriendly smartphone is designed and produced with the intention of minimising harm to the planet. It is developed by an independent Social Enterprise based in Amsterdam, Netherlands. Google too has launched Project Aura to build an open source modular smartphone that is designed by customers.

The high rate of technological change in wireless communications networks is not expected to slow down any time soon. Because of newer technologies, demand for the existing models diminishes. Already mobile phones are one of the leading contributors to the e-waste crisis we are currently dealing with as a planet. There are environmental impacts associated with each step of the lifecycle of mobile phone. It is time now for consumers to make more sustainable choices with an aim to reduce these environmental impacts by buying the products and services which are more environment-friendly.

Smartphone and the Environment

Earlier a phone was used exclusively as a communicating device and computers ran software applications. Over time the mobile phone transformed into a smart phone, it serves as both, the communication as well as a computation device.

This metamorphosis of the cell phone into a mobile computing platform with voice capabilities is epitomized by the smartphone. The arrival of the App - a dizzying array of software applications, or apps - could be installed at a touch of the screen. These apps can collect vast amount of data, easily and quickly, from large global samples.

https://img.washingtonpost.com

Difference between the smartphone and the cell phone

A smartphone is very different from a cell phone and it is a device that makes telephone calls, but also adds in features which were available in a personal digital assistant (PDA) or a computer--such as the ability to send and receive e-mail and edit office documents.

Operating system
In general, a smartphone is based on an operating system that allows it to run applications. Apple's iPhone runs the iOS, and BlackBerry smartphones run the BlackBerry OS. Other devices run Google's Android OS, HP's webOS, and Microsoft's Windows Phone.

Apps
The term “app” is a short name of the “application software.” Mobile apps are downloadable software

programmes and access directly using the phone or another mobile device – like a tablet or music player. All smartphones have some sort of software programme. These apps allow playing games; getting turn-by-turn directions; and access

news, books, weather, music, videos and much more.

QWERTY Keyboard
This is a basic requirement for the smartphone. The keyboard is like the keyboard of a computer.

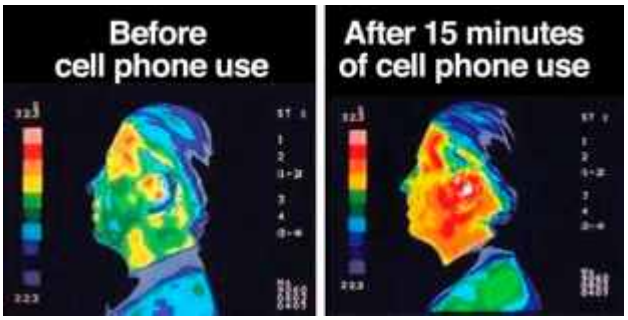
Text Messaging
The smartphone can send and receive text messages like a cell phone. It also can sync with personal and, most likely, professional e-mail account. Some models can support multiple e-mail accounts. Others include access to the popular instant messaging services, like AOL's AIM (AOL Instant Messenger) and Yahoo! Messenger.

These are just some of the features that make a smartphone smart. The technology related to smartphones and cell phones is constantly changing, though. What constitutes a smartphone today may change by –not just next year, but next month – even next week.

By 2025, more than 5 billion people on our planet will be using ultra-broadband, sensor-rich smartphones far beyond the abilities of today's iPhones, Androids, and Blackberrys.

Smartphone and radiation

Do smartphones cause environment and health problems or don't they? That has been a serious ongoing concern. The issue of radiation from smartphones is one of the scariest unknown technology risks of our times. The smartphone has penetrated so much in daily lives that it is difficult to imagine life without a smartphone. Excessive use of the smartphone may cause health problems; however, a smartphone with bad SAR (Specific Absorption Rate) is most dangerous.



SAR is a measure of the amount of radio frequency (RF) energy absorbed by the body when using a mobile phone. It is an important measurement for human health and all phones undergo careful evaluation of their SAR by the Federal Communications Commission (FCC) in the United States. The FCC requires manufacturers to ensure that their phones comply with these objective limits for safe exposure. Any cell phone at or below these SAR levels is a “safe” phone, as measured by these standards. The FCC limit for public exposure from cellular telephones is an SAR level of 1.6 watts per kilogram (1.6 W/kg) of body weight.

All cell phones must meet the FCC's RF exposure standard, which is set at a level well below that at which laboratory testing indicates, and medical and biological experts generally agree, adverse health effects could occur. India has also adopted the most stringent FCC norms for mobile handsets effective from 1st September 2012.

In case of smartphones SAR is measured by keeping the phone in the talking position and then calculating the amount of radiation absorbed by the part of head which is closest to the antennas of the smartphone. Telecommunication Engineering Center in India calculates SAR value by choosing smartphones randomly produced by a manufacturer and then verifying it with the data provided by the manufacturer.

SAR Value is just a reference to indicate that the smartphone is safe to use.

Smartphone and its environmental impact

Among cellular phones, smartphones are the fastest growing subset of cellular phones in terms of popularity. Impact of smartphones on environment starts from the manufacture of components, transportation of components, their assembly, at the consumer end it is during the use of the phone, at the network level and also at the end of phone's life.

The production consumes more energy than the use of the phones and has grave environmental impact. Some key contributors to the manufacturing phase impact include semiconductors, printed circuit boards, and batteries. Manufacturing of semi conductors is highly energy-intensive and uses large amount of water and industrial chemicals, many of which are toxic. Smartphone also consumes gold, platinum and other precious metals which are non renewable. The way these metals are used, it is difficult to recover these at the end of phone's life.

Statistics published by the ESU Services of Switzerland and figures released by US EPA state that the energy needed to manufacture and transport just one mobile phone, as well as the energy needed to operate it produces 60kg of carbon dioxide. This works out to be the same amount of carbon dioxide as produced from burning 26L of fuel.

Mobile network requires more energy than that consumed by the handset. Some studies have estimated that modern network energy usage exceeds handset usage by a factor of 100 or more on a per subscriber basis.

Waste of electrical and electronic equipment (WEEE) is a complex mixture of materials and components which because of their hazardous content, and if not properly managed, can cause major environmental and health problems. Mobile phones are a significant source of WEEE.

The increasing demand of smartphones has led to the rapid expansion of the smartphone market. As a result of the continuing innovation and technological improvements, new generation of smartphones are being constantly introduced with more powerful processing capability and more diversified sensors and functionalities. The average lifetime of smartphone is only 1.5 years and billions of used smartphones still functional become redundant every year. Increasing the life time of mobile devices will reduce both, the waste generation as well as the intensity of environmental impacts from smartphone use. The best way to reduce smartphone's impact on the environment is to buy fewer of them, and recycle when upgrading. Reusing these smartphones is also a key approach towards green computing.

Source: http://www.psmag.com/nature-and-technology/reduce-reuse-recycle-cellphones
http://www.cs.ucsb.edu/~xun/papers/reuse-ictbook12.pdf
http://www.arp.net.au/carbon_pf.php
http://www.dot.gov.in/sites/default/files/Revision%20of%20SAR%20Limit%20mobile%20handsets.pdfhttps://www.fcc.gov/encyclopedia/specific-absorption-rate-sar-cellular-telephones
http://cellphones.about.com/od/smartphonebasics/a/what_is_smart.htm

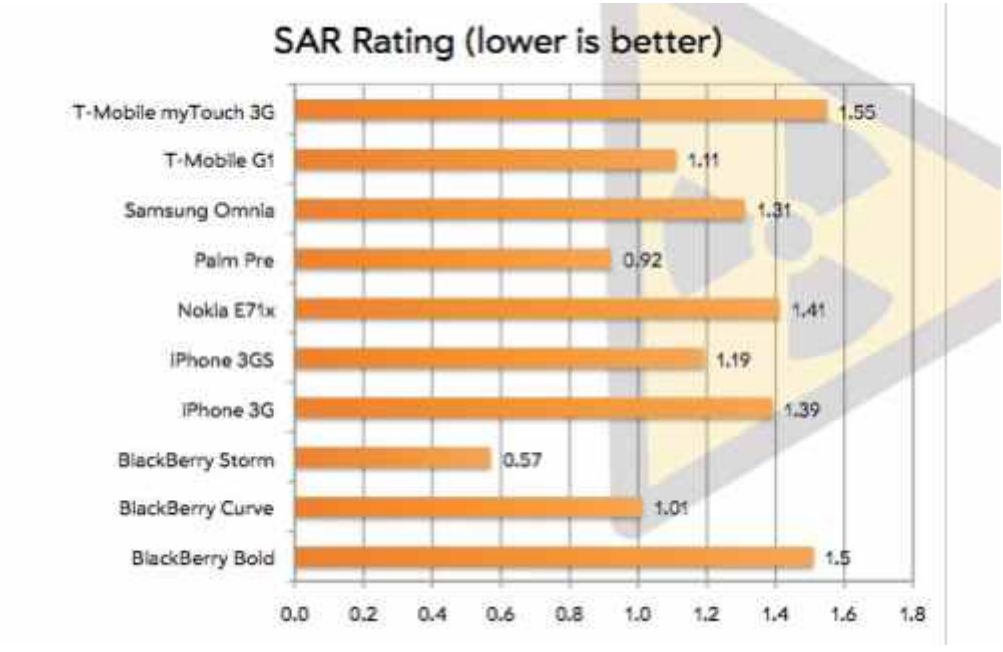
Consumer Awareness

Approximately five billion mobile phones are in operation globally, and the usage of mobile phones continues to rise because of "smartness" and convenience offered by smartphones. International Agency for Research on Cancer, a part of World Health Organisation (WHO) stated that mobile phone usage may possibly be carcinogenic to humans. This conclusion was based on a review of hundreds of scientific papers.

Electro Magnetic Fields Radiation and Health

WHO in its Fact Sheet No. 304, May 2006 on Electro Magnetic Fields (EMF) and Public Health (Base Stations and Wireless Technologies) has concluded that "considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak Radio Frequency (RF) Signals from base stations and wireless networks can cause adverse health effects. From all evidence accumulated so far, no adverse short or long term health effects have been shown to occur from the RF Signals produced by base stations (mobile phone towers)". WHO has recommended that National authorities should adopt international standards to protect their citizens against adverse levels of RF fields. Department of Telecommunication (DoT) of India has made an assessment of health effects of EM radiations and prescribed stricter precautionary limits for EM radiation from mobile tower. The present prescribed limits for EM radiations from Base Stations in India are one-tenth (1/10th) of internationally prescribed limits of ICNIRP (International Commission on Non-Ionizing Radiation Protection).

Source:http://www.dot.gov.in/hi/node/1811?theme=dot http://www.who. int/peh-emf/publications/facts /fs304/en/



Specific Absorption Rate (SAR) Value and Handset

Information on energy emissions should be known at the time of sale so buyers can make informed choices.

Every mobile phone has a specific absorption rate value which measures the maximum amount of energy released by the phone when in use. Every cell phone sold has to specify the SAR, the count which specifies the amount of RF waves absorbed by the body when using a mobile phone, as an option in the menu of the handset. There is an upper SAR limit for each phone. Every cellphone sold officially anywhere in the world has a unique SAR value. In the US and the European Union (EU) every handset maker has to declare the SAR level. Both the Federal Communications Commission (FCC) and the EU have stringent safety standards on cellphone radiation levels.

In the USA, the Cellular Telecommunications and Internet Association (CTIA) requires that manufacturers must provide SAR information in the instructional material that comes with the phone, along with a label on the packaging. This label however only advises the consumer of the phone's compliance with the FCC SAR limit of 1.6 W/Kg and not the specific SAR value itself. In the UK, the government appointed expert group, the IEGMP (Independent Expert Group on Mobile Phones), recommended that the SAR value itself should be openly displayed on both the packaging and also on an official website so that consumers could make an informed choice when purchasing a handset.

In India manufacturers are required to provide a self-declaration of the SAR value of the handset. In addition to this, manufacturers and importers are required to ensure that all mobile phones sold in India must comply with the requirements set out by the Bureau of Indian Standards (BIS). With effect from 1st September 2012, all mobile phone handsets are required to be sold with hands free devices and SAR value information of the mobile handsets need to be made available on the manufacturer's website and in the handset manual.

This is the information that consumers are entitled to know, albeit have a right to this information which will allow them make informed choices.

Source: http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf' http://www.dot.gov.in/sites/default/files/Annexures/advertisement_0.pdf http://www.techlaw.org/wp-content/uploads/2010/07/Trilegal-Radiation-Norms-for-Mobile-Handsets-to-Come-in-Force-on-1-September-2012-August-2012.pdf, http://sarvalues.com/

Guidelines for mobile tower installation

There is a great concern regarding cellular towers erected near residential areas, schools and hospitals because of radiation and its effect on health and environment. The World Health Organisation's International Agency for Research on Cancer (IARC) also reported that cellphone handsets' and towers' radiations are possibly carcinogenic to humans and may cause a type of brain cancer or glioma. There are certain rules and regulations that need to be followed for setting up a cellular tower in any locality.

Department of Telecommunications of India (DoT) has released advisory guidelines for State Governments for issue of clearance for installation of mobile towers effective from August 1st 2013. DoT has devised certain uniform procedures that are proposed to be adopted by all State Governments for grant of permission for installation of mobile towers by the telecom service providers.

DoT has made it mandatory for telecom companies to get technical clearance from the Telecom Enforcement, Resource and Monitoring Cell (TERM Cell).

Tower firms also have to get a structural stability certificate from neutral entities such as the Indian Institute of Technology (IIT) and the Central Building Research Institute (CBRI).

Before installation of a tower, the telecom service providers also have to obtain necessary clearances from concerned local authorities/ State Government bodies. Various local bodies/State Government have formulated their own policy regarding grant of such permissions for installation of mobile towers.

Wireless Planning and Coordination Wing (WPC) of Department of Telecommunications (DoT), issues siting clearance for installation of mobile towers for each and every site from the point of view of interference with other wireless users, aviation hazards and obstruction to any other existing microwave links.

In case of both ground based towers & roof top towers, there should be no nearby buildings right in front of the antenna with height comparable to the lowest antenna on tower at a distance threshold as specified i.e, from 35 meters to 75 meters.

The local bodies may also seek submission of the copy of No Objection Certificate (NOC) from building owner / entities having roof top rights or roof top tenants

in case of roof based tower/ land owner in case of ground based tower, as the case may be.

Pole mounted Antenna height should be $\geq$ 5 metre above ground/ road level on flyovers and no residential place /office directly in front of the wall mounted antenna at a height comparable to the antenna in the exclusion zone.

There is no restriction for installation of tower on/ near specific buildings such as schools/ hospitals/ playground etc. as new tougher standards based on precautionary principles apply equally to all locations with human presence.

A copy of clearance of the Forest Department for 'forest protected area' is required.

Consumer Grievances

In order to effectively address the problems relating to installation of towers and issues related to telecom infrastructure set up, State Level Telecom Committees and District Level Telecom Committees effectively address public grievances. There are also provisions to organise public awareness programmes involving civil society members.

The telecom service providers are required to submit self-certificates periodically in order to ensure that normally all general public areas around the tower site are within the safe Electromagnetic Radiation (EMR) exposure limits. Any violation entails heavy penalties on service providers and may also lead to shutdown of the service, in case the violation persists.

Precautionary Guidelines for mobile users

For the benefit of users, DoT has issued the following guidelines that provide precautionary measures while using a mobile handset -:

- Keep safe distance – Hold the cell phone away from the body to the extent possible.
- Do not press the phone handset against your head. Radio Frequency (RF) energy is inversely proportional to the square of the distance from the source -- being very close increases energy absorption much more.
- Limit the length of mobile calls. Listen more, talk less.
- Use text as compared to voice wherever possible.
- Put the cell phone on speaker mode or use a head set.
- If the radio signal is weak, a mobile phone will increase its transmission power. Find a strong signal and avoid movement – Use your phone where reception is good.
- Metal & water are good conductors of radio waves so avoid using a mobile phone while wearing metal-framed glasses or having wet hair.
- Let the call connect before putting the handset on your ear or start speaking and listening – a mobile phone first makes the communication at higher power and then reduces power to an adequate level. More power is radiated during call connecting time.
- If you have a choice, use a landline (wired) phone, not a mobile phone.
- When your phone is ON, don't carry it in chest/breast or pants pocket. When it is ON, it automatically transmits at high power every one or two minutes to check (poll) the network.
- Minimise mobile phone use by children as younger people will likely have a longer lifetime exposure to radiation from cell phones.
- People having active medical implants should preferably keep the cell phone at least 15 cm away from the implant.
- While purchasing a Mobile Handset check the SAR value of the mobile phone. It can be searched on internet if its model number & make is known.

Source:http://www.dot.gov.in/sites/default/files/Annexures/01-08-2013.pdf
http://164.100.47.134/lsscommittee/Information%20Technology/15_Information_Technology_53.pdf
https://www.itu.int/en/ITU-T/climatechange/emf-1305/Documents/Presentations/s2part2p3-RKBhatnagar.pdf
http://www.dot.gov.in/sites/default/files/Annexures/11.%20Guidelines%20%20to%20States%202012.pdf

Guide to greener mobile phone companies

According to a report by Greenpeace International "Global electronics companies must do more to end the use of climate changing dirty energy in their manufacturing and supply chains."

The 18th version of the 'Guide to Greener Electronics' released by Greenpeace International in 2012 ranked 16 electronic companies based on their commitment and progress in three environmental areas energy and climate, greener products and sustainable operations. Out of 16 electronic companies, there are 8 mobile phone manufacturers.

Which mobile company is GREEN?

Company	Score out of 10	Overall ranking	Free of PVC and BFRs	Phasing out other hazardous substances
Nokia	5.4	3rd	All Nokia phones are free.	All products are free from antimony trioxide, beryllium compounds; phthalates have been restricted since 2005. It also restricts certain PFCs and organotins.
Acer	5.1	4th	90% to 99% of parts in the BOMs (Bill of Materials) of newly introduced products are free as of the end of 2013. Smart phone A9 models and CONIA SMART are also Free.	In the future, suppliers will be required to ban the usage of beryllium, antimony and all phthalates.
Apple	4.5	6th	Eliminated from products in 2008.	Products are also free from phthalates, lead, mercury and arsenic. Apple has not yet reported on its elimination of beryllium and antimony.
Samsung	4.2	7th	All models of mobile phones have been free from BFRs as of January 2010 and PVC from April 2010.	Antimony and compounds, beryllium and compounds and phthalates have been phased out from mobile phones (new products) as from January 2013.
Sony	4.1	8th	Xperia mobile phones are free. Sony Ericsson was one of the first brands to phase out from its mobile phones.	It has eliminated certain phthalates, antimony trioxide and beryllium; antimony is not yet eliminated.
Panasonic	3.6	11th	All mobile phones (sold in Japan only) have been PVC-free (excluding internal wiring in a charger)from FY2005 models onwards. Panasonic has launched a BFR free mobile phone (P-02D), apart from accessories, although this is no longer in production. Apart from this, there are no BFR-free products.	There has been minimal progress in the phase out of PVC/BFRs or other hazardous substances since the last assessment done by Greenpeace in November 2012.
LG	3.5	12th	All mobile phones and tablets are free as from 2010.	Mobile phones are also free from beryllium, phthalates and antimony trioxide.
Blackberry	2.0	16th	BlackBerry has eliminated all BFRs, PVC and phthalates as of the end of 2013. Products introduced after 2013 are halogen free.	All phthalates were phased out by the end of 2013. Beryllium was eliminated in 2011. BlackBerry plans to eliminate all antimony oxides by the end of 2014.

The Guide criteria reflect Greenpeace's demands to electronics companies to:

- Reduce emissions of greenhouse gases by implementing a Clean Electricity Plan
- Clean up their products by eliminating hazardous substances;
- Take-back and recycle their products responsibly once they become obsolete,
- Stop the use of unsustainable materials in their products and packaging

According to Greenpeace International more than 50% of the mobile phone market is currently represented by brands – led by Nokia, Sony Ericsson, Apple and Blackberry smartphone – that have completely eliminated the use of hazardous Polyvinyl chloride (PVC)plastic and brominated flame retardants (BFRs) in their products. LGE, Samsung, Acer and RIM are also now PVC/BFR free. Panasonic is still not free from PVC/BFR.

Manufacturers of low cost smartphones – such as Huawei, Xiaomi and Micromax – that are taking an increasing share of the market, urgently need to adopt plans to eliminate hazardous substances to ensure that the environmental progress made over the past five years is not lost.

The biggest energy footprint comes from manufacturing, undertaken by several tiers of suppliers, which are often not owned by the company. Apple has started to address the issue of renewable energy use in its supply chain by announcing that its new US factory for iPhone glass screens will be powered by 100% renewable energy from solar and geothermal power. Apple discloses the carbon footprint of all its products.

Eighty percent of the carbon footprint of a mobile phone comes from manufacturing (iPhone 5s 83%, Samsung Note2 79%). Samsung's limited public disclosure of specific carbon footprints shows that 69% of GHG emissions from the Galaxy Note2 come from its manufacture.

The aim of the 'Guide to Greener Electronics' is to push the electronics sector to reduce its environmental impact, its energy use and emissions throughout its supply chain, and its use of unsustainable materials. The Guide also pushes companies to use their influence in support of stronger environmental legislation. This Guide cannot be used as a product guide to find the greenest mobile phone; it provides the information to compare the company-wide policy and practices of - leading mobile phone makers.

Source:http://www.greenpeace.org/international/en/campaigns/climate-change/cool-it/Campaign-analysis/Guide-to-Greener-Electronics/
http://www.greenpeace.org/international/Global/international/publications/toxics/2014/Green%20Gadgets.pdf

Buying a new smartphone? Read This First

How often do we buy a new cell phone? In these gadget-driven days, we probably upgrade our electronics fairly often. Most people don't think twice about buying the “latest and greatest” technology. After all, companies and their marketing teams spend a great deal of money to make sure that we're hungry for the next generation of cellphone.

Go to a Certified E-Waste Recycler
Even if your phone has no re-sell value–for example, if it's too old for the market–it is not doing much good sitting in the back of your drawer. There are many accredited electronic waste recyclers governed by

ISO14001 standards - the international regulation for the safe disposal of electronic waste. Many organisations collect your e-waste and deliver it to the appropriate recycling facilities where 95-98%, by weight, will be recycled for future use. Recyclers and collection facilities can dispose your phone safely and can harvest the parts within the phone to recycle and perhaps create new phones. The metals various plastics, and glass within the phone can be recycled. Apple is the highest recycling company.

Green Manufacturer

Support the manufacturers who are producing cleaner products. Many phones and smartphones manufacturers are already part of the UL 110 standard of sustainability for mobile phones. EPEAT, a comprehensive global environmental rating system, provides green ratings to mobile phones. It currently covers 41 devices from eight manufacturers including HTC, Kyocera, LG, Samsung and ZTE. Greener mobile phones are very important because they use more valuable raw materials and are recycled rather than discarded.

Reconsider your upgrade

Before you upgrade to a new cell phone or other device, take a good look at the item you are about to discard. Do you really need the latest model or will the one you have suffice your needs?

Trade-In For Cash

There are many websites devoted to giving you cash or gift cards for your unwanted mobile phones. Their programmes allow users to instantly sell or recycle their old electronic devices like mobile phones, laptops, PDAs and more.

Donate or give for good causes

If you have mobiles which are of no use instead of letting the old mobiles sit there collecting dust or tossing them into the trash better to donate them. You can see your obsolete items go for a good cause and gain a new life. There are many nonprofit organisations that are also in constant need of donated items.

Get Involved

Unless we recycle, reuse and reduce responsibly, we and our environment, all pay price. Take action and help/involve people responsibly to recycle mobile e-Waste to dispose it in the right way. Spread the word on Social Media and pledge to be an e- Envoy.

Take back Programme

There are many manufacturers and retailers who allow customers to return at least some models when no longer in use. They are properly recycled, disposed or reused. Companies have developed the most extensive take-back programmes with comprehensive global systems in place from both Nokia and Apple.

Look at the E-waste world map

The Solving the E-Waste Problem (StEP) Initiative has created and released the first online world map that geographically depicts the escalating global e-Waste problem. It allows users to interactively explore comparable annual data from 184 countries, including India, depicting the estimated amount of electrical and electronic equipment put on the market and how much resultant e-Waste is eventually generated.

Final Word

- Whenever you buy new smartphone be sure that your old one gets recycled properly. Recycling is a good, environmentally friendly solution.
- Ideally try to consume less. Do not get always pulled into new technology.
- If possible try to get a secondhand model/version.
- Don't let your storage closets become mobile burial grounds.

Source:http://www.epa.gov/http://www.seattletimes.com/ business/technology/do-your-part-top-5solutions-to-e-waste/
http://www.moneycrashers.com / electronic-e-waste-recycling-disposal-facts/

https://www.fairphone.com/projects/phone-recycling-program/
http://www.step-initiative.org/step-e-waste-world-map.html, http://www.epeat.net/greenbiz-com-epeat-adds-green-ratings-to-mobile-phones/,
http://www.greenpeace.org/international/Global/international/publications/toxics/2014/Green%20Gadgets.pdf

Source: http://www.epa.gov/

The Environmental Information System acronymed as ENVIS was implemented by the Ministry of Environment & Forests by end of 6th Five Year Plan as a Plan Scheme for environmental information collection, collation, storage, retrieval and dissemination to policy planners, decision makers, scientists and environmentalists, researchers, academicians and other stakeholders.

The Ministry of Environment and Forests has identified Consumer Education and Research Centre (CERC), Ahmedabad, as one of the centers to collect and disseminate information on "Eco-labelling and Promotion of Eco-friendly Products". The main objective of this ENVIS Centre is to disseminate information on Eco products, International, and National Eco labeling programs.

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