*International Journal of Engineering & Technology*, 7 (3.10) (2018) 224-226

International Journal of Engineering & Technology

*Website: www.sciencepubco.com/index.php/IJET*

***Research paper***

# Green Computing Initiatives to Reduce the Hazardous Effect on the World

**Ms. S. Meena, Mrs. S. Kayathri*, Mrs. S. Girija**

*Assistant Professor/MCA, M.Kumarasamy College of Engineering,Tamilnadu.*
**Corresponding author E-mail: kayathris.mca@mkce.ac.in,*

**Abstract**

Green computing is the learn and realize of using computer devices in an ecological while maintaining on the whole computers. Earth Warming and ecological changes have become challenging issues in governments, corporate and who are all are seeking out innovative ways to green up. Green computing is the best necessity to preserve our atmosphere and keep our energy beside with operational expenses in planet. Green is the word for relating belongings that are good quality for our environment, usually healthful, more newly, cost-effectively. Environmental and Energy preservation issues are now the talk of the day in the global business in modern years. Greening is a healthy and sustainable move toward the success of a green IT, healthful and safe environment cannot compromise technical needs of recent generations. This piece of writing is a study of green computing or Green IT.

***Keywords*:** *Earth Warming, Energy, Green Computing, Green IT, Power*

## 1. Introduction

The ambition of the Green computing is decrease the practice of toxic materials, make best use of energy during the product's lifespan, and encourage recycle of expired products and factory waste [1]. The main objective of the Green Computing is minimizing energy consumption, purchasing green energy, decreasing paper work, increasing equipment disposal properly [2].Green computing starting from designing, manufacturing green products, disposing hardware peripherals [3]. Green computing is low risk factors of our business to not only help the atmosphere its reducing cost. Now a day's power consumption is one of the major problems. Making a proper decision increase the profit but also reduce the carbon foot prints. Recently carbon dioxide emissions and green house gas are affected our environment.

## 2. Why Green Computing

Ecological and Power Consumption problems are now the discussion of the daytime in the universal business in recent days. The Green IT changes from developing company computing needs, Power cost, earth warming issue and maximizing national energy security. Green computing compromise environmental sustain, cost of energy efficiency, entire cost of owner, cost of disposal recycle.

Green IT includes the guidelines, procedure, and personal computing practice associated with any use of information and communication technology. Citizens utilizing sustainable or
green computing practice struggle to decreasing green house gas and e-waste, while maximizing the cost efficacy of IT, its contain Systems, LAN, and data hub. It is frankly conveys that using system in ways that save the environment, energy and money.


**Fig. 1:** Green Computing

Day to life, While leaving the computer when not in use computer energy is wasted.Using the Printer, simply leave the printer consuming more power. The computer peripherals are disposing in proper place ,otherwise due to the toxic chemicals land get polluted. The toxic chemicals are Lead,Mercury and Cadmium.The Lead used for soldering printer circuit board.The Lead can damage our kidney, nervvous and blood system.The mercury used for creating batteries,switches.The Mercury combine with water its convert as methylated maercury can damage our brain.

### 2.1. Origin of Green Computing

In 1992 Environmental Protection Agency starting the energy star program. The energy star program earning more money and safe our environment from energy consumes products. This program is labeling 50 product categories.


**Fig. 2:** Energy Star

It is mainly used for producing power capable of laptop and desktop computers. Environmental Protection Agency is sale the energy star labeled computers in each year. It is save the power and increase the production rate $2 billion per year.

### 2.2. Four Major domains of Green Computing

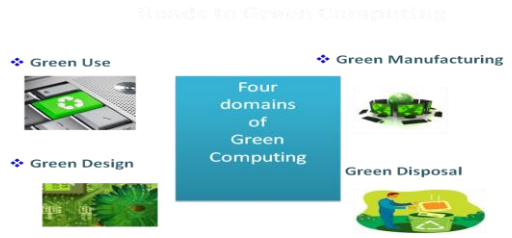


**Fig. 3:** Four Major Domains

- **Green use** ---It is the usage of less energy conservation resources in the computer.
- **Green Design** — It is used to design the green products are such as green sound components, green servers, cooling equipment and data centers.
- **Green Manufacturing** — It is developed green electronic components, desktop and other associated peripherals with minimal effect on the earth.
- **Green disposal** --- Use the method of Reduce, Reuse, and Recycle.Properly deposing the computer equipments.

## 3. Remarkable Green Initiatives in IT

1. Computer science plays a main role in, teaching, and promotion of Green Computing techniques.
2. As a part of green IT, corporate companies must know about product design and are working together to reduce the carbon paper print in their production organization.
3. The IT Company implementing of energy proficient CPU, server and hardware devices reduced Power consumption and proper disposal of e-waste.
4. Enterprise Management Associates insisting companies to apply a green computing, It is also to decrease operating expenses and boost profitability.
5. Lenovo has produced new energy efficacy LCD monitors that reduce power compare to number of lamps from four to two.
6. Xerox, produced green printers to use solid ink, which produce a smaller amount, waste because IT administrators no need to change toner cartridges.
7. IBM is expanding Big Green project to allow broader portion of the IT infrastructure, apartment from data centers also
8. Some manufacturing companies are producing 100 percent recyclable products.
9. Acer, for example, is minimizing its use of plastic spray. Acer's Aspire Net books send mainly in cardboard packaging.

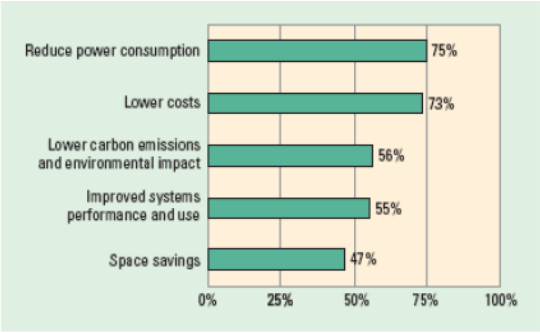


**Fig. 4:** Sun Micro System Green Computing Survey

10. The Sun Microsystems on Green IT, give awareness to the achieve Green IT implementation.
11. The top of the charts were reduction of power consumption and lowering of costs.
12. Laser printers use a major amount of power during printing.
13. Compare to CRT the LCD monitors use 40% less energy.
14. Desktop energy is maximizing 35 -45% every day time
15. The output devices are using 10% power more than desktop's usage

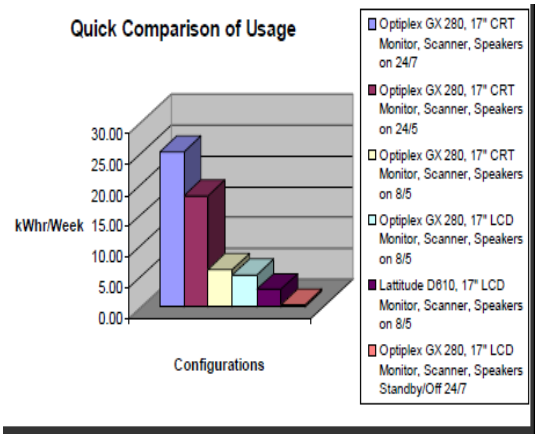


**Fig. 5:** Power Consumption

### 3.1. Reducing Power Consumption using Green Strategy

1 Use the print preview option before printing the document.
2 If you must print the document use the one side sheets.
4. Always keep the once-used paper in printer tray.
5. Use the Economic mode in printer. Its saves the toner lifespan.
6. Buy redecorate ink cartridges and toner
7. Print two sides of the paper.
8. Do not use screensavers. It's consuming more power.
9. Instead of buying a large monitor prefer the small size. For example 19inch monitor uses 40% more energy than a 17inch monitor. The higher resolution monitors are consumes more power.
10. Use the Sleep mode in computers, monitors, copiers, printers, fax machines, etc.
11. Our default margin setup in Word is 1.25 margin set up left & right and 1inch for top & bottom. We can avoid the unnecessary paper usage.
12. Insisting faculty and staffs are following green computing practices.
13. Cultivating admin to buy the Energy Star labeled computers.
14. Pilot testing method to develop the energy efficiency and cost efficacy of local area networks and data centers.
15. Use LCDs instead of CRTs because LCD consuming very less power.
16. Recycle your old computers
17. Turn off the computer at night may enlarge the lifetime of computer.

## 4. Green Manufacture Products

**(i) Bamboo:** Bamboo is very famous for making computer casings for computer and hardware devices
**(ii) Recyclable Plastics:**The computer are making recyclable polycabonated resin
**(iii) Eco friendly flame retardant:** The computer compounds are made for flame retardant silicone compunds.The green computing technology manufacturing non toxic computer components.
**(iv) Inventory Management**: Reduce the usage of haarmful material used in the process

**(v) Volume reduction:** removes hazardous particle waster from non hazardous partile.

## 5. Recent implementation of Green Computing

**(i) Blackle:** It is a one of the web search tool website powered Google Search tool. Blackle come out the idea that system monitor is white, displaying a blank page or home page, PC expends 74Watt. When the monitor is dark its take 59W. Based on this strategy everyone change. Blackle search, our earth would save 750MW per year. This was a very good solution than average usage of computer. [1]


**Fig. 6**: Blackle Web Search Tool

**(ii) Fit-PC:** A little PC that consumes just 5watt. Fit-PC is the extent of a soft cover paper back and totally noiseless; it is sufficiently to work on Linux or Windows XP. It is used to fit where a standard PC is tremendously big, energetic and take more energy. Fit-PC takes 5 Watts, in a day less power than a normal computer expanding in 1Hour.

**Fig. 7:** Fir PC

**(iii) Zonbu Computer:** Zonbu computer is the one of the liveliness efficient PC. The Zonbu computer consumes only 33% of the electricity of a common light bulb. The tool works on the Linux OS utilizing a 1.2 gigaHertz processor and 512 MegaByte of RAM.

**Fig. 8:** Zonbu Computer

**(iv) Sunray thin client:** The Sun ray thin client takes very less power than normal desktop PC. The sun ray consumes only 4 to 8 watts of power, the reason behind is server do the all the work. It is mainly used in all service sectors.

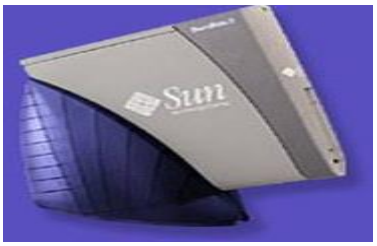


**Fig. 9**: Sun ray thin client

**(v) Asus Eee PC and ultra portables:** The ultra-versatile class of computer is represented as a small size, fully low power CPU, smaller monitor, minimal effort ,for example, utilizing flash memory for storage. Compare to other desktop PC Asus Eee run more powerfully and use less power.It is ultra portable, soft cover, Integrate with Wi-Fi and use flash memory behalf of hard drive. It is work on based on the Linux OS.


**Fig. 10:** Asus Eee PC

## 6. Conclusion

Green computing is very necessary to our society. Now a day's electricity is the biggest issue with help of the green computing recovers the problem. Now this is the time to effectively use the computer resources which are reuse. The heart of computation has shifted to well-organized Energy consumption, less computations by improving Algorithmic efficiency and alternative energy sources. Green computing gives a new opportunity for capitalist for harvesting with E-waste material and computer particles.

## References

[1] Smart 2020: Enabling the low carbon economy in the information age," The Climate Group SMART 2020 Report, Tech. Rep., June 2008.
[2] Biswajit Saha, " Green Computing" in International Journal of Computer Trends and Technology (IJCTT), volume 14 , Aug 2014,pp. 46-50.
[3] U. E. P. Agency, "Data centre report to congress," U.S. Environmental Protection Agency, Tech. Rep., 2007.
[4] http://en.wikipedia.org/wiki/Green_computing
*[5]* Murugesan, San. "Harnessing green IT: Principles and practices." *IT*
[6] *professional* 10.1 (2008): 24-33.
[7] Mishra, Sushree. "GREEN COMPUTING." *Science Horizon* (2013): 21.
[8] Google green computing report https://www.vpit.ualberta.ca/green/index.php?ref=home
[9] tmambersmitec.blogspot.in/2013/12/recent-implementation-of-green-computing.html
[10] http://greenworld2010.blogspot.in/2010/05/approaches-to-green-computing.html
[11] https://www.researchgate.net/publication/289527258_Green_Computing_and_Its_Impact
[12] https://www.techopedia.com/definition/14753/green-computing