GREEN ICT GUIDE

A Guide to the conscientious purchase, use and disposal of ICT

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Global e-Schools and Communities Initiative

Contents

INTRODUCTION

There is international growing concern about the environmental and health problems associated with waste electronic and electrical equipment (WEEE). GeSCI is committed to advising governments on environmental issues and to exercising good practice, to the best of its ability, in the area of environmental sustainability and more specifically e-waste

E-waste – the garbage generated by the disposal of electronic equipment like computers, peripherals and monitors - is becoming a major concern. The United Nation's Environment Programme (UNEP) estimated in 2006 that up to 50 million tonnes of electronic waste are generated every year, creating extreme health hazards in particular for the inhabitants of many African and Asian countries, contaminated with illegally dumped scrap.

OBJECTIVE

GeSCI's objective in producing the Green ICT Guide is to provide ICT stakeholders ,including teachers ,students, principals and policy makers with access to up-to-date information on the responsible acquisition, use and disposal of ICT.

This information pack contains links to the most relevant documents available concerning the conscientious purchase, use and disposal of ICT. This guide draws on current good and emerging practices in government agencies and businesses. The information is organised as follows:

Green acquisition: Buying greener equipment - *starting off on the right track*!

Green use: Maximising the lifespan of IT equipment - delaying obsolescence and understanding renewable energy production methods.

Green disposal: Responsible disposal of equipment - for schools, educational institutions and Ministries of education.

Fore *much more* on e-waste, see the Annex for further reading references, and a list of useful online tools.

GREEN ACQUISITION

The future impact of ICTs on environmental sustainability
2004, The European Commission
This study is the first quantitative projection to be carried out on how ICT could affect the environment in the European Union. In order to estimate the effects of ICT on a set of five environmental indicators, the project team adopted an innovative methodology combining qualitative scenario-building and quantitative modeling.
http://fiste.jrc.ec.europa.eu/pages/detail.cfm?prs=1208

Assessment of e-waste flows: a probabilistic approach to quantify e-waste based on world ICT and development indicators
2009, The Empa, Swiss Federal Laboratories for Materials Testing and Research
In this study a model was developed and applied to estimate e-waste flows from existing indicators which are published periodically by international organizations
http://ewasteguide.info/Mueller_2009_R09

GREEN ACQUISITION

We can influence the future when we buy new equipment by bearing in mind how the equipment will impact the environment at the end of its life cycle. Buying energy-efficient and environmentally sound components, computers, servers, and other ICT equipment helps to reduce the contaminant factor of e-waste.

Guide to Greener Electronics
May 2010, GreenPeace
The guide ranks the top manufacturers of personal computers, mobile phones, TVs and games consoles according to their policies on toxic chemicals, recycling and climate change.
http://www.greenpeace.org/international/campaigns/toxics/electronics/how-the-companies-line-up

EPEAT
EPEAT is a system that helps purchasers evaluate, compare and select electronic products based on their environmental attributes. The system currently covers desktop and laptop computers, thin clients, workstations

and computer monitors
http://www.epeat.net

Federal electronics challenge
Federal electronics challenge contains several useful
resources about environmental considerations in bidding
processes, like *Incorporating Environmental Criteria in
Electronics Acquisition*
http://www.federalelectronicschallenge.net/resources/
docs/bestval.pdf
and other tools like checklists, model contracts, TCO
tools considering waste, etc.
 http://www.federalelectronicschallenge.net/

GREEN USE

Computer manufacturers persist in fabricating what
amounts to potentially disposable products - which is
why the mountain of rubbish discarded by the IT industry
is growing faster than in any other sector. And the market
pressure to replace and to update the equipment in
order to run newer software and applications forces
organizations to replace equipment every 3 to 5 years.

However, there are several preventive measures
governments and schools can take to reduce this
contaminant process to the minimum and expand the
useful lifetime of each device to the maximum possible,
like configuring machines for optimum use and use
energy conservation methods and alternative renewable
energy sources.

BETTER USE OF EQUIPMENT

Extending the Life of Electronic Equipment
2009, Federal Electronics Challenge
Contains suggestions on different ways to maximize the
lifetime of computer equipment.
http://www.federalelectronicschallenge.net/resources/
docs/extend.pdf

**Improving Operation and Maintenance of Electronic
Equipment**
2009, Federal Electronics Challenge

RENEWABLE ENERGY SYSTEMS

This tool will guide you through some simple steps that

your organization can take to improve the operation and maintenance of your electronics in three areas: energy conservation and efficiency; efficient use of imaging equipment; and extending product life.
http://www.federalelectronicschallenge.net/resources/docs/oandm.pdf

ENERGY CONSERVATION

Power Management for Computers and Other Office Equipment: A Best Practices Resource Guide
2009, Federal electronics challenge, USA
This resource guide addresses common questions that energy managers, facility managers, and IT administrators have about the power management of computers and other office equipment.
http://stateelectronicschallenge.net/pdf/sec_computer_power_management_guide%20.pdf

RENEWABLE ENERGY SYSTEMS

Grid alternatives
A website that provides updated information of technologies available
http://www.gridalternatives.org/

Guide to alternative power for small scale rural projects
2004, Winrock
An excellent guide that provides recommendations on powering up in rural areas
http://www.winrock.org/clean_energy/files/Winrock_Energy_for_Rural_ICT_Guidebook.pdf

Off Grid Solar calculator
2009, A Post in BuildAfrica.org
An interesting tool allows you to calculate requirements and needs to design a solar panel
http://buildafrica.org/2009/05/03/off-grid-solar-calculator/

Create a micro hydro power system
A resource by GreenYou

GREEN DISPOSAL

http://www.greenyour.com/home/home-improvement/
energy/tips/create-a-micro-hydro-power-system

**When a device breaks down or becomes obsolete,
its components and parts can still be processed by
using them as spares, refurbishing and recycling them,
donating them or breaking them apart in order to
reuse components and parts.**

REUSE

Reuse of Electronic Equipment
2008, Federal electronics challenge
This document outlines reuse and donation options
for managing excess and surplus electronic items,
including tips for Internal Reuse, Refurbishment and
Redeployment.
http://www.federalelectronicschallenge.net/resources/
docs/reuse.pdf

**Solving the E-Waste Problem (StEP) White Paper: One
Global Understanding of Re-Use**
2009, Step
Re-use of used electronics or its components is to be
seen in the context of the waste hierarchy, wherein
the avoidance of waste generation is seen preferential
to activities of waste processing, namely recovery of
materials and energy and ultimately disposal.
http://www.step-initiative.org/pdf/white-papers/StEP_
TF3_WPCommonDefinitions.pdf

**Other interesting documentation and references
available at STEP, solving the e-waste problem
initiative:**
http://www.step-initiative.org/taskforces/tf3.php

DISPOSAL

**Disposition and End-of-Life Options for Personal
Computers**
1997, Carnegie Mellon University
This old but not outdated document explains the models
available to reduce the contaminant factor of used
personal computers
http://gdi.ce.cmu.edu/comprec/NEWREPORT.PDF

RECYCLING

Plataforma RELAC: Plataforma regional de residuos electrónicos en latinoamerica y el caribe
A good collection of e-waste experiences and information in the latin american region (in Spanish)
http://www.residuoselectronicos.net/

E-waste challenges in developing countries: South Africa case study
2005, APC
This discussion paper, commissioned by the APC, aims to raise the profile of e-waste issues in developing countries so that the implications of information and communications technology (ICTs) for development initiatives can be better understood – particularly in the context of the increasing flow of old technology from developed to developing countries
http://www.apc.org/fr/system/files/e-waste_EN.pdf

The management of electronic waste, a guide for local and regional authorities
2003 by ACR and the Association of Cities and Regions for Recycling and sustainable Resource management

La gestión de residuos de aparatos electrónicos
http://www.residuoselectronicos.net/archivos/documentos/LaGestionRAEE.pdf (Spanish)
the English, Italian, French and German versions are available for free on request from info@acrplus.org

E-waste Guide India
An online reference guide to the initiatives and status on e-waste in India.
http://www.e-waste.in/

RECYCLING

Recycling of Electronic Equipment
2008, Federal electronics challenge
This document outlines recycling options for disposing of obsolete electronic property.
http://www.federalelectronicschallenge.net/resources/docs/recycling.pdf

Recycling: from e-waste to resources
2009, UNEP (United Nations environmental programme)
The appropriate handling of e-waste can both prevent serious environmental damage and also recover valuable

*materials, especially for metals. This document analyzes
the e-waste recycling sector in selected developing
countries*
http://www.ewasteguide.info/files/UNEP_2009_eW2R.
pdf

REFURBISHING

**How to Set up and Operate a Successful Computer
refurbishment Centre in Africa. A planning and
management guide.**
2004, *Bridges.org*
http://www.bridges.org/refurbished_computers

The Entrepreneur's Guide to Computer Recycling
The purpose of this guidebook is to help develop the
skills required to handle the growing flux of waste
generated by the new and used computer markets for
the benefit of the environment and public health.
http://www.ticethic.com/guide?lang=en
French: http://www.ticethic.com/guide

APPENDIX

WEBSITES

Federal electronics challenge
http://www.federalelectronicschallenge.net

UNEP United Nations environment programme
http://www.unep.org/

E-waste Guide
http://www.ewasteguide.info/

ONLINE TOOLS:

Electronics Environmental Benefits Calculator (EEBC) by the federal Electronics Challenge.
This tool has been developed to assist organizations in estimating the environmental benefits of greening their purchase, use and disposal of electronics.
http://www.federalelectronicschallenge.net/resources/bencalc.htm

Total Cost of Ownership (TCO) Modeling by the federal Electronics Challenge.
This is a tool that systematically accounts for the indirect and direct life cycle costs related to an information technology (IT) investment decision. While the emphasis is on decisions with a potential environmental impact, this tool includes data entry fields for any costs that the user might consider in a TCO analysis.
http://www.federalelectronicschallenge.net/resources/aquisit.htm

Notes

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ABOUT GESCI

GeSCI is an international not-for-profit organisation providing demand-driven assistance to developing countries seeking to harness the potential of Information Communication Technology (ICT) to improve their education systems.

GeSCI was founded by the UN ICT Task Force in 2003 arising from a global call to utilise ICT to address the issues of quality and access in developing country education systems. seven years on, GeSCI is a well known innovative agency replete with a team of international experts in education, technology and research. We work with Ministries of Education (MoEs) and leading international organisations to realise the shared vision of a Knowledge Society for All.

VISION

At the heart of GeSCI's mission is the concept of Knowledge Building and Sharing: working together with our developing country partners to strengthen their knowledge systems and to develop their visionary thinking and strategic capacity to effectively manage, deploy and integrate ICT in their education systems. GeSCI believes that the proper and effective use of ICT in education can improve the quality of teaching and learning at all levels of the education system. We are committed to the creation of a world where every learner has access to a standard of education which can help them to improve their lives, a Knowledge Society for All. To this end GeSCI will work with partners at local, national and international levels who support and share this vision.

Gesci contact details:

Dublin Office Gesci
14 St. Stephen's Green,
Dublin 2, Ireland.
Tel +353 (0)1 6425006
Fax +353 (0)1 676 9856

info@gesci.org
www.gesic.org

Niamh Brannigan,
Communications Manager
Tel: +353 (0)85 7751564

Africa Regional Office
9th Floor, Unga House,
Westlands, Nairobi, Kenya.
PO Box 66380-0800

Tel +254 20 374 6060/1/2