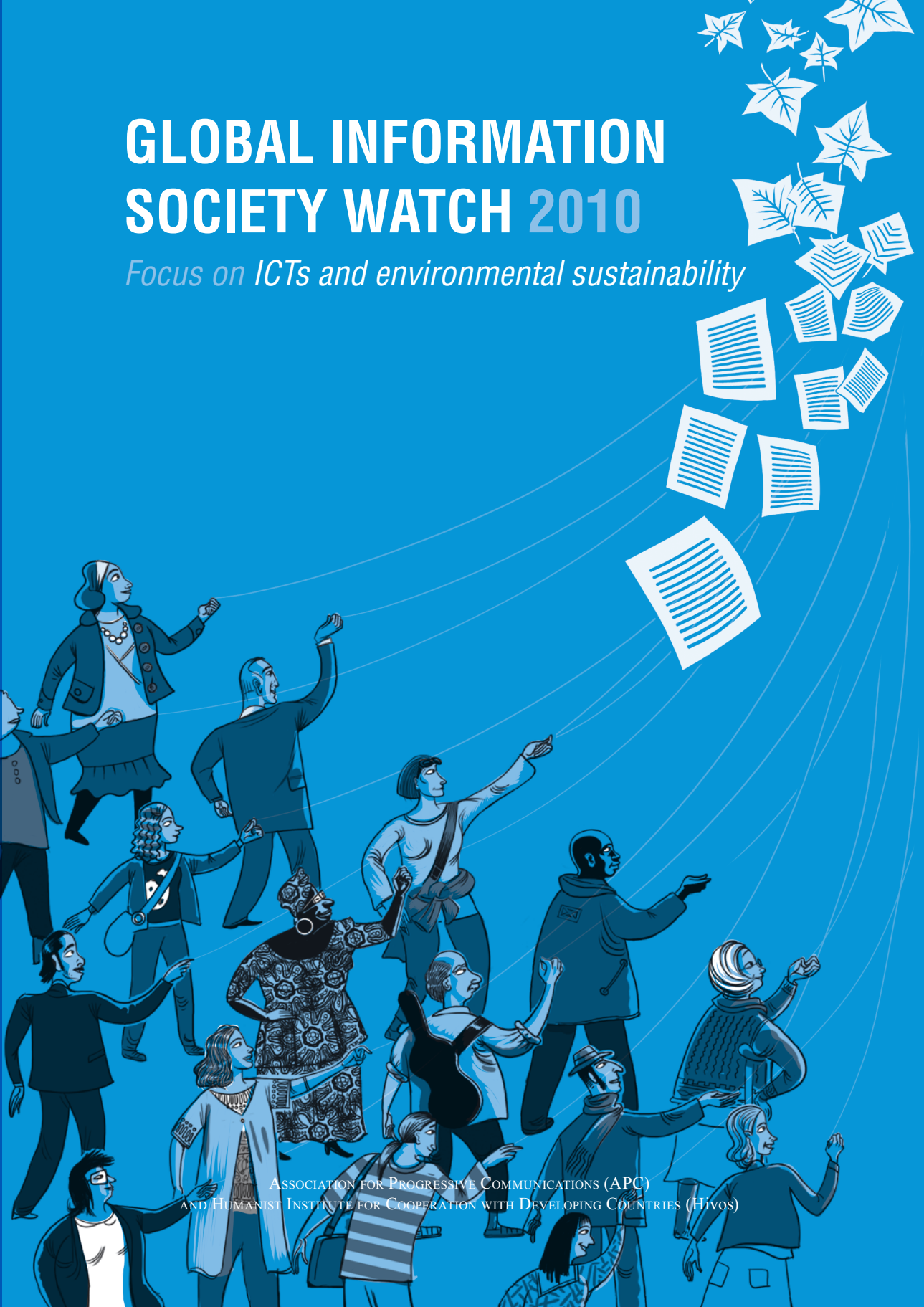
GLOBAL INFORMATION SOCIETY WATCH 2010

Focus on ICTs and environmental sustainability



Association for Progressive Communications (APC)
and Humanist Institute for Cooperation with Developing Countries (Hivos)

Global Information Society Watch

2010

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Swedish International Cooperation Agency (Sida)
Swiss Agency for Development and Cooperation (SDC)

Global Information Society Watch
Published by APC and Hivos
2010

ISBN 92-95049-96-9
APC-201011-CIPP-R-EN-PDF-0087

APC and Hivos would like to thank the Swedish International Cooperation Agency (Sida) and the Swiss Agency for Development and Cooperation (SDC) for their support for Global Information Society Watch 2010. SDC is contributing to building participation in Latin America and the Caribbean and Sida in Africa.

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The carbon footprint of ICTs

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Introduction

The catastrophic British Petroleum (BP) oil gush in the Gulf of Mexico has brought home to many the acute dangers implicit in the desperate search for new sources of fossil fuels. But it also dramatised the extent to which information and communications technologies (ICTs) can be effectively deployed to redress environmental crises and promote public awareness; including, in this case, the provision of the visual links and transmission of data to investigators and the media from the site of the oil gush some five miles below the surface of the ocean. Similarly, ICTs can assist companies such as BP, as well as governments and civic organisations to limit their carbon footprints and promote better environmental safeguards as part of their normal day-to-day operations.

But the responsibility of the ICT industry goes well beyond facilitating the greening of other enterprises. The industry must get its own house in order. Media commentators and leading ICT actors often ascribe the carbon emission problem to others: the petroleum industry, the airlines and automobile sectors and plastics manufacturers, among them. While keeping a spotlight on the worst offenders, the ICT industry's narrative and media analysis must extend beyond the usual suspects to include the first person plural. The sector must attend to its own greening by redressing the increasing industry carbon footprints caused from applications in high-energy call centres, "cloud computing" data centres, ultra-fast servers, complex telecommunications networks, equipment cooling devices and expensive air conditioning, the use of multiple PCs, powerful modems and ubiquitous mobile phones. By examining the role of ICTs in climate change as well as the disposal of ICT waste, the industry will be able to take corrective internal actions while continuing to expose the causes and consequences of climate change outside of the sector itself.

Carbon footprint of the global ICT industry

Global consultants Gartner estimate that ICTs presently account for approximately 0.86 metric gigatonnes of carbon emissions annually, or just about 2% of global carbon emissions.[1] The International Telecommunication Union (ITU) has estimated the contribution of ICTs (excluding the broadcasting sector) to climate change at between 2% and 2.5% of total global carbon emissions. The main contributing sectors within the ICT industry include the energy requirements of PCs and monitors (40%), data centres, which contribute a further 23%, and fixed and mobile telecommunications that contribute 24% of the total emissions.[2]

Other researchers such as Boccaletti, Löffler and Oppenheim present a worrying prognosis, noting:

> Emissions from the manufacture and use of PCs alone will double over the next 12 years as middle-class buyers in emerging economies go digital. Similarly, worldwide growth in the use of mobile phones will triple their carbon footprint by 2020, in large part because of their consumption of silicon and rare metals. But the fastest-increasing contributor to carbon emissions will be as a result of growth in the number and size of data centers, whose carbon footprint will rise more than fivefold between 2002 and 2020 as organizations in all sectors add servers to meet rising demand even as companies and governments alike attempt to become more energy efficient.[3]

E-waste

The methods of disposal, including incineration, of electronic waste (e-waste) are another key environmental issue affecting climate change. Among the discarded artefacts are disused mobile phones, obsolete computer and television equipment, old cables and other ICT hardware. The ITU estimates that between 1996 and 2008 the number of mobile phones in use increased from 145 million to over four billion. Most of these will be discarded within one to three years of their life span. In many countries disused mobile phones, old computers and other electronic junk are discarded into existing general dump sites for domestic waste, where they are liable to be incinerated alongside other solid waste materials. The resulting carcinogenic emissions will add to the alchemy of harmful gases contributing to climate change. At the same time, the failure by manufacturers to maximise the life span of equipment increases the burden of emissions from the manufacturing sector.

ICT adaptation and mitigation strategies

While the prognosis on the ICT industry's own future contribution to climate change is worrying, there is still the overriding positive prospect that ICTs themselves can

1 Gartner (2009) Gartner Estimates ICT Industry Accounts for 2 Percent of Global CO2 Emissions. www.gartner.com/it/page.jsp?id=503867

2 ITU (2009) ICTs and Climate Change, background paper for the ITU Symposium on ICTs and Climate Change, Quito, Ecuador, 8-10 July.

3 Boccaletti, G., Löffler, M. and Oppenheim, J. (2008) How IT can cut carbon emissions, *The McKinsey Quarterly*, October, p. 2. www.mckinsey.com/clientservice/sustainability/pdf/how_it_can_cut_carbon_missions.pdf

facilitate innovations and social and economic restructuring globally to help reduce overall global carbon emissions. Already there are estimates that by the year 2020 ICT applications could help reduce global carbon emissions by 15%, which is significantly higher than the industry's own contribution to carbon output.

The creation of greener and more energy-efficient industrial plants and the greater use of renewable energy in such areas as electricity generation and equipment production, should become the norm through both voluntary compliance and formal regulation to meet agreed industry standards. ICT firms should be directed to take measures to recalibrate their production plants and manufacturing systems, as well as to include technical innovations in their internal systems to make them more energy efficient and environmentally friendly.[4]

The use of audits of social and economic sectors to identify activities that could be digitised or "dematerialised" is another critical adaptation strategy. McKinsey Consultants have found that through ICT applications in the highest energy-consuming industries, including motor vehicle manufacture, shipping, air transport, building and construction, there could be an accumulated reduction in emissions equivalent to 4.52 gigatonnes of carbon equivalents ($GtCO_2e$). The McKinsey study indicated that total energy savings across these industries could amount to over EUR 363 million.[5] This sum could contribute to financing further investments in energy-efficient industrial technologies and in green ICTs.

However, financing the implementation of these innovations, particularly in developing countries, will be a major challenge. The use of taxation on current levels of carbon output may be counterproductive in the existing economic climate. Alternative policies of providing incentives for private sector adoption of energy-efficient innovations should be considered by governments. Additionally, the cap and trade mechanism (by which limits are placed on carbon consumption and any resulting savings traded commercially) may also provide an avenue to safeguard ecosystems while being able to finance the diffusion of energy-efficient technologies and promote other sustainable development objectives. The smart use of universal access funds to source green technology could also provide creative ways to finance or subsidise energy-efficient and pro-poor ICTs, especially in developing countries.

If ICTs are to more effectively influence attitudes and behaviour toward a greener environment, strategies would need to be adopted to link info-literacy with environmental literacy programmes as they are taught in schools and communities. Government information services, corporate public service announcements and advertising campaigns could also more actively promote environmental awareness, including through the popular internet social networking sites where some of the most receptive, youthful audiences reside.

Conclusions

One of the critical challenges of our era is to balance the competing demands for more widespread use of ICTs with their energy-efficient deployment, and safer e-waste disposal at the end of their useful life. We must also face the challenge of using ICTs to help other industries realise greener objectives, whether these are self-imposed or externally regulated. In these ways we could better contribute to meeting crucial human development objectives such as those embodied in the Millennium Development Goals (MDGs) of the United Nations (UN). The technology strategies and targets emanating from governments, the UN Internet Governance Forum and other multilateral and post-World Summit on the Information Society channels should be audited and recalibrated for their implications for environmental sustainability. Even as developing countries seek investors and affordable ICT access for low-income populations, they cannot afford to do so at any cost to the environment. Significant reforms in showcasing sound public policies and incentivising good corporate citizenship should be devised, alongside tough environmental regulations in order to align the needs of private sector investors and governments with the social requirements for the more environmentally responsible use of ICTs. "We", who are the primary users, beneficiaries and custodians of the burgeoning ICT industry, must also seek solutions on our own doorsteps. ■

4 www.euractiv.com/en/climate-change/ict-climate-change-problem-solution/article-180760

5 www.euractiv.com/en/climate-change/study-sheds-light-ict-sector-carbon-footprint/article-173710

GLOBAL INFORMATION SOCIETY WATCH 2010

GLOBAL INFORMATION SOCIETY WATCH 2010 investigates the impact that information and communications technologies (ICTs) have on the environment – both good and bad.

Written from a civil society perspective, **GISWatch 2010** covers some 50 countries and six regions, with the key issues of ICTs and environmental sustainability, including climate change response and electronic waste (e-waste), explored in seven expert thematic reports. It also contains an institutional overview and a consideration of green indicators, as well as a mapping section offering a comparative analysis of "green" media spheres on the web.

While supporting the positive role that technology can play in sustaining the environment, many of these reports challenge the perception that ICTs will automatically be a panacea for critical issues such as climate change – and argue that for technology to really benefit everyone, consumption and production patterns have to change. In order to build a sustainable future, it cannot be "business as usual".

GISWatch 2010 is a rallying cry to electronics producers and consumers, policy makers and development organisations to pay urgent attention to the sustainability of the environment. It spells out the impact that the production, consumption and disposal of computers, mobile phones and other technology are having on the earth's natural resources, on political conflict and social rights, and the massive global carbon footprint produced.

GISWatch 2010 is the fourth in a series of yearly reports critically covering the state of the information society from the perspectives of civil society organisations across the world.

GISWatch is a joint initiative of the Association for Progressive Communications (APC) and the Humanist Institute for Cooperation with Developing Countries (Hivos).

GLOBAL INFORMATION SOCIETY WATCH
2010 Report
www.GISWatch.org

ISBN 92-95049-95-0
9 789295 049956

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