

GLOBAL INFORMATION SOCIETY WATCH 2010

Focus on ICTs and environmental sustainability



ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC)
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Introduction

A new issue is gaining space at international and European forums, as a response to a growing concern about the environment: the relationship between information technology, innovation and climate change.¹ Information and communications technologies (ICTs) have a high priority on the European Union (EU) policy-making agenda, as the Digital Competitiveness Report explains: “Europe remains a global force in advanced information and communication technologies. The World Wide Web, the mobile GSM standard, the MPEG standard for digital content and ADSL technology were all invented in Europe. Maintaining this leadership position and turning it into a competitive advantage is an important policy goal.”²

The EU, as a supranational organisation, is a leading force in setting policy standards for the 27 member states, as well as non-member European countries. The EU policy framework for the information society and media – i2010 – has promoted the positive contribution that ICTs can make to the economy, society and personal quality of life. Since 2008 a more environmentally aware ICT policy direction³ has taken off in the region. The green turn is a response both to climate change concerns and to the economic recession. The new ICT policy of the EU, launched in 2010 and called the Digital Agenda, rethinks ICTs as key tools of an environmentally sustainable, innovative Europe. At the same time, environmental policy is a key regulation area for the EU: nature has no political borders and clean technologies would impact on the quality of life of future generations. A tight climate change policy and strict electronic waste (e-waste) regulations set the framework for a clean ICT policy in Europe.

The focus of this report is the relationship between ICTs, climate change and innovation in Europe, as promoted by EU officials and backed up by ICT business stakeholders.

Regional trends in policy and legislation

The EU's ICT policy between 2005 and 2010 (i2010) highlighted e-inclusion, infrastructural development, inter-

operability and accessibility issues as top priorities. Between 2005 and 2010, European ICT policy highlights have been infrastructural development for high-speed and broadband internet, e-inclusion measures aimed at bridging the social and geographical digital divide, and interoperability in order to achieve media convergence goals. The Digital Agenda (2010-2015) has approached ICTs as tools for mitigation of and adaptation to climate change.⁴

The EU has committed to cutting its greenhouse gas (GHG) emissions by at least 20% by 2020 compared to 1990 levels and to improving energy efficiency by 20%. The ICT sector has a key role to play in this challenge.⁵

- ICTs offer potential for a structural shift to less resource-intensive products and services, for energy savings in buildings and electricity networks, as well as for more efficient and less energy-consuming intelligent transport systems.
- The ICT sector should lead the way by reporting its own environmental performance and by adopting a common measurement framework as a basis for setting targets to reduce energy use and GHG emissions of all processes involved in production, distribution, use and disposal of ICT products and delivery of ICT services.

Innovation and ICTs are the driving forces of the new economic strategy proposed by the EU called “Europe 2020”. It sets ambitious targets in key economic, social, cultural and environmental areas:⁶ 75% of the population aged 20-64 should be employed; 3% of the EU's gross domestic product (GDP) should be invested in research and development; the “20/20/20” climate/energy targets should be met; the share of early school leavers should be under 10% and at least 40% of the younger generation should have a degree or diploma; and 20 million less people should be at risk of poverty. In order to meet these targets, the European Commission proposes joint action in several areas: rethinking innovation policy; enhancing the quality and international attractiveness of Europe's higher education system by promoting student and young professional mobility; promoting a digital market agenda for Europe – a digital single market

4 Ibid., p. 4.

5 Commission of the European Communities (EC) (2010) *A Digital Agenda for Europe*. eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:HTML

6 Commission of the European Communities (EC) (2010) *Commission proposes new economic strategy in Europe*. europa.eu/rapid/pressReleasesAction.do?reference=IP/10/225&format=HTML&aged=0&language=EN&guiLanguage=en

7 A 20% cut in emissions of greenhouse gases by 2020, compared with 1990 levels; a 20% increase in the share of renewables in the energy mix; and a 20% cut in energy consumption. BBC (2010) EU climate package explained, BBC, 9 April. news.bbc.co.uk/2/hi/europe/7765094.stm

1 Maclean, D. and St. Arnaud, B. (2008) *ICTs, Innovation and the Challenge of Climate Change*, International Institute for Sustainable Development, p. 3. www.iisd.org/pdf/2008/ict_innovation_climate.pdf

2 Commission of the European Communities (EC) (2009) *Europe's Digital Competitiveness Report: Main achievements of the i2010 strategy 2005-2009*. eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0390:FIN:EN:HTML

3 Commission of the European Communities (EC) (2008) *Addressing the challenge of energy efficiency through information and communication technology*. ec.europa.eu/information_society/activities/sustainable_growth/docs/com_2008_241_1_en.pdf

based on ultra-fast internet; and supporting the shift towards a resource-efficient and low-carbon economy.⁸

Climate change and ICTs: Regulations and good practices

As a proof of its proactive attitude to tackling climate change, the EU has made a unilateral commitment to cut its emissions in 2020 to at least 20% below 1990 levels, and is offering to scale up this reduction to 30% provided other major emitters in the developed and developing worlds take on their fair share of the mitigation effort under a global agreement.⁹

European countries are at different stages of adaptation to climate change:¹⁰ while many of them have developed complex and well-documented projects and programmes (Denmark, Finland, France, Germany, Hungary, Ireland, Netherlands, Norway, Portugal, Spain, Sweden and the UK), others are still working on their coping strategies (Austria, Bulgaria, Czech Republic, Estonia, Italy, Latvia, Lithuania and Switzerland). Some countries provided scarce or no information to the European Environment Agency concerning their climate change adaptation strategies: Cyprus, Greece, Luxemburg, Poland, Romania, Slovak Republic and Slovenia.

In order to meet their emissions targets, the role of ICTs as enablers of energy efficiency across the European economy needs to be fully explored and exploited.¹¹ Firstly, it is necessary to foster research into novel ICT-based solutions, in order to reduce the energy intensity of the economy by using smart technologies. Secondly, ICTs should lead by example and manufacturers should reduce their energy consumption, resulting in substantial energy savings. Thirdly, it is crucial to encourage structural changes aimed at realising the enabling role of ICTs in substituting physical products through online services (“dematerialisation”) and in moving business to the internet (e-banking, teleworking).

Estonia and the UK are leading the way globally when it comes to smart ICT use for the benefit of urban communities: since 2007 they have ranked among the Top Seven Intelligent Communities of the Year, serving as role models for best practices in developing competitive local economies and connecting citizens.¹²

A policy study commissioned by the Swedish government under its EU presidency addressed environmental issues as key components of a broad ICT policy agenda for a green knowledge society.¹³ Green ICTs should support an eco-efficient economy by achieving three main policy goals by 2015: to create a green ICT products and services market; to understand and exploit substitution mechanisms; and to harness ICT in non-ICT sectors. The report recommends that EU member states explore financial incentives to extend and use government procurement mechanisms, to research household and business behaviour, and to offer research and development support for ICT innovation.

The energy consumption of ICTs rose from 123 billion kilowatt hours (kWh) in 2005 to 246 billion kWh globally in 2010, according to a British Computer Society report.¹⁴ Meanwhile, research by the US think tank Gartner has estimated that the ICT industry accounts for 2% of global CO₂ emissions.¹⁵ Gartner has recommended organisations address the negative effects of using ICTs and should:

- Start measuring power consumption
- Buy fewer servers and printers by increasing their usefulness (e.g. using virtual servers)
- Improve capacity and provision planning
- Improve the efficiency of cooling
- Turn power management on, use a low power state or turn equipment off after hours
- Extend the life of assets by reusing within the enterprise and externally
- Use all electronic equipment correctly
- Analyse all waste produced in order to minimise waste, and dispose of it efficiently and environmentally soundly.

For its part, the British Computer Society recommends that since governments account for massive energy consumption through ICTs, they should put pressure on all suppliers to use and provide greener ICT assets and services, along with extending the life cycles of these devices and enabling active power management (switch-off, low-power standby modes).

8 europa.eu/rapid/pressReleasesAction.do?reference=IP/10/225&format=HTML&aged=0&language=EN&guiLanguage=en

9 Commission of the European Communities (EC) (2010) *Building a post-2012 global climate regime: The EU's contribution*. ec.europa.eu/environment/climat/future_action.htm

10 European Environment Agency (EEA) (2010) *National Adaptation Strategies*. www.eea.europa.eu/themes/climate/national-adaptation-strategies

11 Commission of the European Communities (EC) (2008) op. cit., p. 4.

12 Intelligent Community Forum (2010) Top Seven By Year: Community-based approach to the broadband economy. www.intelligentcommunity.org/index.php?src=gendocs&ref=Top7_by_Year&category=Events

13 Forge, S. et al. (2009) *A Green Knowledge Society: An ICT policy agenda to 2015 for Europe's future knowledge society*, SCF Associates Ltd., p. 7. ec.europa.eu/information_society/europe/i2010/docs/i2010_high_level_group/green_knowledge_society.pdf

14 Crooks, B. and Ross, M. (2009) *Greening your IT Work Space*, British Computer Society, p. 5. www.bcs.org/upload/pdf/green-it-mross.pdf

15 Gartner (2007) Gartner Estimates ICT Industry Accounts for 2 Percent of Global CO₂ Emissions. www.gartner.com/it/page.jsp?id=503867

A European Commission report¹⁶ identified the dual contribution ICTs have to make for a low-carbon economy. On the one hand, they can enable energy efficiency improvements by monitoring and directly managing energy consumption. They do this by providing the tools for more energy-efficient business models, working practices and lifestyles, such as e-commerce, teleworking and e-government applications, and by delivering innovative technologies in order to reduce wasteful consumption of energy. On the other hand, ICTs can provide the quantitative basis on which energy-efficient strategies can be implemented and evaluated, by providing energy consumption information to consumers, and by measuring energy performance at a system level: software tools can provide information on how to design a system in order to optimise its overall energy performance in a cost-effective manner.

The British Computer Society¹⁷ summarised the EU clean tech approach: firstly, the ICT sector will be invited to set targets and reach a collective agreement on measurement methods. Secondly, partnerships between the ICT sector and other major energy-using sectors will be encouraged to improve energy efficiency and reduce emissions by using ICTs. Thirdly, EU member states will be called upon to enable smart and clean ICT solutions.

Euractiv estimated¹⁸ that the ICT industry will lead by example and reduce the energy it uses. “In times of recession, reducing [the energy consumption of ICTs goes] hand in hand with environmental initiatives for a low carbon economy.”¹⁹ A number of ICT organisations in developed European countries have launched green ICT marketing campaigns. As an example of good practice, British Telecom “has been recognised as the world number one telecommunications company in the Dow Jones Sustainability Index for the seventh consecutive year and has achieved a 60% reduction in its UK carbon emissions from a 1996 baseline. The company has set a further target to reduce emissions by 80% from the 1996 baseline by 2016.”²⁰

There are multiple benefits of greening ICTs at the workplace, the British Computer Society report shows. These include enhanced reputation, reduced energy bills, and a decrease of travel costs, due to ICT-facilitated teleworking and remote meetings.²¹ The report suggests companies take simple

actions first, such as “hot rooming” (reducing heating and lighting to a limited area), and improving security so staff feel able to work earlier or later, thereby reducing the office space required if everyone worked at peak time. Good printing practices also contribute to greening ICTs at the workplace: using recycled paper, printing less, setting printers for double-sided or side-by-side printing by default, adopting high-density texts (more text on paper) and maximising print areas.

In a white paper²² the German company T-Systems recommends the extensive use of ICT-enabled telecommunications solutions in order to decrease business travel: “In 2008, the average duration of business travel remained stable at 2.3 days. Trips without an overnight stay in particular were more frequent – short trips especially offer significant potential for savings when eliminated by telecommunications solutions that enable remote collaboration.” Clean-tech solutions apply both to major corporations and to small and medium-sized companies, which account for about 80% of all business travel. Video-conferencing systems enable realistic virtual meetings, independently of the participants’ geographical locations.

According to a global green ICT policy evaluation,²³ under the EU codes of conduct for broadband equipment, signatory companies commit to reducing energy consumption of broadband equipment. At the same time, the EU codes of conduct for data centres set energy efficiency goals and measures standards for data centre providers. The relatively small number of signatory companies to the EU codes of conduct for broadband equipment suggests that the codes of conduct have not yet been widely accepted. However, they are still useful for non-signatory companies as they include best practices and standards.

Conclusion

This report focused on the relationship between ICTs, climate change and innovation in Europe, as reflected in EU policies and good practices at governmental and business level. Replacing “dirty ICTs” with “green ICTs”²⁴ is a high priority for all stakeholders: supranational regulatory bodies, national governments and subnational structures and organisations. At the same time, using ICTs as smart tools for an environmentally sustainable Europe is being mainstreamed by governments and businesses equally. ■

16 Commission of the European Communities (EC) (2009) *Mobilising Information and Communication Technologies to facilitate the transition to an energy-efficient, low-carbon economy*, p. 3. ec.europa.eu/information_society/activities/sustainable_growth/docs/com_2009_111/com2009-111-en.pdf

17 Ibid., p. 9.

18 EurActiv (2009) *Brussels to launch new ‘green ICT’ plan*. www.euractiv.com/en/infosociety/brussels-launch-new-green-ict-plan/article-178747

19 Crooks, B. et al. (2009) *Raising Awareness of GreenIT – the BCS Way*, British Computer Society, p. 1. www.bcs.org/upload/pdf/sqm2009-raisingawareness.pdf

20 Commission of the European Communities (EC) (2008) op. cit., p. 3.

21 Crooks and Ross (2009) op. cit., p. 15.

22 T-Systems (2009) *Green ICT: The Greening of Business*, T-Systems White Paper, Bonn, p. 10. www.ictliteracy.info/rf/pdf/T-SystemsWhitePaper_Green-ICT.pdf

23 Reimsbach-Kounatze, C. (2009) *Towards Green ICT Strategies: Assessing Policies and Programmes on ICT and the Environment*, OECD Digital Economy Papers, No. 155, p. 14. www.oecd-ilibrary.org/docserver/download/fulltext/5ksdxh1h5bf2.pdf?expires=1280802562&id=0000&accname=guest&checksum=17C7F3DD959055C9BA33CF4A366A53ED

24 Organisation for Economic Co-operation and Development (OECD) (2009) *ICTs for Development: Improving Policy Coherence*, p. 24. www.oecd.org/document/12/0,3343,en_2649_18532957_44585164_1_1_1_1,00.html

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).

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