

# 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



## Global Information Society Watch 2010

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## Introduction

In the Netherlands, both information and communications technologies (ICTs) and global warming have strong implications. Dutch researchers have played a big part in the development of ICT historically. The compact disc was developed in part by engineers from the Dutch company Phillips, and Wi-Fi, the global standard for wireless internet, was developed in the Dutch town of Nieuwegein.<sup>1</sup> The industry is now a major contributor to the country's economic development.

The Dutch government has actively supported the implementation of ICTs in both the private and public sector. As a consequence the Netherlands is a world leader in terms of ICT use,<sup>2</sup> innovation and commercial applications.

On the other hand, the widespread use of ICTs has created problems such as a rise in electricity demands and electronic waste (e-waste). This blooming industry also contributes increasingly to the country's carbon footprint. Rising sea levels and river management are among the biggest challenges when it comes to global warming for the Netherlands. A quarter of the country lies below sea level, where most of the people live and work; therefore the effects can be drastic, with strong social and economic consequences.

## Policy and legislative context

The Netherlands, as an EU country, falls under specific laws of the EU for disposal, treatment and recycling of electronic waste. Moreover, there are national laws, adapted from EU directives and implemented at the national level.

The most relevant EU directives are 2002/95/EC and 2002/96/EC,<sup>3</sup> which concern the use of hazardous materials and flow of e-waste. The laws in the Netherlands are adapted to fulfil the requirements. Producers are responsible for limited use of toxic materials (2002/95/EC) and distributors and municipalities are responsible for the collection and processing of used electronics.

The Ministry for Housing, Spatial Planning and Environment (VROM) is responsible for ruling, controlling and providing incentives for compliance with policies related to e-waste. There are more than 600 municipal collection points for e-waste in the Netherlands, providing two options for the citizens: to return their electronics to specialised stores or to hand them over to their city administrations for processing.

VROM is a partner in the development of solutions regarding sustainability and eco-friendly markets. The ministry has the environment as one of its main issues. It has regulations in several areas, such as emissions, sustainability and waste. Most of this legislation concerns companies.

A noteworthy step that the government has taken is to implement a sustainable procurement policy, which started in 2010.<sup>4</sup> The novelty here is that the government is not using legislation, but its position as a (very large) customer to encourage the suppliers of products and services to become more sustainable. Among the product groups that have been defined in this policy are hardware and networks/infrastructure, and telephone services and equipment.<sup>5</sup> Some municipalities are exploring whether they can even go beyond the requirements set at the national level.

## The three sides of the ICT industry

The three sides of ICT related to climate change can be summarised as follows: enabling the green economy (innovation), greening of ICTs and greening using ICTs.<sup>6</sup>

## ICTs as a catalyst for innovation

ICTs have been called the "innovation axis" due to their potential to enable innovation for other economic sectors, by increasing productivity and creating new types of services.

The Dutch government actively promotes the use of ICTs in several ways, facilitating access to broadband internet and e-government services.<sup>7</sup> The Dutch Digital Delta (D3) policy (1999) introduced the pillars of regulation governing the use of ICTs in the public sector, which were considered essential to support the future position of the Netherlands as a world leader in ICTs. The dematerialisation that is the result of e-government communications has been progressively implemented, starting with online communication in municipalities. A big step towards e-government was the 1999 D3 policy document, which addressed electronic tax declarations.<sup>8</sup>

The Netherlands is one of the countries with the world's highest ICT Development Index (IDI) rating. This index developed by the International Telecommunication Union (ITU) measures the level of ICT access, use and skills in a certain

1 Agency for International Business and Cooperation (EVD) (2008) Dutch ICT turning existing technologies into innovative products and services, *Made in Holland*, p. 6. [www.hollandtrade.com/made-in-holland/pdf/2008\\_05\\_Dutch ICT\\_EN.pdf](http://www.hollandtrade.com/made-in-holland/pdf/2008_05_Dutch ICT_EN.pdf)

2 [www.itu.int/net/itunews/issues/2010/03/26.aspx](http://www.itu.int/net/itunews/issues/2010/03/26.aspx)

3 [ec.europa.eu/environment/waste/weee/pdf/faq\\_weee.pdf](http://ec.europa.eu/environment/waste/weee/pdf/faq_weee.pdf)

4 [www.senternovem.nl/sustainableprocurement/what\\_is\\_it\\_about/index.asp](http://www.senternovem.nl/sustainableprocurement/what_is_it_about/index.asp)

5 [www.senternovem.nl/sustainableprocurement/criteria/index.asp](http://www.senternovem.nl/sustainableprocurement/criteria/index.asp)

6 [www.108-ict-is-een-probleem-en-een-oplossing.html](http://www.108-ict-is-een-probleem-en-een-oplossing.html)

7 Statistics Netherlands (2009) *The Digital Economy 2009: Summary and conclusions*, p. 3.

8 Van der Hof, S. (2007) The Status of eGovernment in the Netherlands, *Electronic Journal of Comparative Law*, 11 (1), p. 4. [www.ejcl.org/11/article111-13.pdf](http://www.ejcl.org/11/article111-13.pdf)

country.<sup>9</sup> The number of subscriptions to digital cable and terrestrial television and use of mobile services are growing rapidly; there are currently 1.2 mobile subscriptions per inhabitant. The glass fibre network has been actively expanded along with the volume of internet traffic, facilitating access to high-speed internet connections. In fact, the largest and fastest internet hub in the world is the Amsterdam Internet Exchange.<sup>10</sup> Therefore the country is a key actor in the digital era. These facts have brought many advantages. The Netherlands is a preferred location for many international enterprises that want to develop business in Europe; a good ICT infrastructure and a highly skilled workforce have attracted more than 5,000 foreign companies, most of them major ICT corporations like Acer Computer, IBM, BenQ, Google, Oracle or Sun Microsystems.<sup>11</sup>

The Netherlands spends EUR 30 billion annually on ICTs, amounting to 5% of the national GDP. The steady growth of the industry, even in the economic downturn, has been a key element for economic recovery.<sup>12</sup> Today ICTs represent 70% of the country's innovative activities<sup>13</sup> and 10% of the value generated in the country.<sup>14</sup> Dutch ICT exports nearly doubled between 1998 and 2008,<sup>15</sup> being the world's fourth-largest exporter in the field.<sup>16</sup>

ICTs have provided easier access to services like health care. In 2006 a national switch point (LSP) was built with a reference index of routing, identification, authentication, authorisation and logging. Using this, healthcare providers can request data from hospitals, pharmacies and doctors. However, this application is controversial due to the kind of data stored, which includes personal information with intrinsic market value for private insurance and health companies. This example shows that the simple application of new technologies for managing data in order to increase efficiency and accessibility is not necessarily good or free of problems. The public might demand additional security measures or even ban its use all together.

### *ICTs and their contribution to the carbon footprint and energy use*

Apart from the positive effect on the Dutch economy, the industry also has an impact on the environment.

The main contribution to the carbon footprint comes from the increasing number of ICT users. The Netherlands is among the countries with the highest level of ICT

penetration. In addition to the high number of users, each user has many different devices. Moreover, these devices require more power due to their extended capabilities. 3G mobile phones, which are becoming common, consume more power than older ones. A few decades ago one radio, TV set and fixed telephone per household were enough for access to updated information and private communication; nowadays each person in the Netherlands produces between four and eight kilograms of e-waste per year, out of almost 50,000 tonnes that are put on the market annually.<sup>17</sup>

E-government initiatives have meant evident savings for the environment in terms of paper consumption and efficiency; however, they have also required investments to facilitate electronic access for people who did not have digital skills (and in doing so stimulating demand for ICTs), as well as increasing the use of data centres,<sup>18</sup> which require energy and result in emissions.

### *ICTs as a way to reduce the carbon footprint*

A recent report<sup>19</sup> identified the main areas where ICTs could contribute to reducing CO<sub>2</sub> emissions: first, dematerialisation, then four sectors that can become smart, namely motor systems, logistics, buildings and grids. The forecast is that, worldwide, ICTs can reduce five times the volume of CO<sub>2</sub> that they generate, or up to 7.8 gigatonnes CO<sub>2</sub> (15% of total emissions by 2020 or USD 1 trillion in energy costs savings).

The Netherlands is an economy based on services rather than manufacturing. Services typically require less energy and pollute less. Countries with a strong services sector therefore usually have a lower energy intensity.<sup>20</sup>

In 2008 the Dutch State Secretary for Economic Affairs and the ICT Office signed a multiple-year contract in which the ICT companies commit themselves to improve their energy efficiency by 2% a year, on average. This would mean a 30% reduction by the year 2020, compared to 2005.

The Netherlands is considering the use of ICTs for reducing the impact of road transportation. There is a plan – currently on hold due to political struggle – to introduce a scheme which will use GPS technology in order to charge those most frequent users of road networks who create congestion. The programme will be cost neutral but will create more equity in transportation taxes and is expected to reduce up to 60% of travel time during congested periods.<sup>21</sup>

Dematerialisation is another way of reducing a carbon footprint using ICTs. E-government has already resulted in the elimination of many printed documents. Telework is another way of reducing the carbon footprint since it saves transportation emissions. The definition of telework varies

9 International Telecommunication Union (ITU) (2009) *Information Society Statistical Profiles 2009: Europe v1.01*, p. 41-43. [www.itu.int/dms\\_pub/itu-d/opb/ind/D-IND-RPM.EUR-2009-R1-PDF-E.pdf](http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-RPM.EUR-2009-R1-PDF-E.pdf)

10 The Netherlands Foreign Investment Agency (NFIA) [www.nfia-india.com/vertical\\_report ICT.html](http://www.nfia-india.com/vertical_report ICT.html)

11 Agency for International Business and Cooperation (EVD) (2008) op. cit., p. 4.

12 [www.witsa.org/news/newsletter\\_Q110/img/ICTOffice\\_DutchICTSector2008\\_2009.pdf](http://www.witsa.org/news/newsletter_Q110/img/ICTOffice_DutchICTSector2008_2009.pdf)

13 Agency for International Business and Cooperation (EVD) (2008) op. cit., p. 9.

14 OECD Country Statistics Profiles 2009. [stats.oecd.org/Index.aspx?DataSetCode=CSP2009](http://stats.oecd.org/Index.aspx?DataSetCode=CSP2009)

15 Statistics Netherlands (2009) op. cit., p. 3.

16 Agency for International Business and Cooperation (EVD) (2008) op. cit., p. 6.

17 [epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/wastestreams/weee](http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/wastestreams/weee)

18 Van der Hof (2007) op. cit.

19 The Climate Group (2008) *SMART 2020: Enabling the low carbon economy in the information age*. [www.smart2020.org/\\_assets/files/02\\_Smart2020Report.pdf](http://www.smart2020.org/_assets/files/02_Smart2020Report.pdf)

20 OECD (2010) *ICTs for Development: Improving Policy Coherence*, OECD, Washington, p. 150.

21 Sustainable Development Commission (2010) *Smarter Moves: How information communications technology can promote sustainable mobility*, p. 50. [www.sd-commission.org.uk/publications.php?id=1050](http://www.sd-commission.org.uk/publications.php?id=1050)

among countries; the Central Statistical Office (CBS) defines a teleworker as “someone who works outside the premises of his/her employer on a regular basis and has access to the ICTs of a company.” Using this definition, 8% of workers carried out telework in the Netherlands in 2004. A Smart Work Centre (SWC), launched in September 2008, provides a flexible working space using ICTs in close proximity to a residential community. The aim of the project is to reduce transportation demands and increase productivity.<sup>22</sup>

Having in mind the possibilities created by Smart Cities, Amsterdam partnered with Accenture in order to create the EU’s first “intelligent city”. The city will use a smart electric grid, smart metres, smart-building technologies, electric vehicles and recharging stations. The goal is a 40% CO<sub>2</sub> reduction in 2025 compared to 1990 and the use of local renewable resources to produce 20% of its own energy needs.

Most of the solutions that ICTs can provide in order to reduce emissions related to administration tasks both in the public and private sector will need bigger and more powerful data centres. As a result, there is a need for more energy-efficient systems, including innovative cooling methods. One positive example is the Dutch company EvoSwitch, which has reduced energy consumption by 20% and operates on a climate-neutral basis.<sup>23</sup>

## Dealing with e-waste

As a result of the application of ICTs in many sectors e-waste has become a major problem. The Dutch ICT sector has recognised these problems, and due to the link between ICTs and global warming, it is shifting to more environmentally friendly practices. This effort is supported by ICT Environment (*ICT-Milieu*),<sup>24</sup> a foundation that represents more than 300 companies in the ICT sector. It helps ICT manufacturers and importers to recycle used ICT equipment in a responsible manner. Through this programme 100 million kilograms of ICT waste have been processed, and 97% of all electronic waste collected is recycled.<sup>25</sup>

Nevertheless, a large proportion of e-waste has been shipped to other parts of the world – officially as second-hand goods for reuse. Dutch inspections by VROM proved that 50% to 90% of the material exported was in fact broken, and was therefore e-waste.<sup>26</sup> As a result of the inspections, this percentage has decreased.

The e-waste sector in the Netherlands is considered advanced, and a reference for other countries in Europe. Two main organisations are important in the sector: ICT-Office (an association of more than 500 companies in the sector), and the Dutch Association for the Disposal of Metal and Electrical Products (NVMP), which follows the development of e-waste in the sector.

Exploration in this sector is mostly thanks to the fact that it is seen as an opportunity. According to the general manager of ICT-Office, the Dutch ICT sector implements green innovation in products because it results in an increase in profits. Government incentives for retailers (which receive money back for items collected) also play a role.<sup>27</sup>

## New trends

Positive and negative impacts from ICTs on the environment are common in all countries. Nevertheless, in the Netherlands new companies are creating business opportunities.

Besides the private sector, civil society stakeholders are developing initiatives that are directly related to the impact that ICTs have on the environment. The Dutch project Our Mobile Generation (OMG)<sup>28</sup> aims to inspire mobile phone users to come up with sustainable solutions or ideas that will lead to a more sustainable telecom industry and lifestyle. To reach that objective, OMG has set out different challenges which will be achieved by a community of students, young professionals and volunteers through a co-creation process.

In early 2010 the IT for Sustainability Meshwork<sup>29</sup> was initiated. Through an online platform, ICT experts share their knowledge to challenge the IT industry and help to contribute to sustainability in society.

At the 17th World Congress on Information Technology (Amsterdam, May 2010)<sup>30</sup> many of the problems mentioned in this report were discussed, creating a space for new proposals, including the smarter use of electricity grids, transportation/logistics and hybrid or electric cars.

## Action steps

The debate regarding the ICT industry and climate change has two sides. First of all, ICTs are capable of providing many solutions to other industries in order to reduce their carbon footprint; but the ICT industry’s carbon footprint itself will also increase, which offsets part of this positive development.

The Dutch government has actively implemented ICTs in the country and it has integrated them with public services. At the same time it has developed legislation regarding the impact they have on the environment, such as e-waste. Continued attention is required, however, and other stakeholders (companies, municipalities, etc.) should be encouraged to comply with or preferably go beyond the legal requirements. They must be challenged to discover the opportunities and apply their historical skills to turn threats into opportunities – in a cooperative fashion – so that, like the battle with the sea, we will prevail here once again. ■

22 [www.smart2020.org/case-studies/smart-work-center](http://www.smart2020.org/case-studies/smart-work-center)

23 [www.evswitch.com](http://www.evswitch.com)

24 [www.ictoffice.nl/?ch=MIL](http://www.ictoffice.nl/?ch=MIL)

25 Agency for International Business and Cooperation (EVD) (2008) op. cit., p. 9-10.

26 SwedWatch (2009) *Out of control: E-waste trade flows from the EU to developing countries*, p. 27-28.

27 [www.nvmp.nl/nederlands/detailisten/detailistenvergoeding-2010.html](http://www.nvmp.nl/nederlands/detailisten/detailistenvergoeding-2010.html)

28 [www.ourmobilegeneration.org](http://www.ourmobilegeneration.org)

29 [it4sustainability.global.gaiaspace.org/global](http://it4sustainability.global.gaiaspace.org/global)

30 [www.wcit2010.com](http://www.wcit2010.com)

**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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