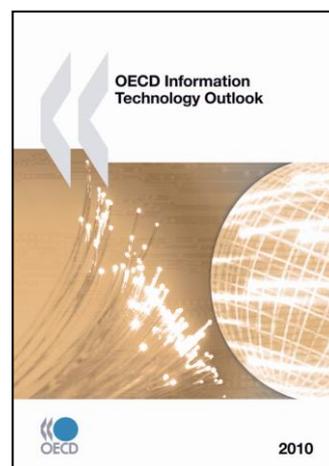


OECD *Multilingual Summaries*



OECD Information Technology Outlook 2010

Summary in English

- Information technology (IT) and the Internet are major drivers of research, innovation, growth and social change. The 2010 edition of the OECD Information Technology Outlook analyses the economic crisis and recovery, and suggests that the outlook for IT goods and services industries is good after weathering a turbulent economic period better than during the crisis at the beginning of the 2000s. The industry continues to restructure, with non-OECD economies, particularly China and India, major suppliers of information and communications technology-related goods and services.
- The role of information and communications technologies (ICTs) in tackling environmental problems and climate change is analysed extensively, with emphasis on the role of ICTs in enabling more widespread improvements in environmental performance across the economy and in underpinning systemic changes in behaviour.
- Recent trends in OECD ICT policies are analysed to see if they are rising to new challenges in the recovery. Priorities are now on getting the economy moving, focusing on ICT skills and employment, broadband diffusion, ICT R&D and venture finance, and a major new emphasis on using ICTs to tackle environmental problems and climate change.

The ICT sector is recovering from the economic crisis and global ICT markets are shifting to non-OECD economies

Since the 2008 edition the prospects of the ICT sector have improved and it is expected to grow by 3-4% in 2010

The outlook for ICT production and markets is brighter than in the past two years. The macroeconomic situation has improved since mid-2009, although recovery in OECD countries is slow and uneven. Previously very gloomy projections for the ICT sector and in general have been successively revised upwards.

ICT growth in OECD countries was down by over 6% in 2009 owing to faltering macroeconomic conditions and poor business and consumer sentiment, but should reach 3-4% in 2010 and even higher in 2011. World ICT spending fell by 4% in 2009 but is expected to grow by some 6% in 2010.

The OECD ICT sector accounts for 8% of business value added and countries with significant ICT manufacturing have comparative advantages in trade

Over the long term, the OECD ICT sector has seen consistent growth. In 2008 it represented more than 8% of OECD business value added and employed almost 16 million people. With the global restructuring of production, OECD ICT manufacturing has declined overall, but countries with strong value added in ICT manufacturing maintain a comparative advantage and export surpluses in ICT goods. In 2008, the eleven OECD countries with the largest shares of ICT manufacturing value added in total value added were Korea, Finland, Ireland, Japan, Hungary, Sweden, the Slovak Republic, Germany, the Czech Republic, the United States and Mexico. Of these, ten had a revealed comparative advantage in ICT goods exports and nine had export surpluses.

Performances in the ICT sector differ markedly as ICT production and markets shift to non-OECD economies

As ICT manufacturing has moved to lower-cost locations in OECD countries and Asian economies, the OECD-area ICT sector has shifted to computer and related services and other ICT services. These services account for more than two-thirds of total ICT sector value added in most countries. Their share has increased and they have grown more rapidly than total business services.

In 2009 OECD countries' share of the ICT world market declined to 76% (from 84% in 2003), as growth in non-OECD economies decoupled from growth in OECD countries. As part of this shift the top 250 ICT firms include more non-OECD firms, among them manufacturing firms in Chinese Taipei, which have partly driven the rise of China as the major exporter of ICT goods, IT services firms from India, and telecommunication services providers from a range of non-OECD economies.

The crisis has accelerated the restructuring of global trade and investment

Global trade is growing again

Worldwide ICT trade has returned to growth following the very sharp decline from the last half of 2008 through the first quarter of 2009. Before the economic crisis, global ICT trade expanded strongly and continued to grow through 2008. It approached USD 4 trillion in 2008, having tripled since 1996 and almost doubled the spike of USD 2.2 trillion in 2000. The share of ICT trade in total world merchandise trade peaked at 18% in 2000, but fell to 12.5% in 2008 due to the slowdown in ICT trade, stronger growth of world trade

in non-ICT products and price effects. OECD ICT trade more than doubled to USD 2.1 trillion and accounted for close to 7% of world merchandise trade but imports outpaced exports, and the OECD share of total ICT trade dropped from 71% in 1996 to 53% in 2008.

China is the largest exporter of ICT goods and India of computer and information services

Global restructuring of ICT production continues. Eastern Europe, Mexico and non-member developing economies are increasingly important as producers and growth markets. Multinational enterprises, international sourcing, and intra-firm and intra-industry trade have had huge impacts on global ICT goods value chains, and the reorganisation of the international supply of ICT services has been an increasing source of growth. China is by far the largest exporter of ICT goods, very largely driven by foreign investment and sourcing arrangements. India is by far the largest exporter of computer and information services, fuelled by the growth of domestic firms.

Asia plays an increasing role in goods production networks that import high-value electronic components for assembly and re-export, and China's role as a production and sourcing location has intensified. In 2008 China's ICT exports were only slightly behind the combined exports of the United States, the EU27 (excluding intra-European trade) and Japan. New supply locations are emerging as the search for low-cost provision and the reorganisation of global innovation and supply chains continue.

ICT-related FDI declined overall during the crisis, and non-OECD economies are increasingly active in M&As

Like foreign direct investment (FDI) in general, ICT-related FDI slumped during the crisis. The value of cross-border mergers and acquisitions (M&As) dropped by half, faster than purely domestic M&As, with firms preferring to invest at home. ICT-related M&As declined faster than total M&As from 2007. In 2009, acquisitions of ICT firms accounted for only 11% of the total value of deals, down from the historic high of over 30% in 2000 when telecommunications firms overextended themselves in a buyout frenzy. Non-OECD economies are increasingly active: the share of ICT-sector cross-border M&As targeting and originating in them increased steadily to 33% and 24%, respectively, in 2009.

The pressure on OECD ICT employment during the recession has begun to lift and vacancy rates are growing

Pressure on OECD ICT employment remains, but declines have been less sharp than in 2002-03

ICT and ICT-related employment account for a significant share of total employment. The ICT sector had close to 6% of total OECD business sector employment in 2008, and long-term growth has been somewhat faster than for total business.

Employment has dropped in ICT goods sectors, and has remained quit flat in ICT services. However, despite year-on-year falls of 6-7%, ICT manufacturing employment has not suffered the large declines of 2002-03. ICT-related vacancy rates have recovered and were growing month on month in early 2010.

The share of ICT specialists in OECD countries is rising consistently

ICT specialists in all sectors account for around 3-4% of total employment in most OECD countries, with lower shares in eastern Europe. Women still account for less than 20%; their share is above the OECD

average in Finland, Iceland and the United States.

Cloud computing and green ICTs are promising areas for new ICT jobs

Promising areas for new ICT jobs and competences include cloud computing, green ICTs and “smart” applications. The last two have been promoted in government “green growth” stimulus packages.

Cloud computing should strengthen demand for ICT specialists but it is likely to have more impact on value added and growth than on employment. Employment in R&D, production and deployment of green ICTs remained relatively stable during the recession and may increase significantly with the recovery. There should be jobs in manufacturing semiconductors for energy efficiency and clean technologies such as photovoltaics and wind power and in ICT recycling services, as well as in the development and use of virtualisation software. More efficient and cleaner “smart” applications are also likely to be a source of jobs.

Growth continues in key areas

ICT-sector R&D maintains its position in terms of R&D investments

Growth of the Internet economy is driven by ICT-sector innovation and ICT firms have maintained their dominant role among R&D-performing firms during the recession, despite the strong impact of the crisis on revenue and employment.

ICT R&D has tightened its links to firm revenues, and ICT firms appear ready for renewed technology-driven growth. Internet and Asian firms show the most dynamic growth, with semiconductor R&D continuing to underpin ICT applications and use.

Access to high-speed Internet is widespread among business and households and continues to expand...

In most OECD countries at least three-quarters of businesses and well over 50% of households are connected to high-speed broadband. Moreover, most OECD governments aim for 100% availability of high-speed Internet for households in the near and medium term.

...spurring the development of digital content

These trends stimulate the development and use of digital content. Most areas are growing at double-digit rates. For games, music, film, news and advertising, the Internet is transforming existing value chains and business models.

Green ICTs can drive growth and innovation and help tackle climate change

The direct impact of ICTs on energy and material use during their life cycle can be reduced

ICTs are key enablers of “green growth” in all sectors of the economy and offer means of tackling environmental challenges and climate change. ICTs affect the environment at three levels: direct impacts, enabling impacts and systemic impacts.

ICTs have considerable direct environmental impacts in terms of energy use, materials throughput and end-of-life treatment. A basic PC’s contribution to global warming is highest during its use phase, but it also has significant impacts during the manufacturing and end-of-life phases. Improved R&D and design can deal

with direct impacts throughout the life cycle, and government “green ICT” policies can promote life-cycle approaches (see the OECD Recommendation of the Council on Information and Communication Technologies and the Environment).

ICTs can enable more sustainable production and consumption across all sectors...

ICT systems enable more sustainable production and consumption across the economy, ranging from product-specific improvements (embedded ICTs for energy-efficient vehicles) to entire systems (ICTs for smarter transport management). ICTs can lead to significant environmental benefits in buildings, transport and energy. In the transport sector green ICTs can reduce travel needs, influence travel choices, change driver and vehicle behaviour, increase vehicle load factors and improve network efficiency.

...and underpin systemic changes towards a greener society

ICTs are pivotal for system-wide mitigation of and adaptation to environmental change. Users and consumers can spearhead more sustainable growth through informed consumption decisions based on easy access to reliable environment-related information. They also require information about how to use ICTs to improve the environment. Further research is needed to understand how ICTs and the Internet can contribute to reaching environmental policy goals by fostering renewable energy, reducing transport, optimising energy use and reducing material use.

Sensor technology can help improve environmental performance, reduce greenhouse gas emissions and underpin green growth

Sensor applications can contribute to more efficient use of resources to reduce the impact of climate change

Sensor and sensor network applications show particular promise for tackling environmental challenges in energy, transport, industrial applications, precision agriculture and smart buildings. In smart buildings minimum standards of energy efficiency coupled with sensor technology can be a major factor in reducing electricity use and greenhouse gas emissions.

However, rebound effects have to be taken into account

Although smart grids, smart buildings, smart industrial applications and precision agriculture and farming are expected to have strong positive effects, results for smart transport are mixed owing to rebound effects. Intelligent transport systems make transport more efficient, faster and cheaper, but raise demand for transport and related resources, with potentially negative rebound effects.

This underscores the importance of government actions

Government policies and initiatives are crucial for achieving the positive environmental effects of sensor technologies and radically improving environmental performance. They can ensure that environmental costs are internalised, for example by raising CO₂-intensive energy and fuel prices. Minimum energy-efficiency standards for smart buildings and smart grids can reduce electricity use and help mitigate climate change. Joint R&D, demonstration and implementation projects can promote industry-wide use of sensor technology and help to develop open standards.

Following the recession ICT policies are helping to foster economic recovery

Most government economic stimulus packages include measures promoting ICTs

Most government responses to the economic crisis include measures targeting the ICT sector and promoting ICT-based innovation, diffusion and use. To boost the recovery, three-quarters of governments have increased the priority of at least one ICT policy area. Recent policy emphasis on areas that contribute directly to short- and long-term growth – ICT jobs, broadband, R&D and venture finance, and smart ICTs for the environment – provides evidence of the key roles that ICT policy can and must play.

Table 1. Top ICT policies for the economic recovery

ICT policy area
ICT skills and employment
Broadband
R&D programmes
Venture finance
Enabling environmental impacts of ICTs

Longer-term ICT policies take account of the ubiquity of ICTs

Table 2. Top ten longer term ICT policy priorities, 2010

ICT policy area
1. Security of information systems and networks
2. Broadband
3. R&D programmes
4. Government on line, government as model users
5. Innovation networks and clusters
6. ICT skills and employment
7. Digital content
8. Consumer protection
9. Technology diffusion to businesses
10. Technology diffusion to individuals and households

Longer-term ICT policy priorities are also influenced by the economic crisis, with some differences in the overall promotion of ICT innovation across the economy. The number of governments giving high priority to security of information systems and networks has increased since 2008 in response to the ubiquity of ICTs in OECD economies, high uptake rates among individuals and organisations, and the potential risks of greater

reliance on information systems.

ICT policies are now mainstream economic policies

ICT policies have changed considerably in the last ten years. They are now mainstream policies underpinning growth and jobs, increasing productivity, enhancing the delivery of public and private services, and achieving broad socioeconomic objectives in the areas of health care and education, climate change, energy efficiency, employment and social development. As ICT applications and services have become ubiquitous, they have become essential for ensuring sustainability throughout the economy. This makes policy evaluation more crucial than ever to ensure that policy design and implementation are efficient and effective.

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