

OECD WORK ON
**SCIENCE,
TECHNOLOGY
AND INDUSTRY**



2014

OECD WORK ON SCIENCE, TECHNOLOGY AND INDUSTRY

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Organisation for Economic Co-operation and Development



Angel Gurría
OECD Secretary-General

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation whose mission is to promote policies that will improve the economic and social well-being of people around the world. It provides a forum for member and partner countries, committed to democratic government and the market economy, to work together to learn from each other's

experiences, identify good practices and find solutions to common problems. Dialogue, consensus and peer review are fundamental elements of our work.

The OECD is one of the world's largest and most reliable sources of comparable statistical, economic and social data. It monitors trends, collects data, analyses economic development and forecasts evolving patterns in a broad range of public policy areas such as agriculture, development co-operation, education, employment, environment, industry, innovation,

science, technology and trade. Using this data, the OECD works with governments to understand what drives economic, social and environmental change. It also sets international standards on a wide range of policy domains, from agriculture and tax to the safety of chemicals. Above all, drawing on facts and real-life experience, the OECD recommends policies designed to make the lives of ordinary people better.

In addition to its 34 member countries, the OECD is in accession talks with the Russian Federation. The Organisation also works directly with many other countries, including key partners: Brazil, China, India, Indonesia and South Africa.

The OECD is currently developing an overarching initiative entitled "New Approaches to Economic Challenges" to reflect on the lessons learned from the crisis and derive its policy implications. The Directorate for Science, Technology and Industry (STI) is contributing several key components, including metrics to measure and understand trends such as knowledge-based capital and trade in value-added, as well as analysis to provide insights into the future role of government in increasingly complex economies.

Directorate for Science, Technology and Industry



Andrew Wyckoff
STI Director

“Knowledge generated by research, software, design, large databases, networks and smart organisations will increasingly drive growth and competitiveness. These intangible assets can contribute to a large share of a product's value-added, and remain one of the main reasons why the world buys Apple™ phones and Nespresso™ coffee.”

The OECD Directorate for Science, Technology and Industry (STI) develops evidence-based policy advice on the contribution of science, technology and industry to well-being and economic growth.

We have a long tradition of developing statistical methodologies and standards, as well as maintaining internationally comparable databases to inform research, debate and policy making in public and private sectors. Our data underpins

policy work in such areas as biotechnology, nanotechnology, innovation, competitiveness and global value chains.

The financial and economic crisis has added new challenges to our work. Short-term shocks coupled with long-term structural changes – environmental, demographic and societal – require unprecedented responses under stringent budgetary constraints.

Ongoing work on knowledge-based capital can help address these challenges. Our policy focus aims to unleash new sources of growth that hold promise for productivity gains, improved governmental efficiency and advances in health and the environment. Understanding the use of knowledge-based capital is also essential to capture value from global value chains, which increasingly shape world trade patterns.

In the search for sustainable growth, STI will also continue to explore the contribution of science and technology to advancing societal well-being and to addressing such global challenges as climate change, ageing populations and food security.

New sources of growth

Creating value in the 21st century

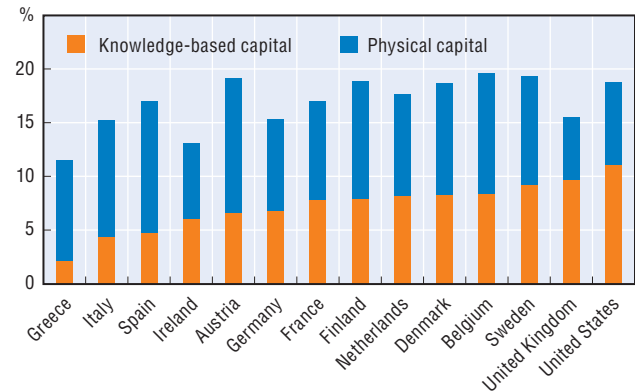
More than ever, restoring growth is the main objective of governmental policies around the world, not least to address ongoing sovereign debt crises and to tackle unemployment. The following areas are major drivers of this growth:

Knowledge-based capital

Growth in OECD economies is increasingly driven by investment in knowledge-based capital (KBC). These intangible assets include **digital information** (software and data), **innovative property** (patents, copyrights, trademarks and designs) and **organisation-specific competencies** (brand equity, training and organisational capital). They are a key factor to create the types of innovation that spur new sources of growth.

The creation and application of knowledge are especially critical to the ability of firms and organisations to develop in a competitive global economy and to create high-wage employment and economic growth. In particular, KBC allows countries and firms to upgrade their comparative advantage by positioning themselves in high value-added industries, activities and market segments.

Business investment in knowledge-based capital and physical capital, as % of GDP (2009)



Source: Joint Database on Intangibles for European Policymaking, based on data from INNODRIVE, COINVEST and the Conference Board, www.intan-invest.net (2012)

The diffusion of information and communication technologies, new participative modes of innovation, the increasing mobility of people and the globalisation of firms have fostered the emergence of new businesses models, networks and markets. These dynamic sources of information centre around value embedded in software, databases, patents, designs and brands.

The rise of these forms of KBC creates new challenges for policymakers and businesses regarding the ways in which economic activity is measured. For example, the assets associated with the creation and diffusion of knowledge rarely appear on balance sheets and, only in some cases, are they measured as part of GDP.

Many policy frameworks and institutions still seem best suited to a world in which physical capital, such as machinery, equipment and buildings, drive growth. But in some OECD countries (such as Sweden, the United Kingdom, and the United States) firms now invest as much if not more in KBC as they do in physical capital. Today, the value of some leading global companies resides almost entirely in their KBC.

Find out more

- *Supporting Investment in Knowledge Capital, Growth and Innovation (2013)*
- *OECD Science, Technology and Industry Scoreboard (2013)*
www.oecd.org/sti/industry-issues

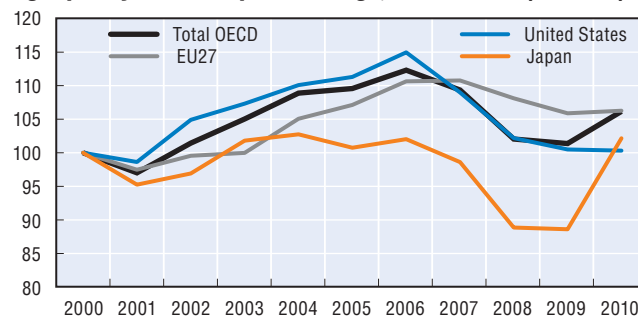
Intellectual property rights

Intellectual property rights (trademarks, patents, copyrights, etc.) protect inventions developed by firms, institutions and individuals and thus play a key role in modern economies. They help foster research and innovation, diffusion of knowledge and improved economic performance. The OECD develops and maintains sophisticated patent indicators to map and monitor aspects of the innovative performance of countries, regions, and specific domains and technology fields.

Find out more

- *OECD Patent Statistics Manual (2009)*
- *OECD Patent Database*
www.oecd.org/sti/ipr-statistics

High quality “triadic” patent filings, index = 100 (2000-10)



Source: OECD MSTI Database (2012)

Big data analytics

The growing pervasiveness of the Internet means that personal and professional activities are increasingly conducted online, while new capabilities are simultaneously emerging to capture, analyse and store these interactions. The explosive growth of mobile networks, cloud computing and smart ICT applications (i.e. sensors and machine-to-machine communication) enables vast fields of information – loosely referred to as *big data* – to be processed, shared and transferred across the globe.

According to IDC Digital Universe, global data creation is projected to grow at 40% each year. Combined with powerful analytics, these huge reserves of information, including personal data, offer the prospect of significant value creation, social benefit and productivity enhancement, while also raising important policy and societal questions, particularly in the areas of privacy and security.

- ▶ In the **healthcare** sector, the sharing of health data facilitates access to medical care and affords useful insights for product and service innovation. Widening the use of data, with appropriate safeguards in place, could deliver tremendous value in improved quality of health care and of care delivery.
- ▶ In the **public administration** sector, improved use of data can help tailor service delivery to individuals, improve fraud detection and help make democracy more transparent and responsive to citizens' needs.

- ▶ For **consumers**, the use of their personal data is leading to products tailored to their preferences, improved efficiencies and a more focused customer experience.

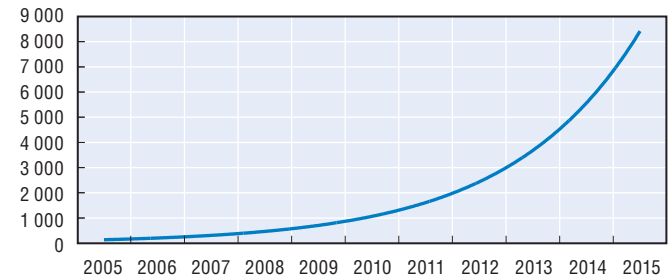


Find out more

- *OECD Digital Economy Papers*
- *The OECD Privacy Framework (2013)*
- *The Role of Internet Intermediaries in Advancing Public Policy Objectives (2011)*

www.oecd.org/sti/interneteconomy

World data storage in exabytes, or billions of gigabytes (2005-15)



Source: OECD, based on IDC *Digital Universe* research estimates (2010)

High-growth firms and entrepreneurship

High growth firms are those businesses that, by virtue of their extraordinary growth, make the largest contribution to net job creation. They are a significant driver of employment and productivity growth, a source of radical and high-impact innovation and a key connector for fostering innovation within the entrepreneurial ecosystem.

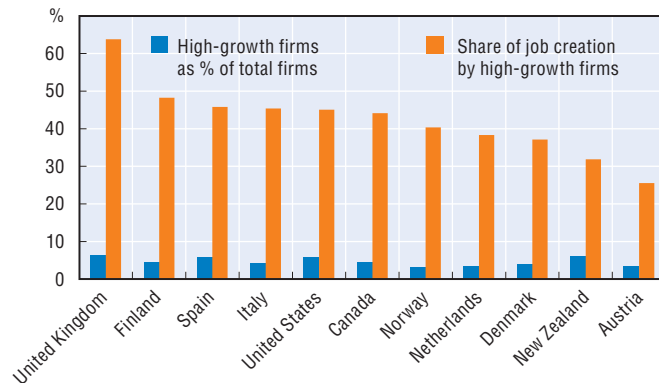
Young firms, in particular, account for a large share of all new innovations and often exploit opportunities not taken up by more established companies. They are vital to driving forward the process of “creative destruction” and generating new opportunities for growth.

The financial crisis has shown that governments and policy makers must strengthen the environment for high-growth firms by providing the proper framework conditions, reducing barriers and uncertainty, strengthening access to finance and encouraging an entrepreneurial culture.

Find out more

- *What Drives the Dynamics of Business Growth?* (2013)
 - *Policies for Seed and Early-Stage Finance* (2013)
 - *Financing High-Growth Firms: The Role of Angel Investors* (2011)
- www.oecd.org/sti/industry-issues

Job creation by high-growth firms (2002-05)



Source: *What Drives the Dynamics of Business Growth?*, OECD (2012)

DID YOU KNOW ...High-growth firms, defined as those with an average annual employee increase of 20%, only represented 6% of the total firms in the United Kingdom, but accounted for over 60% of job creation between 2002 and 2005.

Innovation and social challenges

Unleashing sustainable growth and development

OECD Innovation Strategy

Today's recovery from the global financial and economic crisis remains fragile. While no single policy instrument holds all the answers, *innovation* – or the introduction of better or more effective products, processes, services and technologies – will play a key role in any effort to improve people's quality of life.

In both developed and developing countries, innovation is crucial for long-term economic growth. It can foster competitiveness, create employment and reduce inequality. Innovation is essential for addressing pressing societal issues such as climate change, health and poverty.

For the past 50 years, the Directorate for Science and Technology (STI) has been a leader in the field of innovation and has developed indicators and good policy practices in areas such as support to R&D, public/private partnerships for innovation and overall management of national innovation systems.

In 2010, the OECD launched its Innovation Strategy to promote the role and measurement of innovation in order to improve macroeconomic performance and address social challenges. Research in this area helps countries boost their innovation

capacity, improve productivity and stimulate sustainable growth.

The OECD also offers comprehensive assessments of a country's innovation system, focusing on the role of government to ensure efficient linkages between science and industry. The reviews, conducted at country request, provide concrete policy recommendations to harness technological change, boost economic growth, achieve needed social objectives and create environments conducive to further innovation.



Find out more

- *OECD Science, Technology and Industry Scoreboard (2011, 2013)*
- *OECD Science, Technology and Industry Outlook (2012, 2014)*
- *Demand-Side Innovation Policies (2011)*
- *Measuring Innovation: A New Perspective (2010)*
- *Innovation in Firms: A Microeconomic Perspective (2009)*
- *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data (3rd edition, 2005)*

www.oecd.org/sti/innovation

Innovation for development

Innovation plays a pivotal role in economic development throughout the world, including in developing countries. But it is much more than just R&D conducted in the high-tech industries of developed countries. It is often about a series of minor improvements of existing technology, adaptations which allow adoption and non-technological change. Innovation is therefore within the reach of all countries because high costs in financial and human capital are not always necessary. The transfer and adaptation of technologies can also contribute to addressing urgent challenges such as providing access to drinking water, eradicating diseases and reducing hunger.

For developing countries, innovation is often first a process of “catching up” via the adoption of existing, more advanced technologies and institutions. But local innovation of an incremental or social nature can also take place in industries in which countries have a comparative advantage. Furthermore, even though developing countries generally lag behind in terms of overall productivity, they can still be at the technological forefront in certain industries – especially in green technology and information and communication technologies.

Find out more

- *Innovation for Development (Booklet, 2012)*
- *Innovation and the Development Agenda (2010)*
- *Innovation and Growth – Chasing a Moving Frontier (2009)*
www.oecd.org/sti/innovation

Inclusive innovation

Policy makers have a responsibility to ensure that policies contribute to improving the quality of life across all segments of society. But economic growth can sometimes exacerbate inequalities both within and across regions, economic activities and social groups.



Science and innovation can help support the type of inclusive growth that provides opportunities for large segments of the population, whether through job creation or by providing products and services aimed at the needs of the poorest in society, such as medicines, seeds or clean water.

Both developing and developed countries can leverage innovation to address high rates of social exclusion and poverty as part of their development strategies. Solutions include offering affordable versions of sophisticated products and technologies

for purchase by lower-income groups and facilitating the type of grassroots entrepreneurship that integrates marginalised groups into circuits of economic activity.



Find out more

www.oecd.org/sti/innovation

Green innovation

Green growth can be seen as a way to pursue economic growth and development while preventing environmental degradation, biodiversity loss and unsustainable natural resource use.

Sustainable growth ultimately implies “decoupling” the use of natural resources and generation of environmental and climate impacts from economic activities. This global challenge cannot be addressed by “business as usual” but requires significant innovation, i.e. the creation and use of new products, processes and technologies.

Improving resource and energy use and engaging in a broad range of innovations to improve environmental performance will ultimately lead to new industries and new jobs, including in emerging areas such as biotechnology, nanotechnology and information and communication technologies.

By developing a practical knowledge base to support the greening efforts of governments, industry and consumers, the OECD helps advance policies that will stimulate green

innovation, foster business investment and encourage consumer adoption of green technologies.



Find out more

- *Nanotechnology for Green Innovation* (2013)
- “Transitioning to Green Innovation and Technology,” in *OECD Science, Technology and Industry Outlook* (2012)
- *Fostering Innovation for Green Growth* (2012)
- *OECD Sustainable Manufacturing Toolkit* (2011)

www.oecd.org/innovation/green

Foresight and risk assessment

Rapid change and growing uncertainty are factors underlying almost all decision-making today. Alerting policy makers to emerging trends, helping them anticipate developments and ensuring their decisions stay robust in the long-term are key ingredients of OECD foresight work.

In a fast-moving world, early identification and assessment of technological opportunities in leading-edge sectors such as the Internet economy, biotechnology and renewable energy are critical to address the societal challenges that lie ahead.

Equally important, however, is the early identification and assessment of risks. The last few years have seen a spate of major disasters and highly disruptive events, from earthquakes, tsunamis and floods to epidemics, famine, devastating oil spills and serious attacks on ICT systems. The rapid pace

of globalisation, urbanisation and growing economic and technical interdependence suggest that the 21st century is likely to see more, rather than fewer, such crises. The OECD helps detect and manage these threats through its work on earth observation and remote sensing, cybersecurity, biotechnology, supply chain vulnerability and the establishment of uniform standards for calculating and monitoring earthquakes.

Find out more

- *Strategic Transport Infrastructure Needs to 2030 (2012)*
- *Future Global Shocks: Improving Risk Governance (2011)*
- *The Bioeconomy to 2030 (2009)*

www.oecd.org/futures

Silver economy

In 2008, there were on average four persons of working age for every retired person in the OECD area. In 2050, this number will drop to only two workers per retiree.

Ageing populations could strain health services, long-term care systems, public finances and economic performance for many OECD countries in the years ahead. Science and technology, especially developments in biomedicine and ICT applications, can play an important role in helping the elderly remain as healthy, autonomous and active as possible.

Stimulating innovation to meet the needs of the elderly can improve their quality of life but can also benefit the wider

economy. This *silver economy* – both for and by the elderly – holds potential to create jobs and new economic activities in sectors such as public services, health and well-being, leisure, sports, culture, tourism, new media, telecommunications and financial services.

The OECD examines how countries are currently enabling innovation in such service sectors as health and nursing care, education, transportation and urban development.

Find out more

- “*Science and Technology Perspectives for an Ageing Society*,” in *OECD Science, Technology and Industry Outlook (2012)*
- “*Information and Communication Technologies for Health and Ageing*,” in *OECD Internet Economy Outlook (2012)*

www.oecd.org/sti/innovation

DID YOU KNOW ... Japan's 2009 New Growth Strategy estimates that innovation in the medical and nursing care sectors in Japan alone would create 2.8 million new jobs and a new market worth JPY 45 trillion (USD 565 billion) by 2020.



Science and technology

Advancing knowledge and innovation

Management of public research

Science and technology have radically changed during the last few decades, owing to the increasingly global nature of the world economy, growing interdisciplinarity and an ever-changing social context. The recent financial crisis and the shifting balance of the world economy towards emerging economies have further accelerated and accentuated these changes, and have placed a premium on policy approaches that manage public funding as efficiently as possible.

Through their activities in discovering, using and diffusing knowledge, public research organisations and universities play a crucial role in spurring research and innovation. As part of a national and international infrastructure, these centres of science help advance education and training, assist with technology transfer and can achieve targeted policy objectives. Their activities often generate spillovers for the wider economy by helping firms to expand their capabilities.

Researchers and highly-skilled workforce

Individual researchers are key inputs into science and technology activity and their education and career development are important policy topics. The OECD helps governments

ensure that investments in science-based education yield net benefits for the economy by collecting evidence on current arrangements, identifying good training practices and highlighting future directions to support career development and improved research.

Current policy work focuses on promoting lifelong learning, increasing the mobility of skilled labour (notably across borders), improving the participation of women and other under-represented groups, increasing ICT skills for the digital economy and improving the match between job supply and demand in the emerging sciences.

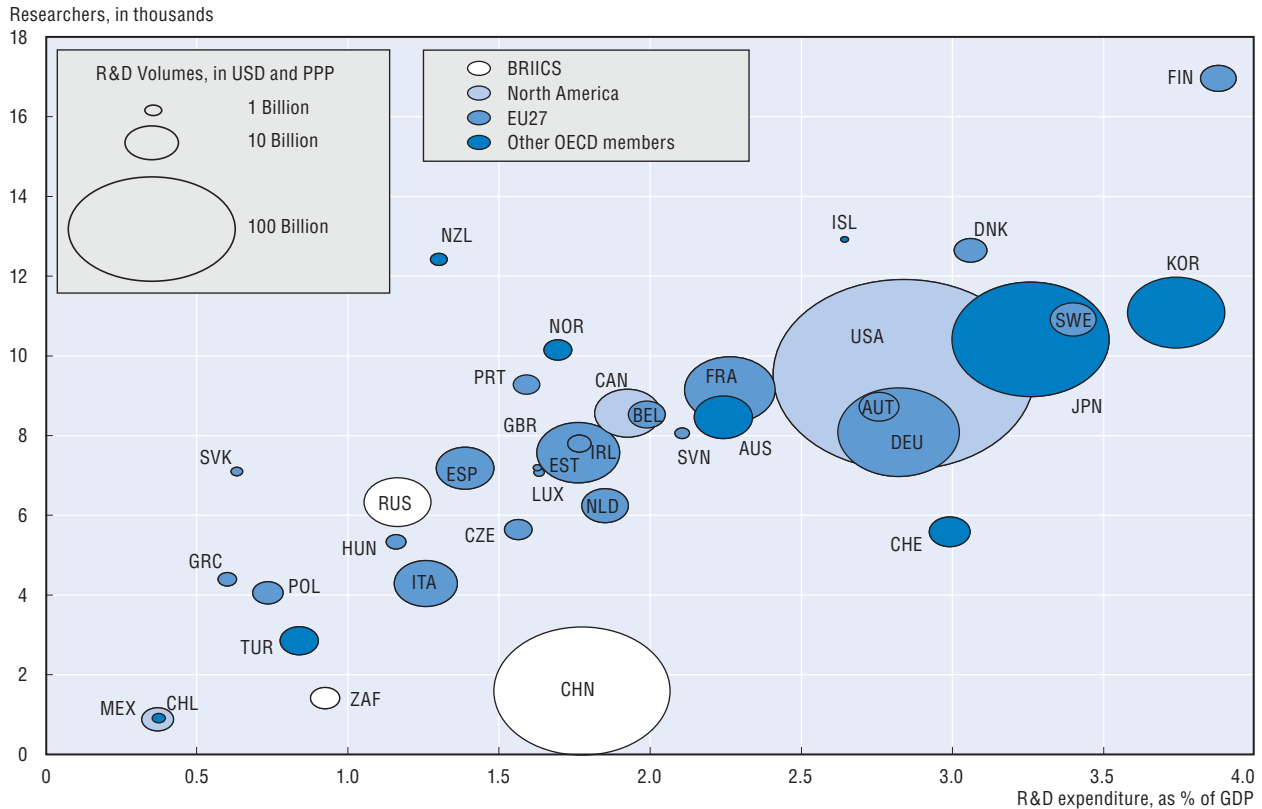


Find out more

- *OECD Science, Technology and Industry Outlook (2014)*
- *Promoting Research Excellence: New Approaches to Funding (2014)*
- *OECD Science, Technology and Industry Scoreboard (2013)*
- *Commercialising Public Research: New Trends and Strategies (2013)*
- *Knowledge Networks and Markets in the Life Sciences (2012)*
- *Transferable Skills Training for Researchers (2012)*
- *Public Research Institutions: Mapping Sector Trends (2011)*
- *Frascati Manual (6th edition, 2002)*

www.oecd.org/science

R&D in OECD and non-OECD countries (2010)



Source: OECD Science, Technology and Industry Outlook 2012 and OECD Science, Technology and Industry Scoreboard 2011, based on OECD MSTI Database (2012)

International scientific co-operation

Collaboration has become a pervasive feature of research activities in most countries. Geographical and cultural proximity, the widespread use of English and the ubiquity of information and communication technologies are all factors that have helped extend the scope of international scientific collaboration.

The OECD promotes international scientific co-operation by facilitating frequent consultations among senior science policy officials from around the world. By providing a forum, the OECD helps policy makers explore opportunities for new or enhanced co-operation in selected scientific areas; define international frameworks for vital national or regional science policy decisions; and address the scientific dimensions related to global challenges.



Find out more

- *Meeting Global Challenges through Better Governance: International Co-operation in Science, Technology and Innovation (2012)*
- *Facilitating International Co-operation in Non-Commercial Clinical Trials (2012)*
- *Opportunities, Challenges and Good Practices in International Research Cooperation (2011)*
- *Large Research Infrastructures (2011)*

www.oecd.org/sti/gsf

Nanotechnology

Nanotechnology enables the manipulation, study and exploitation of very small (typically less than 100 nanometres) structures and systems. It contributes to the development of novel materials, devices and products – from tyres to touchscreens – that have the potential to affect virtually every area of economic activity as well as help address societal and environmental challenges, such as renewable energy and water supply.

OECD work on nanotechnology helps promote and facilitate the responsible commercialisation of nanotechnology. Policy focus includes: identifying opportunities and impediments for realising the economic, environmental and social benefits of nanotechnology; encouraging an appropriate environment for commercialisation and technology transfer; and facilitating the development of internationally comparable statistics and indicators to track the research, development and commercialisation of nanotechnology.



Find out more

- *Planning Guide for Public Engagement and Outreach in Nanotechnology (2012)*
- *Fostering Nanotechnology to Address Global Challenges: Water (2011)*
- *The Impacts of Nanotechnology on Companies (2010)*
- *Nanotechnology: An Overview Based on Indicators and Statistics (2009)*

www.oecd.org/sti/nano

Biotechnology

Biotechnology adds value to a host of products and services, producing a new set of economic activities related to the invention, development and use of products and processes. An increasingly important driver of sustainable growth and development, the transition to a robust and efficient bioeconomy requires careful management.

Given favourable conditions, the bioeconomy will continue to contribute significantly to socio-economic progress in OECD and non-OECD countries. It holds vast potential to improve health outcomes, boost the productivity of agriculture and industrial processes and enhance sustainability.

Find out more

- *Marine Biotechnology: Enabling Solutions for Ocean Productivity and Sustainability* (2013)
- *Biotechnology for the Environment* (2012)
- *Synthetic Biology and Knowledge Infrastructures* (2012)
- *Industrial Biotechnology and Climate Change* (2011)
- *Future Prospects for Industrial Biotechnology* (2011)
- *Key OECD Biotechnology Indicators*

www.oecd.org/sti/biotechnology

Space

The space industry is relatively small compared to other sectors, but its technological dynamism and strategic significance mean that it plays an increasingly critical role in modern society.

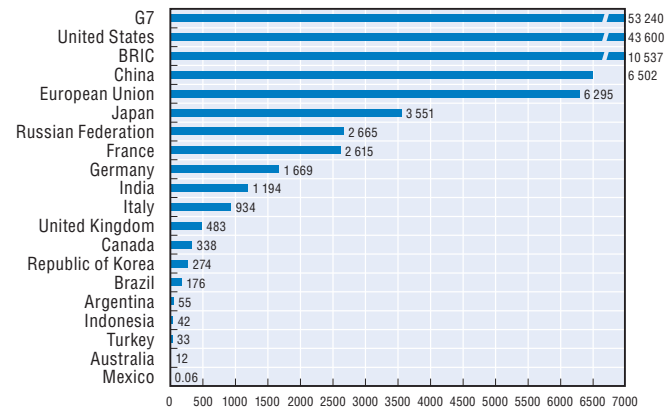
Weather forecasting, air traffic control, global communications and broadcasting, disaster management – these essential activities largely rely on satellite technology. The OECD helps space agencies and governments understand the implications of the space economy by developing methodologies, indicators and statistics for measuring its impact.

Find out more

- *Space Technologies and Food Security* (2014)
- *OECD Handbook on Measuring the Space Economy* (2012)
- *The Space Economy at a Glance* (2011)

www.oecd.org/futures

Space budgets of G20 countries, in USD millions (2010)



Source: *OECD Handbook on Measuring the Space Economy* (2012)

Internet economy

Toward ubiquitous connectivity

Thanks to nearly one billion broadband subscriptions in the OECD area, the Internet is a key platform that supports every sector of the economy and is a fundamental driver of productivity gains and economic growth. And with mobile broadband usage soaring thanks to the uptake of smart phones, the Internet continues to expand to an even wider range of portable devices and markets.

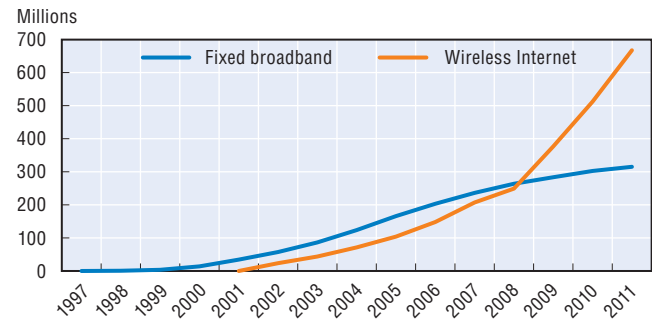
The economic activity stemming from this connectivity provides increasing social and economic benefits through greater access to information, e-commerce, communication, social networking and web services. It enables new businesses, entrepreneurship, productivity gains and global business expansion. The Internet is also critical to empower consumers; to improve health, education and labour market efficiency; and to enable governments to more openly communicate with their citizens.



Find out more

- *The Internet Economy on the Rise: Progress since the Seoul Declaration (2013)*
- *OECD Internet Economy Outlook (2012)*

Wireless Internet access overtaking fixed broadband subscriptions, in millions of subscriptions (1997-2011)



Source: OECD Broadband Portal (2012)

- *OECD Digital Economy Papers*
- *OECD Key ICT Indicators*
www.oecd.org/internet

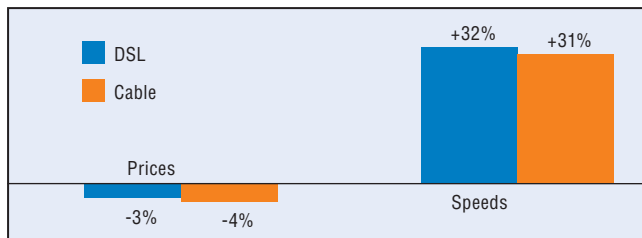
Broadband and telecommunications

Broadband is a fundamental infrastructure for economic and social development. It serves as a communication and transaction platform for the entire economy and improves productivity across all sectors. Trends show that broadband speeds keep increasing while prices are falling. The OECD performs analysis on telecommunication market liberalisation and performance; regulatory issues such as interconnection and universal service; and on the development of broadband infrastructure to support electronic commerce.

Find out more

- *OECD Communications Outlook (2013)*
- *OECD Broadband Portal*
www.oecd.org/sti/telecom

Broadband price and speed changes in OECD area (2008, 2011)



Source: OECD Broadband Portal (2012)

Security and privacy

For global networks to be trustworthy, infrastructures and services must be reliable; transactions must be secure and private; and personal data must be effectively protected.

Such objectives have traditionally depended on governments, but given the fast-paced evolution of information technologies, the private sector plays an increasingly important role.

The OECD promotes an internationally co-ordinated policy making approach to protecting security and privacy in order to help build trust in the global information society and to facilitate electronic commerce.

Find out more

- *The OECD Privacy Framework (2013)*
- *The Protection of Children Online (2012)*
- *Review of Cross-border Co-operation in the Enforcement of Laws Protecting Privacy (2011)*
www.oecd.org/sti/security-privacy

DID YOU KNOW

...Work on privacy and transborder data flows at the OECD began in the early 1970s. In 1980, the OECD Privacy Guidelines were the first internationally agreed-upon principles for information privacy, and the subsequent basis for many national policies on data privacy.

Digital content

The Internet has transformed industries around the world and has ushered in an ever-increasing switch to digital content. The OECD provides cutting-edge analysis on the related developments, trends and policy implications surrounding this constantly evolving field.

Find out more

- *The Development and Diffusion of Digital Content (2013)*
- *The App Economy (2013)*
- *E-books: Developments and Policy Considerations (2012)*
- *The Relationship between Local Content, Internet Development and Access Prices (2012)*
- *The Role of Internet Intermediaries in Advancing Public Policy Objectives (2011)*

www.oecd.org/sti/digitalcontent



“It is really important to preserve openness to increase innovation.”

Tim Berners-Lee, Director of the World Wide Web Consortium and inventor of the World Wide Web, High Level OECD Meeting on the Internet Economy, June 2011

Internet openness

The decentralised and open nature of the Internet has stimulated innovation, delivered economic benefits and given voice to democratic aspirations. Amid concerns that this openness is at risk, the OECD strives to preserve the fundamentally dynamic nature of the Internet while protecting privacy, security, children online, intellectual property and the free flow of information.

The OECD Principles for Internet Policy Making urge policy makers to protect the openness of the Internet in order to further unleash innovation, creativity and economic growth. The principles support a flexible, multi-stakeholder model of development and management for the Internet rather than an international regulatory approach, while strengthening international co-operation in the process.

Find out more

- *OECD Principles for Internet Policy Making*
www.oecd.org/internet

Consumer empowerment

Consumers account for over 60% of GDP in the OECD area and thus play a vital role as economic decision makers. Consumers who know their rights and have the information to make meaningful choices when buying goods or services spur business innovation and competition.

Consumers are also the driving force behind much of the Internet Economy. Having access to timely, comprehensive and trustworthy information on their computers and mobile devices, consumers are more knowledgeable of product and service characteristics and are able to make better purchases. Moreover, their decisions drive markets towards lower product prices and higher quality.

Governments play an important role in helping consumers understand their rights and in protecting their interests. The OECD aims to help governments around the world design effective consumer policies by examining issues of global relevance to consumers and by developing principles to promote efficient, transparent and fair global markets for consumers.

The OECD conducts research on e-commerce, product safety, education, cross-border fraud, dispute resolution and redress. It also examines consumer economics, focusing on the new insights provided by work on behavioural economics.



Find out more

- *Empowering and Protecting Consumers in the Internet Economy (2013)*
- *Consumer Protection for Online and Mobile Payments (2012)*
- *Consumer Policy Toolkit (2010)*
- *Global Portal on Product Recalls*
www.oecd.org/sti/consumerpolicy

DID YOU KNOW

...Credit card contracts were typically one page long in the 1980s compared to over 30 pages today. Contrary to popular belief, more information is not always a good thing. Instead, less jargon is better for consumers.



Industry and globalisation

Adapting to new economic interdependencies

A main concern of governments around the world is the impact of industrial globalisation on domestic employment, economic growth and innovative capacity.



The OECD focuses on the structural characteristics of economies for growth and productivity performance, and on the role of governments in fostering growth-enhancing structural reform. It includes analysis on the respective roles of manufacturing and services in the economy, as well as on the role of globalisation.

The aim of this work is to explore how governments can make efficient policy interventions to strengthen their economies and to foster new areas of potential growth, without distorting national or international markets in the process. The research is based on analysis of sectoral and firm-level data, which provide detailed insights into firm behaviour and the role of policies in strengthening growth and productivity. The empirical analysis is complemented by qualitative evaluations of business cases and new business models to provide additional insights.

Find out more

- *OECD Science, Technology and Industry Scoreboard (2013)*
- *Attractiveness for Innovation – Location Factors for International Investment (2011)*
- *OECD Handbook on Economic Globalisation Indicators (2010)*
- *Innovation in Firms: Microeconomic Perspective (2009)*
- *Bilateral Trade in Goods by Industry and End-use Category (BTDIxE) Database*
- *Measuring Globalisation: OECD Economic Globalisation Indicators (2010)*
- *STAN Input-Output Database*
www.oecd.org/sti/industry-issues

Steel

For over 30 years, the OECD has helped to ensure transparent and open steel markets. By focusing on issues related to market conditions in steel and related raw materials, the OECD helps governments address evolving challenges facing the industry. Work also explores the contribution of new steelmaking technologies, such as carbon capture and storage, to mitigate climate change.

While the OECD is not the place to establish and supervise legally binding rules of the steel market, it has emerged over the years as the unique platform where multilateral steel problems can be discussed and political solutions found.

By fostering a global environment in which steel producers compete under fair conditions, the OECD contributes to a more transparent, viable and sustainable steel industry, so that steel continues to contribute to improved economic prosperity around the world.

Find out more

- *Developments in Steelmaking Capacity of Non-OECD Economies (2014)*

www.oecd.org/sti/steel

DID YOU KNOW ...OECD Steel Committee members and observers account for around 50% of world steel production and more than 80% of world exports of steel.



Shipbuilding

OECD work on shipbuilding seeks to progressively establish more competitive conditions in the industry. It encourages transparency through data collection and analysis, and seeks to expand policy dialogue with non-OECD economies that have significant shipbuilding industries.

By providing a forum for information exchange, policy dialogue and peer review, the OECD helps discourage subsidies and other non-commercial practices. It is the only international body that can influence and guide government policies by identifying and, where possible, eliminating factors that distort the shipbuilding market.

Find out more

- *Shipbuilding Industry in Portugal (2014), Japan (2013), Turkey (2011), China (2009)*

www.oecd.org/sti/shipbuilding

Global value chains

The international fragmentation of production into global value chains (GVCs) challenges the way we look at the world economy. As companies increasingly restructure their operations through outsourcing and offshoring, different stages of production occur in different countries. It is essential to understand how GVCs work, how they affect economic performance, and how policy can help countries derive benefits from their involvement.

The OECD is examining current and emerging policy challenges in this increasingly interconnected world: Why have GVCs emerged? What is the link between GVCs and growth, employment and productivity? How can trade policies help firms enter GVCs and grow? What does national competitiveness mean in such an era? How can economies upgrade within GVCs? What new forms of risk arise? These are some of the questions to which the OECD is formulating answers.



Find out more

- *Interconnected Economies: Benefiting from Global Value Chains* (2013)
- *Export Performance of Countries within Global Value Chains* (2012)
- *International Comparative Evidence on Global Value Chains* (2012)
www.oecd.org/sti/industry-issues

Trade in value-added

Many of the goods and services we buy are composed of inputs from various countries around the world. However, the flows of goods and services within these global production chains are not always reflected in conventional measures of international trade. To address this issue, the OECD, in partnership with the World Trade Organisation (WTO), launched the Trade in Value-Added (TiVA) initiative. This considers the value that is added by each country in the production of goods and services that are consumed worldwide.

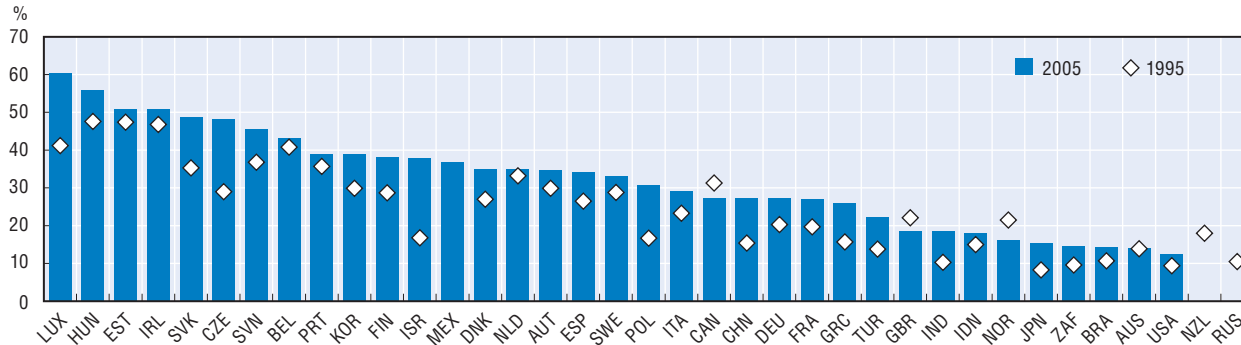
A set of TiVA indicators has been designed to better inform policy makers by providing new insights into the commercial relations between nations. They contribute to a better understanding of the integration and position of countries in global value chains and help to illustrate the complex interdependencies in our global economy. First estimates reveal the extent to which a country's export performance is dependent on imports, the ultimate destination of a country's value added and, the origins of value added in a country's consumption of final goods and services. Services are shown to be more significant in global trade than suggested by traditional measures and new pictures of bilateral trade balances emerge.



Find out more

- *Measuring Trade in Value Added: An OECD-WTO joint initiative*
www.oecd.org/trade/valueadded

Import content of exports, as % of total exports (1995, 2005)

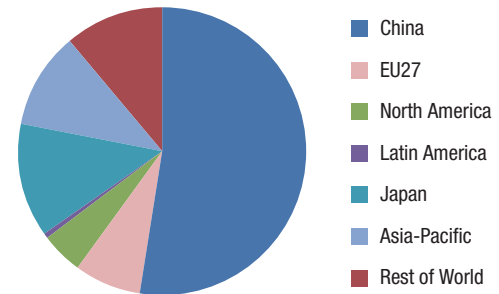


Source: OECD Science, Technology and Industry Scoreboard 2011, based on OECD STAN Input-Output Database (2011)

The *import content of exports* is the amount of imported goods used in the production of an exported good. The above figure shows that behind every exported good is a host of imported intermediary goods that were used in the production process. For many countries, this share of imported content is close to 40% and has risen significantly over time. Such figures demonstrate that traditional measures of trade that only record the final stage of production often present an outmoded picture of bilateral trade balances.

The chart to the right takes an even closer look at this phenomenon by focusing on a specific sector. It shows that for every computer exported by China, roughly half of the component parts had been imported from other countries. Put another way, China's contribution in terms of value-added is only 50% of a computer's final value.

Import content of exported computers by China (2005)



Source: OECD STAN Input-Output Database (2011)

Databases, publications and platforms

On-demand resources for policy makers

Key databases

<p>Main Science and Technology Indicators Database (MSTI) www.oecd.org/sti/msti</p>	<p>76 indicators on research and experimental development (R&D) as well as research personnel, patents, technology balance of payments and international trade in R&D-intensive industries. Updated biannually.</p>
<p>Research and Development Database (R&D) www.oecd.org/sti/rds</p>	<p>Covers a wide range of data on R&D expenditure and personnel. Updated annually and available from 1981 onwards.</p>
<p>Input-Output Database (I-O) www.oecd.org/sti/inputoutput</p>	<p>Internationally-harmonised tables used to explore inter-industrial relationships, including the measurement of trade in value-added, carbon embodied in trade, etc.</p>
<p>Structural Analysis Database (STAN) www.oecd.org/sti/stan</p>	<p>Industry employment, production, investment and trade data for 57 manufacturing and services sectors based on the ISIC Rev. 3 classification, from 1970 onwards.</p>
<p>Bilateral Trade Database (BTDIxE) www.oecd.org/sti/btd</p>	<p>Exports and imports of goods used to provide insights into the patterns of trade in intermediate goods between countries. These data help track global production networks, supply chains and trade in value-added.</p>
<p>Patent Database www.oecd.org/sti/ipr-statistics</p>	<p>Data on patent applications, patent counts by country and technology fields, international co-operation in patents, etc.</p>
<p>Broadband Portal www.oecd.org/sti/ict/broadband</p>	<p>Covers a wide range of broadband-related statistics on penetration, usage, coverage, prices, services and speeds.</p>

Flagship publications



OECD Science, Technology and Industry Scoreboard

The most comprehensive set of indicators on the knowledge-based economy, the Scoreboard brings together internationally comparable indicators. It has become a widely used reference that combines statistical rigour with easy access and readability.

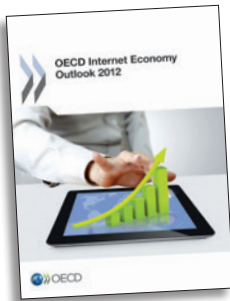
www.oecd.org/sti/scoreboard



OECD Science, Technology and Industry Outlook

The STI Outlook reviews key trends in science, technology and innovation. It also provides individual profiles of the science and innovation performance for each OECD country, as well as for a number of major emerging economies including Brazil, China, India, the Russian Federation and South Africa.

www.oecd.org/sti/outlook



OECD Internet Economy Outlook

The Internet Economy Outlook analyses market dynamics and trends in IT goods and services industries, the development and impact of electronic business processes, digital content, ICT skills and employment and trends in ICT policy.

www.oecd.org/internet



OECD Communications Outlook

The Communications Outlook examines developments in the communications sector and compares the related performance and policy frameworks in OECD countries.

www.oecd.org/sti/telecom/outlook

Country studies and peer reviews

The OECD provides independent assessments of countries' progress in achieving policy objectives in the areas of telecommunications, ICT diffusion to business and fostering innovation. Reviews are conducted to promote peer learning, take advantage of good practice and to help governments implement reform. The analyses are supported by a broad range of economic data and country comparisons and result in targeted policy recommendations.

OECD Reviews of Innovation Policy

France (2014), Netherlands (2014), Viet Nam (2014), Colombia (2014), Croatia (2014), Southeast Asia (2013), Sweden (2012), Slovenia (2012), Peru (2011), Russian Federation (2011), Mexico (2009), Korea (2009), China (2008), South Africa (2007), etc.

www.oecd.org/sti/innovation/reviews

OECD Telecommunications Reviews

Colombia (2014), Mexico (2012), Germany (2004), France (2003), China (2003), Canada (2002), Turkey (2002), United Kingdom (2002), Poland (2002), etc.

www.oecd.org/sti/telecom/reports

Working papers and policy reports

OECD Science, Technology and Industry Working Papers cover a broad range of scientific and technological issues and consist of studies, both technical and analytical in nature, prepared by staff or outside consultants. These papers are intended to share early knowledge and elicit feedback.

STI Policy Papers cover a broad range of topics, including industry and globalisation, innovation and entrepreneurship, scientific R&D and emerging technologies. These reports are officially declassified by an OECD Committee.

The OECD Digital Economy Papers series covers a broad range of ICT-related issues and makes selected studies available to a wider readership. The series primarily includes policy reports, which are officially declassified by an OECD Committee for public diffusion.

OECD Science, Technology and Industry Working Papers

<http://oe.cd/sti-working-papers>

OECD Science, Technology and Industry Policy Papers

<http://oe.cd/sti-policy-papers>

OECD Digital Economy Papers

<http://oe.cd/digital-economy-papers>

Innovation Policy Platform

Growth that is driven by science, technology and innovation requires the right mix of cross-functional and multidisciplinary policy actions across such diverse areas as education, research, finance and public procurement. The challenge is to identify the policy solutions that work in a given national context.

The Innovation Policy Platform (IPP), a joint project between the OECD and the World Bank, is a web-based, open-data interactive platform to facilitate collective learning processes around science, technology and innovation policy. Its goal is to provide policy makers with tailored support in analysing and developing national innovation systems. The IPP is built around a set of modules that cover core areas and frontier topics, including:

- ▶ **Policy briefs** to provide short evidence-based descriptions of policy instruments and topics;
- ▶ **Case studies** that use written narratives and video to highlight specific experiences in tackling problems;
- ▶ **Country profiles** with snapshots of the main indicators characterising countries' innovation performance;
- ▶ **Quantitative indicators** to support policy analysis and benchmarking. Interactive visualisation tools will also enable users to explore and download data.



Find out more

www.oecd.org/sti/innovation

Global portal on product recalls

Health and safety are at the heart of OECD work on consumer policy. Protecting consumers, especially children, from unsafe products and parts requires rigorous legislation and better law enforcement.

The OECD has developed an online data portal that provides updated information on global product recalls and emerging hazards. This public portal is available in several languages to the benefit of regulators, policy makers, businesses and citizens alike at <http://globalrecalls.oecd.org>.



Find out more

www.oecd.org/sti/consumerpolicy



Our structure

The work of the Directorate for Science, Technology and Industry (STI) is governed by its committees and working parties, composed of senior civil servants from OECD countries nominated by their governments. Members are generally from ministries or government agencies with responsibility for policy making, regulation and implementation. They usually meet twice a year to discuss, assess and prioritise work.

In addition, STI draws on a wide range of competencies both within the OECD and from experts in government, universities, enterprises, trade associations, civil society and NGOs to provide input into key science, technology and innovation issues.

Committees and working parties

The **Committee for Scientific and Technological Policy (CSTP)** and its working parties advance the contribution of science for economic growth, sustainable development, the creation of skilled jobs and improved social well-being.

The **Committee on Industry, Innovation and Entrepreneurship (CIIE)** and its working parties focus on drivers of industrial productivity and competitiveness, on factors affecting the performance of firms (large and small) and sectors (manufacturing and services) and on patterns and levels of industrial globalisation.

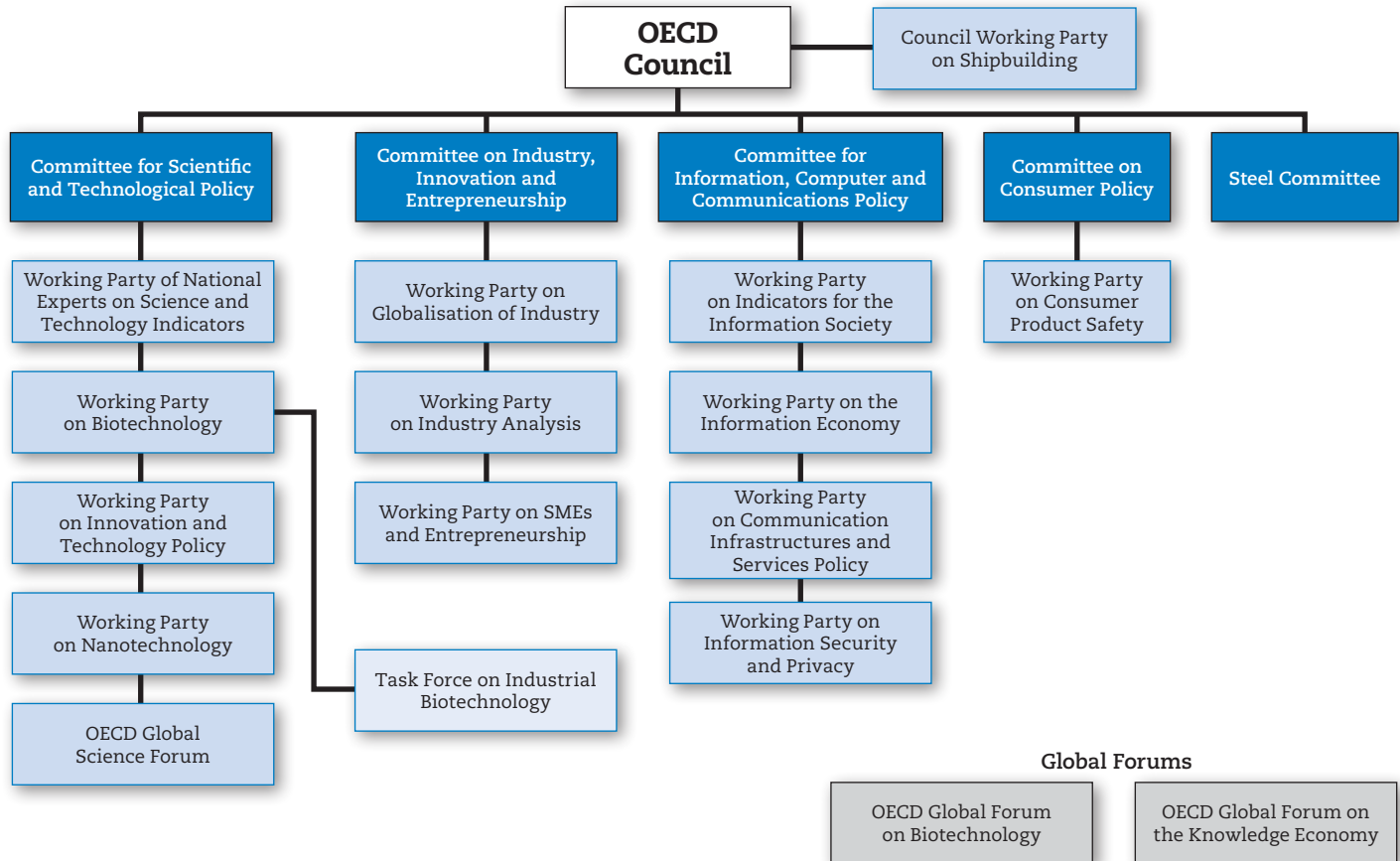
The **Committee for Information, Computer and Communications Policy (ICCP)** and its working parties develop the policy and regulatory environments needed for the expansion of the Internet and information and communications technologies (ICTs) as drivers of innovation, productivity, growth, sustainable development and social well-being.

The **Committee on Consumer Policy (CCP)** and its working party promote consumer trust by developing cross-border policies and mechanisms for a more efficient, transparent and fair global marketplace.

The **Steel Committee (STEEL)** and the **Council Working Party on Shipbuilding (COUNCIL WP6)** work towards ensuring that markets in the steel and shipbuilding industries remain as unrestricted and free of distortion as possible.

Global Forums

OECD Global Forums are created by OECD committees as a way to involve a broader range of views in their work. The OECD Global Forums are not official bodies, but rather communities of stakeholders that meet under the responsibility of one or more OECD committees.



Our staff



The staff at the Directorate for Science, Technology and Industry encompasses some 130 public servants, economists, policy analysts, statisticians and administrative staff from over 20 countries.

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For more information

The Directorate for Science, Technology and Industry produces 20-30 titles a year in English and French, with summaries of selected titles translated into other languages (available for free on the OECD on-line bookshop).

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