



DIGITALISATION AND OPEN SCIENCE, WHAT INDICATORS FOR POLICY MAKERS?

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OECD



The Organisation for Economic Cooperation and Development

The Organisation for Economic Co-operation and Development (OECD)

Our mission

The mission of the Organisation for Economic Co-operation and Development (OECD) is to promote policies that will improve the economic and social well-being of people around the world.

The OECD provides a forum in which governments can work together to share experiences and seek solutions to common problems. We work with governments to understand what drives economic, social and environmental change. We measure productivity and global flows of trade and investment. We analyse and compare data to predict future trends. We set international standards on a wide range of things, from agriculture and tax to the safety of chemicals.

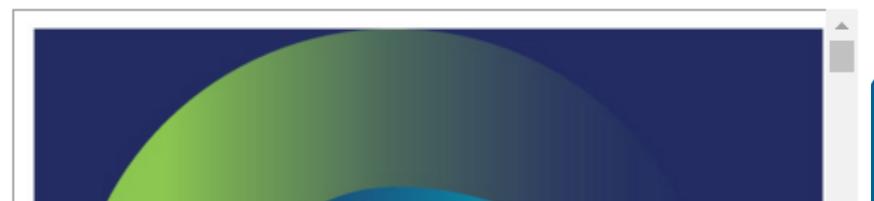
We also look at issues that directly affect everyone's daily life, like how much people pay in taxes and social security, and how much leisure time they can take. We compare how different countries' school systems are readying their young people for modern life, and how different countries' pension systems will look after their citizens in old age.

Drawing on facts and real-life experience, we recommend policies designed to improve the quality of people's lives. We work with business, through the Business and Industry Advisory Committee to the OECD ([BIAC](#)), and with labour, through the Trade Union Advisory Committee ([TUAC](#)). We have active contacts as well with other civil society organisations. The common thread of our work is a shared commitment to market economies backed by democratic institutions and focused on the wellbeing of all citizens. Along the way, we also set out to make life harder for the terrorists, tax dodgers, crooked businessmen and others whose actions undermine a fair and open society.

OECD at 50 and beyond

Today, we are focused on helping governments around the world to:

- Restore confidence in markets and the institutions that make them function.
- Re-establish healthy public finances as a basis for future sustainable





35 members countries

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OECD work on STI



> A to Z

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Science and technology

[OECD Science, Technology and Industry Scoreboard](#)

Published every two years in print and on line, the OECD Science, Technology and Industry (STI) Scoreboard brings together internationally comparable indicators. It has become a widely used reference which combines statistical rigour with easy access and readability.

[Main Science and Technology Indicators \(MSTI\)](#)



...including indicators

The screenshot shows the homepage of The Innovation Policy Platform. At the top left is the platform's logo, which consists of four colored bars (green, orange, blue, and grey) followed by the text "The Innovation Policy Platform". To the right is a search bar with a magnifying glass icon. Further right are links for "About", "News", "Contact", and "Videos". Below these are "SIGN UP" and "SIGN IN" buttons. A horizontal menu bar below the header contains four teal-colored buttons with white text: "Browse by Topic", "Select a Country", "Statistics", and "Communities".

Measurement for Policy

Why is measurement important for policy?

Appropriate measurement is critical for policy to support innovation (OECD 2010a, 2010b) since it may help policy makers in accomplishing the following:

- Assessing the contribution of innovation to achieve social and economic objectives.
- Understanding the determinants of and obstacles to innovation to design policies with higher chances of success.
- Evaluating the effectiveness of different policy approaches, and consequently adapting current policies or designing new ones.
- Benchmarking innovation performance and conditions for innovation to those of other countries.

[Collapse](#)



Measurement for Policy

Other Relevant IPP Pages

The screenshot shows a section of the IPP website titled "Measurement for Policy". It features the IPP logo (four colored bars) and the text "The Innovation Policy Platform".

How can innovation be measured?

[Patent data](#) | [The geography of innovation](#)



Open Science, the OECD agenda

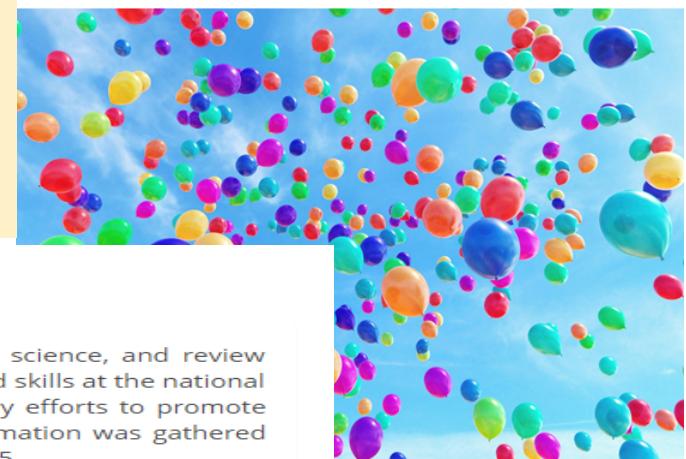


Daejeon Ministerial Declaration

DSTI/STP/TIP(2014)9/REV2



MAKING OPEN SCIENCE
A REALITY



Open science country notes

The country notes present up-to-date information on the key actors in open science, and review recent policy trends in the areas of open access, research data, infrastructure, and skills at the national and international levels. These notes thus constitute a mapping of recent policy efforts to promote open science in OECD member and selected non-member countries. The information was gathered using a common template in the course of 2014, and is current as of Summer 2015.

Belgium

Finland

Japan

Portugal

Canada

France

Korea

Spain

Chile

Germany

Mexico

Turkey

China

Greece

Netherlands

United Kingdom

Estonia

India

Norway

United States

Horizontal OECD project on the digitalisation of the economy and society





Open Science at the OECD GSF





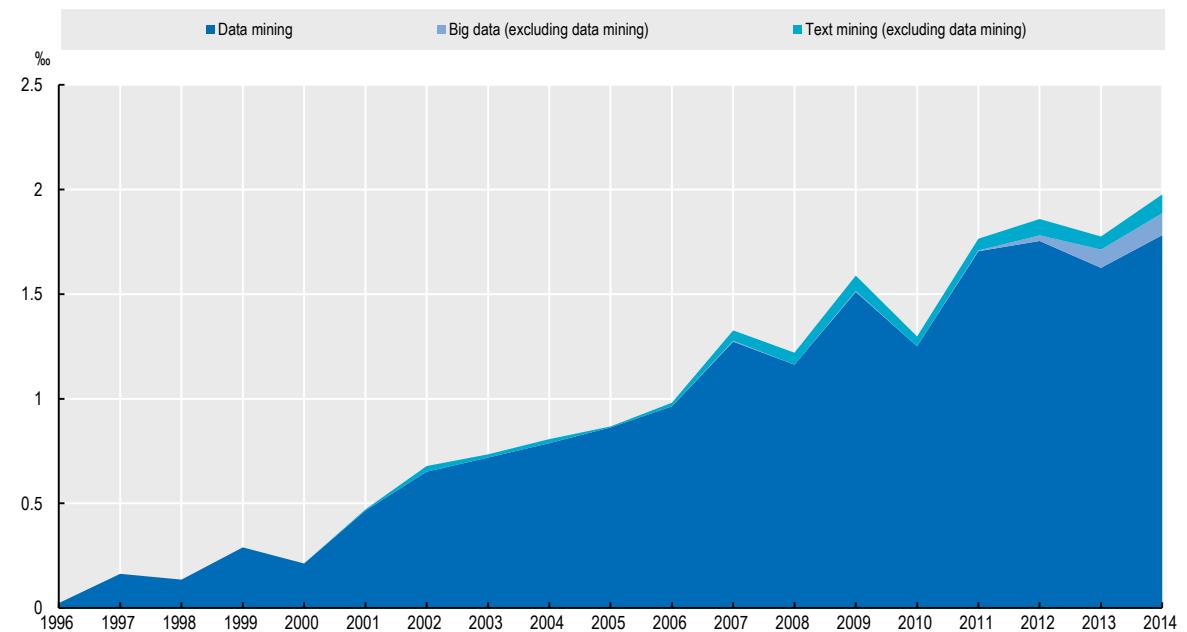
Why are OECD countries so interested in open science?



Science: an evolving scenario...

- ICTs offering new possibilities to share results
- Science is becoming increasingly data-driven
- Digital data offer many new opportunities to build new indicators
- Qualitative information is increasingly becoming a source of quantitative evidence. (Text mining tools, e.g. natural language processing through inductive or deductive methods)

TDM-related scientific articles
1995-2014, per thousand article



Source: OECD (2014), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris.



Open science can also contribute to innovation...but...

- PubMedCentral show that 25% of the daily unique users are from universities, **17% from companies**, **40% are individual citizens** and the rest are government or other categories (UNESCO 2012)
- **48% of Danish SMEs consider research outcomes very important** for their business activities and **more than 2/3 reported difficulties** in accessing research material (Houghton, Swan and Brown 2011)
- **UK SMEs cannot easily access scientific articles** Ware (2009)



...the impacts of open science need to be fully understood

- Open science a relatively new phenomenon (at least for policy makers)
- Evidence on open access citation advantage (but quantification of this advantage is subjected to debate)
- Different behaviours in different fields (why? Over time?)
- Scientists tends to like open science in surveys (what about in reality?)
- Many estimates of the economic impact of data sharing (mostly on open gov data)
- Fewer estimates on research data sharing impact especially on innovation



Need to assess these impacts (to whom and on what?)



But how to measure all this?

OECD Blue Sky Forum on Science and Innovation Indicators



INFORMING SCIENCE AND INNOVATION POLICIES

TOWARDS THE NEXT GENERATION OF DATA AND INDICATORS

19-21 September 2016, Ghent, Belgium



Key objectives

- Lead to a forward looking and policy relevant roadmap on STI measurement for OECD and beyond to consider and implement with their membership, other international organisations and experts.
- Discuss and review the main conceptual underpinnings of current frameworks for STI indicators and data infrastructure initiatives, as well as their uses by the policy and the research communities.
- Explore the role of digital infrastructures in creating new opportunities for measurement and analysis, as well as challenges to existing standards of collection and quality of STI indicators.
- Provide new opportunities for collaboration and strengthen the dialogue between: policy makers, data users and providers; national and global practices on indicators; efforts to build up and maintain underlying data resources and efforts to develop indicators; official statisticians and other practitioners; and STI data practitioners and practitioners in related statistical domains.



Surveys reaching out the scientific community

(1) Information directly from key stakeholders: Insights from the scientists themselves (NESTI project <http://oe.cd/issa>)

The OECD international survey of scientific authors (ISSA)

Through an online experimental survey, the OECD targets corresponding authors of peer-reviewed papers and collects, in a cost effective fashion, microdata of high relevance for science policy, e.g. on access to results of scientific research, gender equality or impacts of research beyond publications. A first pilot was carried out in 2015; a second study focusing on the digitalisation of science is planned for 2017.



Sci PUBLISHING AND OPEN ACCESS ✓

Second pilot in preparation:
SCIENTISTS AND THE DIGITALISATION OF SCIENCE

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OECD Science, Technology and Industry Policy Papers

ISSN: 2307-4957 (online)

Hide / Show Abstract

DOI: [10.1787/23074957](https://doi.org/10.1787/23074957)

Drivers and Implications of Scientific Open Access Publishing

Findings from a Pilot OECD International Survey of Scientific Authors



English

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Brunella Boselli¹, Fernando Galindo-Rueda¹

¹: OECD, France

22 Sep 2016

No.: 33

Pages: 67

DOI: [10.1787/5jlrl2z70k0bx-en](https://doi.org/10.1787/5jlrl2z70k0bx-en)

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This paper presents the results of a new and experimental study on the research and publishing activities of scientific authors. It also aimed to test the feasibility of an OECD global survey on science with a focus on major emerging policy issues. This online, email-based pilot survey was based on a stratified random sample of corresponding authors of publications listed in a major global scientific publication index across seven diverse, hand-picked science domains. The results provide evidence of the extent of journal and repository-based open



A whish list...

- it is important to develop metrics for **all the key aspects of Open and Digital Science** and **move away from a dependency on traditional science publications** (industry-science collaboration, data production and sharing, involvement of citizens, informing policy making, etc.)
- we need good **indicators for open data activities, science for policy activities and public engagement activities**, which might not necessarily be associated with traditional science publications



...and some warnings around indicators for policy making

- potential **abuses of STI indicators that oversimplify reality** on the sole basis of what can be easily measured, and that obfuscate their interpretation. Example -> frequent interpretation of indicators as implying that higher values or rank positions are necessarily better
- need to think about **the possible undesired effects of using metrics in evaluations**
- risk of trying to measure **real time impact of policy initiatives through Big Data**



Thank you!

<http://www.oecd.org/sti/sci-tech/oecdglobalscienceforum.htm>

<https://www.innovationpolicyplatform.org/content/open-science>

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