

## Monitoring of research output using CRIS data

Gunnar Sivertsen

*Nordic Institute for Studies in Innovation, Research and Education, Oslo, Norway*

NIFU

# Thank you for inviting me – already registered in CRIS

**Cris**tin

Norsk versjon

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9

<b>Category:</b>	Conference lecture and academic presentation - Lecture
<b>Person(s):</b>	Sivertsen, Gunnar NIFU Nordic Institute for Studies in Innovation, Research and Education - NIFU Nordic Institute for Studies in Innovation, Research and Education
<b>Original title:</b>	Monitoring of research output using CRIS data
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<b>Type of event:</b>	Seminar
<b>Area of distribution:</b>	International
<b>Organisor:</b>	COST Action CA15137 Training School 2019
<b>City/town:</b>	Poznan
<b>Time:</b>	23.10.19
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<b>Plenary session:</b>	Yes
<b>Status:</b>	Published/Presented.
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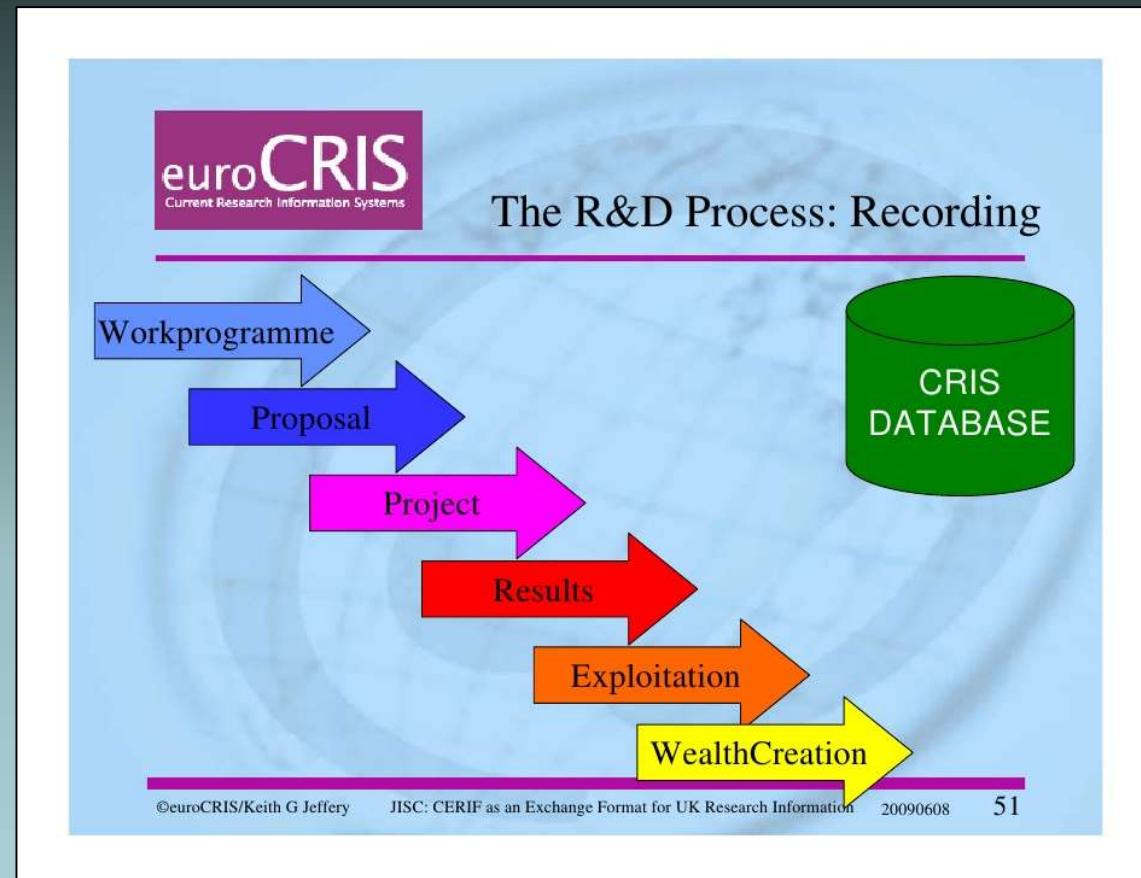
## Outline

1. What is CRIS?
2. The multiple purposes of CRIS
3. Requirements for CRIS to serve *monitoring, funding, evaluation and studies* of research
4. Examples of CRIS-based:
  - Monitoring of research
  - Funding of research
  - Evaluation of research
  - Studies of research

## What is CRIS?

"A current research information system (CRIS) is a database or other information system to **store and manage data** about research conducted at an **institution**."

(Wikipedia)



# Current research information systems (CRIS): Helsinki

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May also serve the purpose of **information** and **communication**



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You are welcome to explore [research portal](#) for up-to-date information on researchers and research groups. The information and short description of ongoing research. Publications are available as full-text if applicable. All research infrastructures additionally by subject areas.



### PUBLICATIONS

Scientific, professional and general publications

Publications →



### RESEARCH INFRASTRUCTURE

Core facilities and research laboratories



### RESEARCH PROJECTS FUNDING GRANTED

Ongoing research

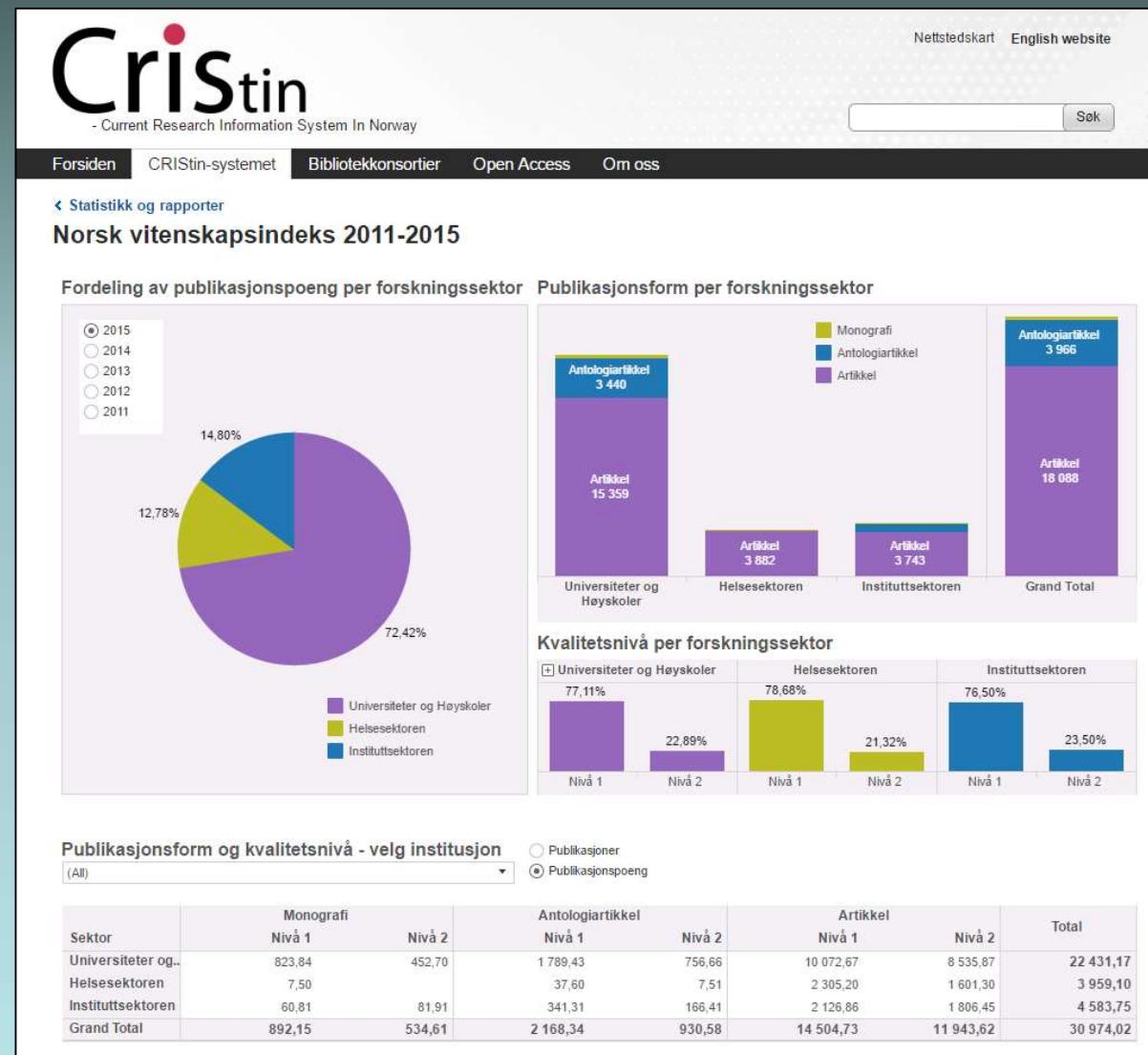
Projects →

# Current research information systems (CRIS): Norway

"A current research information system (CRIS) is a database or other information system to **store and manage data** about research conducted at an **institution**."

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and **statistics**



# Current research information systems (CRIS): Czech Rep.

"A current research information system (CRIS) is a database or other information system to **store and manage data** about research conducted at an **institution**."

May also serve the purpose of **information** and **statistics**

Data may be integrated at the **national level**



The screenshot shows the homepage of the Research, Development and Innovation Council (RIV). The top section features a large logo of a heraldic lion, the text "Research, Development and Innovation Council", and a search bar. Below this is a blue navigation bar with links to "R&D Council", "Documents", "State budget", "R&D Information System", and "R&D Evaluat".

## "Information Register of R&D results" RIV

The RIV is one of parts of the R&D Information System. The RIV has collected an information about results of R&D long-term intentions and R&D projects, state and other public budgets, according to the R&D Act [Code number 130/2002].

The data have been given into the RIV by all public sponsors (different ministries and other state offices with the responsibility for a state R&D long-term intentions and/or R&D project financial aid, the Grant Agency of the Czech Republic, the Academy of Science of the Czech Republic and local authorities [territorial units]).

The content of the RIV, the way how the data have been given into the R&D Information System, the integration of the data into the R&D Information System, processing of the data and the way of data publication are determined by the R&D Act [Code number 130/2002] together with "The Regulation of the Minister of Finance of the Czech Republic [Code number 267/2002] about the R&D Information System", by some other rules and by The Standard Operating Procedure Manual of the R&D Information System.

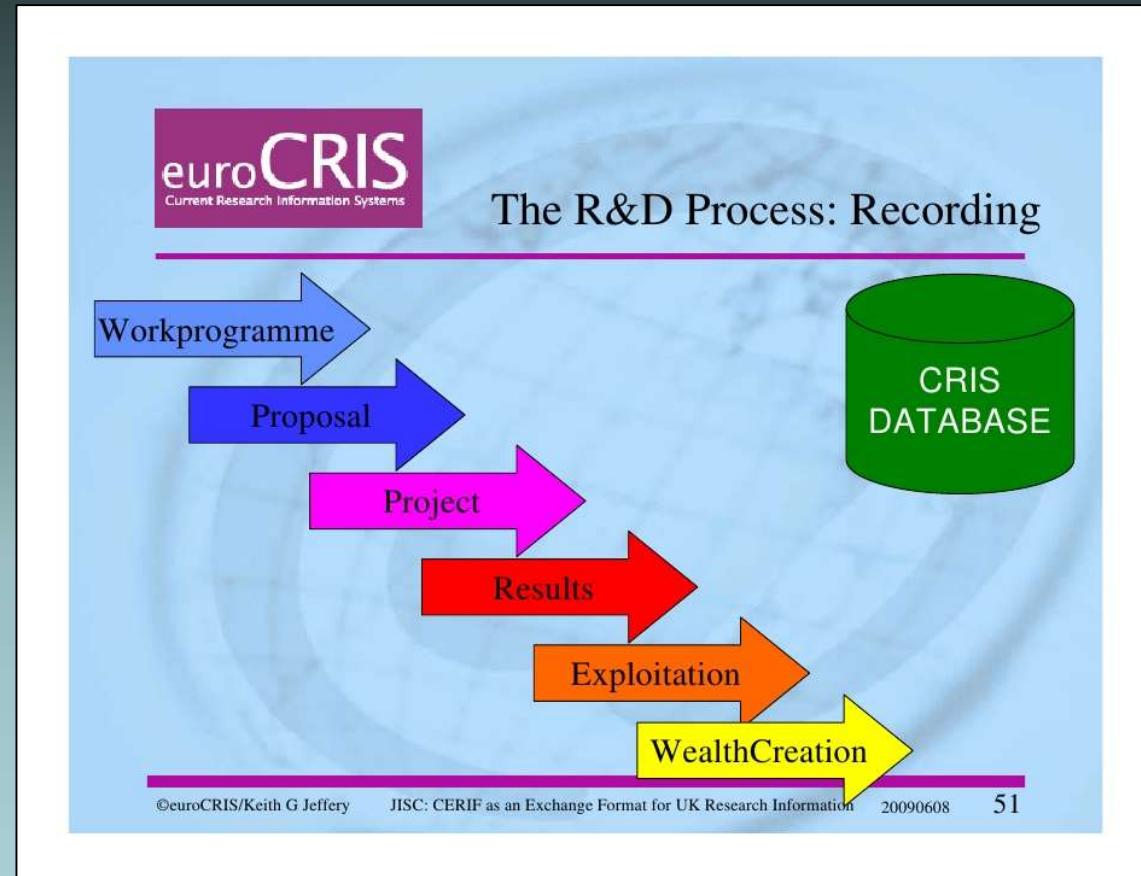
Searching in the R&D Information system can be made by the search program application.

The RIV is a higher version of the former Register of the R&D Publication given by Czech public research institutes [RIP]. The RIP was operated by the Czech Republic until 1995. The RIP has collected data since 1993.

## Let us instead talk about the purposes of CRIS

"A current research information system (CRIS) is a database or other information system to **store and manage data** about research conducted at an **institution**."

(Wikipedia)



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## Purposes of CRIS (I)

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- In the most advanced versions, CRIS help produce integrated data for what used to be documents for separate purposes:
  - individual applications for funding,
  - institutional annual reports,
  - project reports,
  - CV's,
  - publications lists,
  - profiles of research groups,
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  - information for media and the general public, etc.

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- Searchable bibliographic references may lead on to full texts in local repositories.



## Purposes of CRIS (II)

- If the data are *structured and quality-assured for statistical purposes*, research performing and funding organizations may also use CRIS for:
  - monitoring and evaluating research activities and outputs,
  - allocating funding,
  - supporting decision making on their policies and strategies,
  - tracking researchers' careers,
  - describing their systemic role to policy-makers, stakeholders and the public.
- With broad coverage and sufficient completeness, data quality and standardization, CRIS systems can also be used as data sources for *studies of research*.

## Purposes of CRIS (III)

- Making CRIS interoperable and comparable across institutions and countries is necessary for the further development of CRIS for the purposes in focus here:
  - Monitoring of research
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- This is why CRIS are important for:



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## Requirements: Science Europe

- The *Position Statement on Research Information Systems* by Science Europe (2016), "invites all research organizations to develop resilient research information systems" by following four core principles:
  - **Flexibility.** Research information systems should be flexible enough to allow for extensions in terms of the data objects covered, their definitions, metadata, and use of external data sources.
  - **Openness.** Research information systems' data should be available for external use – in line with the principle 'as open as possible, as closed as necessary' and EU Directive 2013/37/EU1 – and their processing should never require the loss of ownership in underlying raw data by the originating institution.
  - **FAIRness.** Research information systems should foster the findability, accessibility, interoperability, and reusability of the data that they store by implementing the FAIR Guiding Principles for research activity data (Wilkinson et al., 2016).
  - **Data entry minimisation.** Research information systems should minimise the need for entering data and facilitate the reuse of data entered manually, in line with the motto 'enter once, reuse multiple times'.



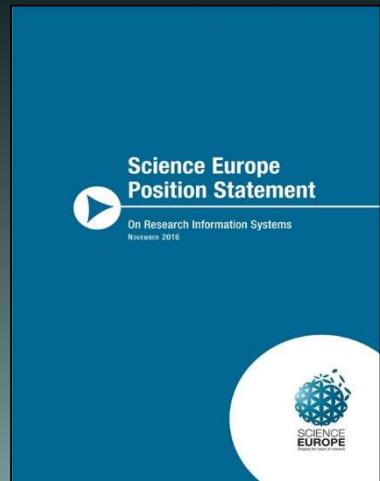
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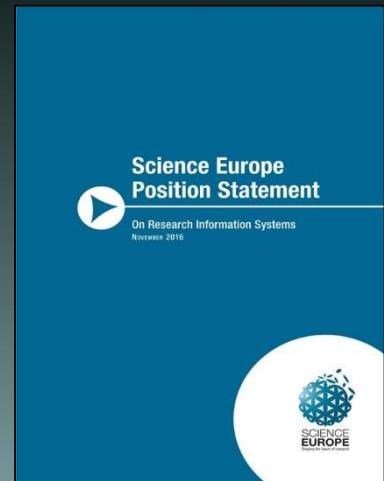
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# Requirements: ENRESSH, based on experiences

COST is supported by the EU Framework Programme Horizon 2020



## ENRESSH

European Network for Research Evaluation  
in the Social Sciences and Humanities  
COST Action 15137

ABOUT US

WORK GROUPS

- More than 125 participants from 37 countries
- Aims:
  - A better understanding of how the SSH generate knowledge and contribute to society
  - Develop appropriate research evaluation methods for the SSH



## WELCOME

TO THE ENRESSH WEBPAGE!

COST (European Cooperation in Science and Technology) is a pan-European intergovernmental framework. Its mission is to enable breakthrough scientific and technological developments leading to new concepts and products and thereby contribute to strengthening Europe's



# National database – Finland's solution

- The universities have **different** systems
- Annually, data from the local systems are exported to, and integrated in, a national database owned by the Government (the VIRTÄ solution)

JUULI Julkaisutietoportaali Suomi

Search: All Fields Find Advanced  Retain current filters

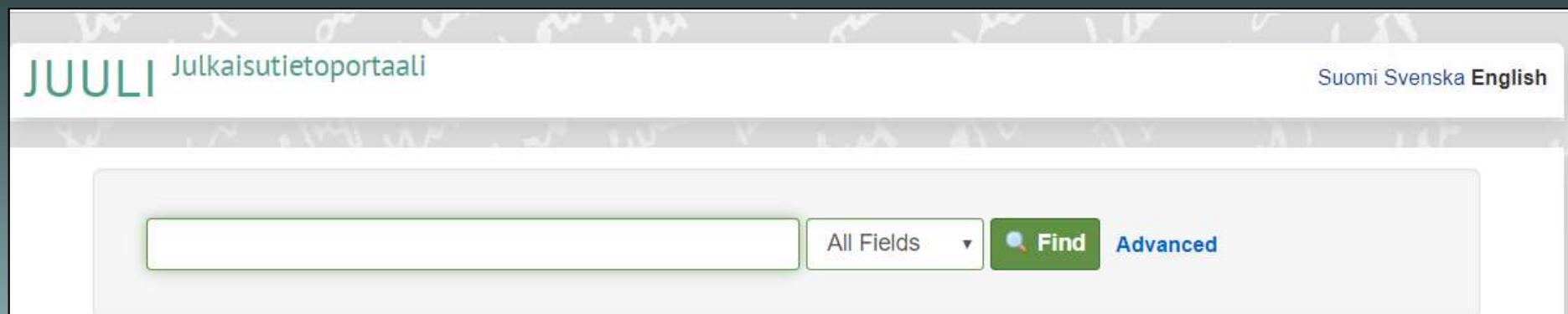
Showing 1 - 20 of 7,245 for search: "", query time: 0.16s Sort Title Narrow Search

Remove Filters Field of Science: N sciences Publication Forum

Institution University Research Institute Health Care District University of Applied Sciences Author Juvela, M.

1	 NO IMAGE AVAILABLE	A 0.5-Mbp deletion on bovine chromosome 23 is a strong candidate for stillbirth in Nordic Red cattle by: Sahana, Goutam; Iso-Touru, Terhi; Wu, Xiaoping; Sander Nielsen, Ulrik; de Koning, Dirk-Jan; Sandø Lund, Mogens; Vilkki, Johanna; Guldbrandtsen, Bernt Genetics Selection Evolution, BioMed Central, 2016 A1 Journal article (refereed), original research <a href="#">Get full text</a> <a href="#">Get full text</a>
2	 NO IMAGE AVAILABLE	1,25-Dihydroxyvitamin D(3) Influences Cellular Homocystine Levels in Murine Preosteoplastic MC3T3-E1 Cells by Directs Regulation of Cystathionine beta-Synthase by: Kriebitzsch C; Verlinden L; Eelen G; van Schoor NM; Swart K; Lips P; Meyer MB; Pike JW; Boonen S; Carlberg C; Vitvitsky V; Bouillon R; Banerjee R; Verstuyf A JOURNAL OF BONE AND MINERAL RESEARCH, 2011 A1 Journal article (refereed), original research <a href="#">Get full text</a>
3		1,3-Dipolar cycloaddition of nitrones to a nitrile

# VIRTA: Integrating information about research publications from Finnish organizations



The Juuli portal contains information on the research publications produced at Finnish organizations.

The publications of Finnish universities and hospital districts are included starting from year 2011, and the publications of universities of applied sciences starting from 2012. A number of state research institutes have joined the data collection starting from 2014 and 2015.

The data has been obtained from the research organizations as part of the annual data collection conducted by the Ministry of Education and Culture. Starting from 2016 some of the organizations have been providing their data automatically on a daily basis to the Virta Research Information Service, from which the data is harvested into Juuli. For these organizations the portal contains information on more recent publications as well.

Statistical analyses on publication data can be obtained from the Vipunen reporting portal ([www.vipunen.fi](http://www.vipunen.fi)) that contains not only data on publications but also other information related to the operations of research universities and universities of applied sciences.

Juuli is maintained by the National Library of Finland in collaboration with the Finnish Ministry of Education and Culture and CSC - IT Centre for Science.



Ministry  
of  
Education  
and  
Culture



## Search Options

- [Search History](#)
- [Advanced Search](#)
- [Browse the Catalog](#)

## Need Help?

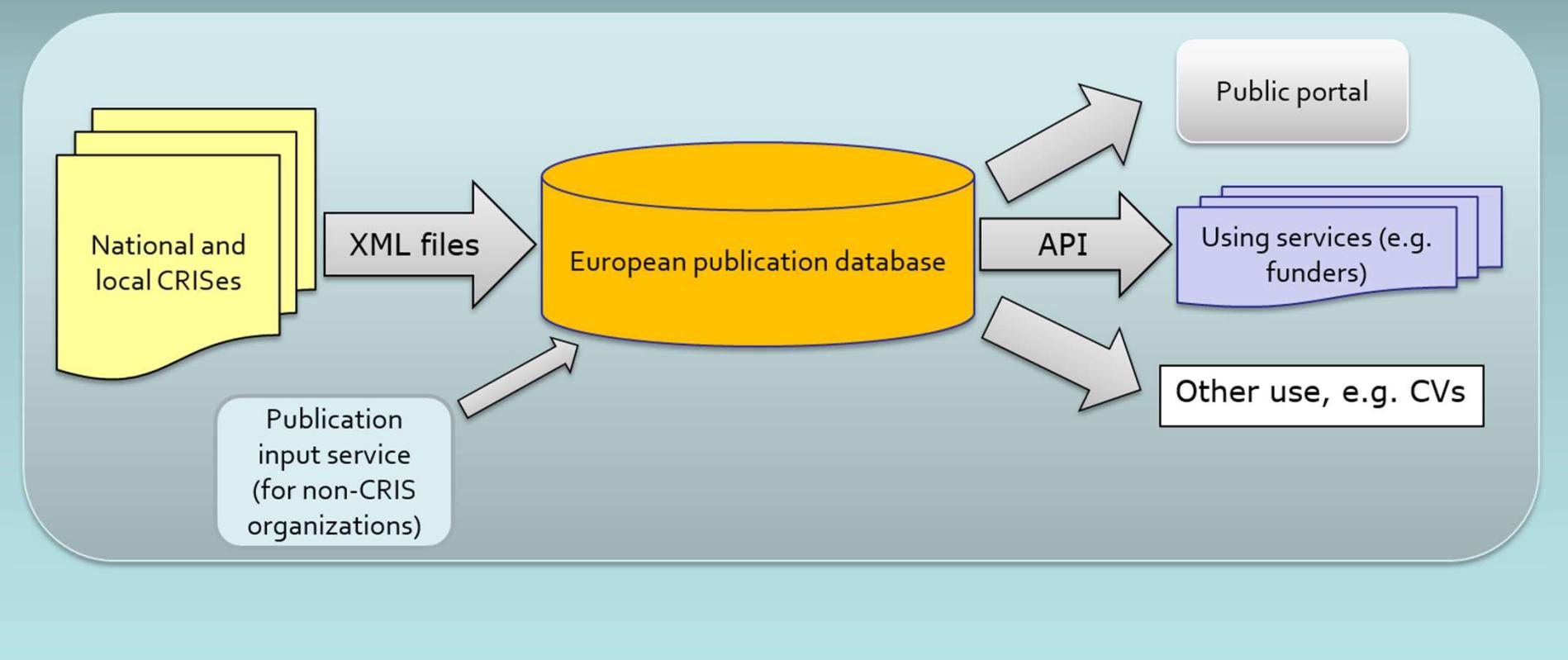
- [Instructions](#)
- [Search Tips](#)
- [Ask a Librarian](#)

## **Experiences with VIRTA**

- VIRTA Publication Information Service compiles real time information on publications at the national level
- VIRTA can provide a convenient and cost-efficient way of developing a European publication information database
- The concept and the technical solution are expandable to compilation of data from countries and organizations across Europe
- Requires common European standardizations and definitions for data content – as already provided by CERIF ([www.eurocris.org](http://www.eurocris.org))

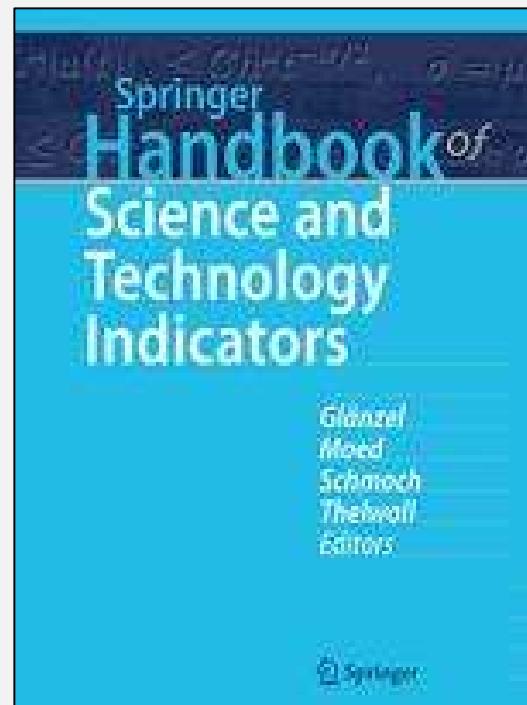
## Principles for a European solution based on VIRTA

- Any European country or single organization can provide its data
- Data transfer from national or local CRISes in a standardized format – annually or more frequently
- All data freely available in a public portal and for services



## The remaining challenges

- Most of the remaining challenges are **not** related to **technical** solutions, but to an efficient production, sharing and use of **contents**.



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- The same is true for e.g. CASRAI, CrossRef, DataCite and ORCID.

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- **CERIF** is only part of the solutions to this challenge.
- The same is true for e.g. CASRAI, CrossRef, DataCite and ORCID.
- **OpenAIRE** needs data that are **already created and harvestable with comparable contents**. OpenAIRE thereby **efficiently demonstrates** the main challenges without being able to solve them.

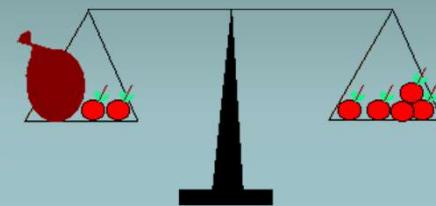
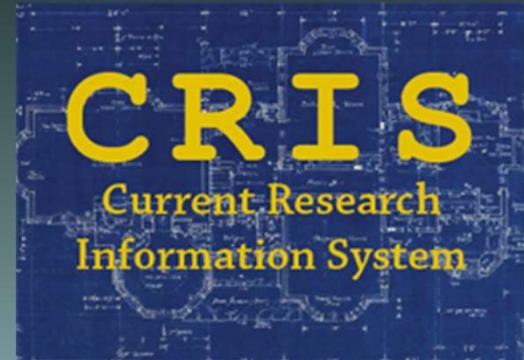
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## «The Norwegian model»

The model has three components:

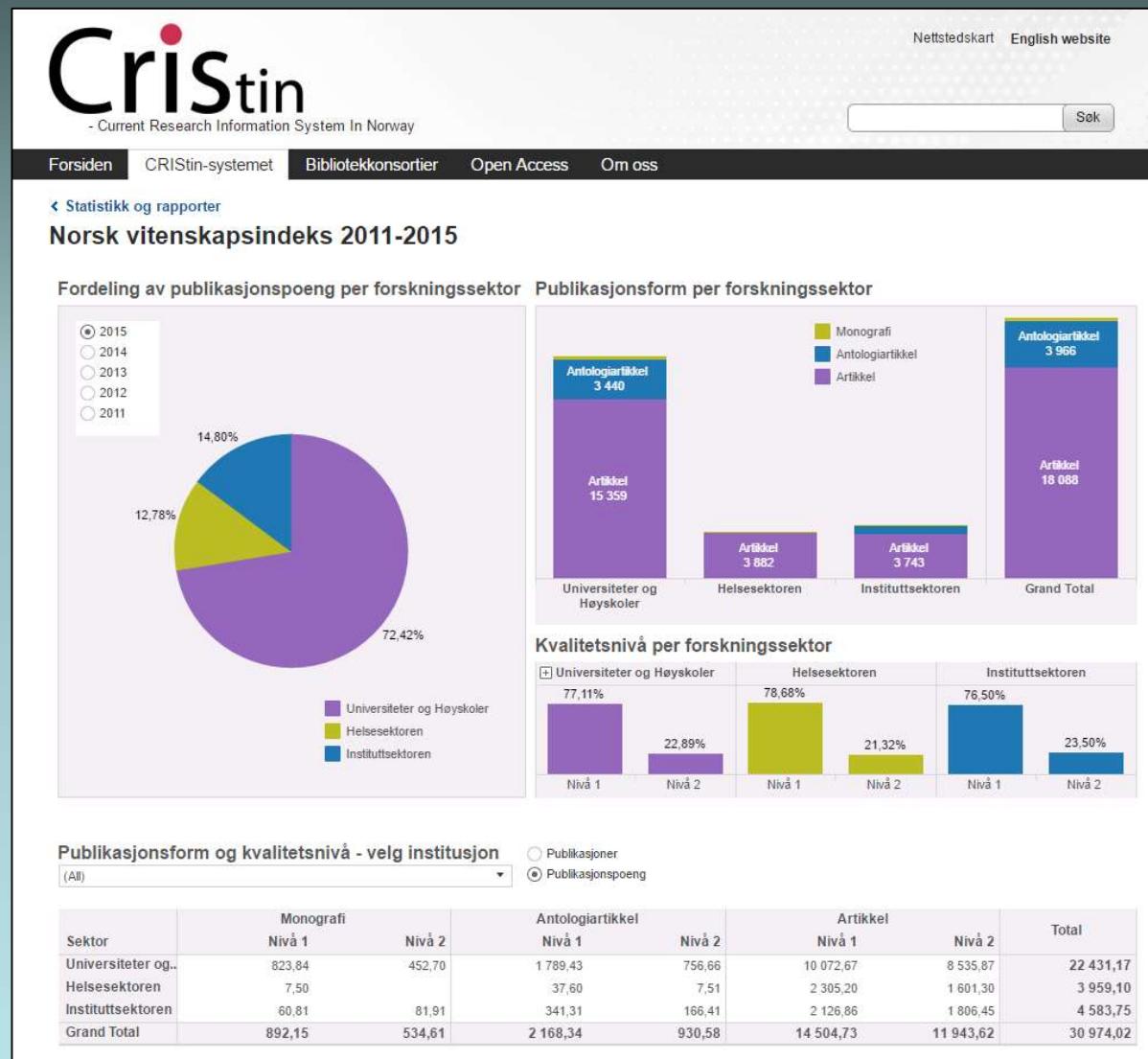
- A. A complete representation in **a national database of structured, verifiable and validated bibliographical records** of the **peer-reviewed** scholarly literature in all areas of research;
- B. A **publication indicator** with a system of weights that makes field-specific publishing traditions comparable across fields in the measurement of "Publication points" at the level of institutions;
- C. **Institutional funding criteria** which reallocates a small proportion of the annual direct institutional funding according the institutions' shares in the total of Publication points.

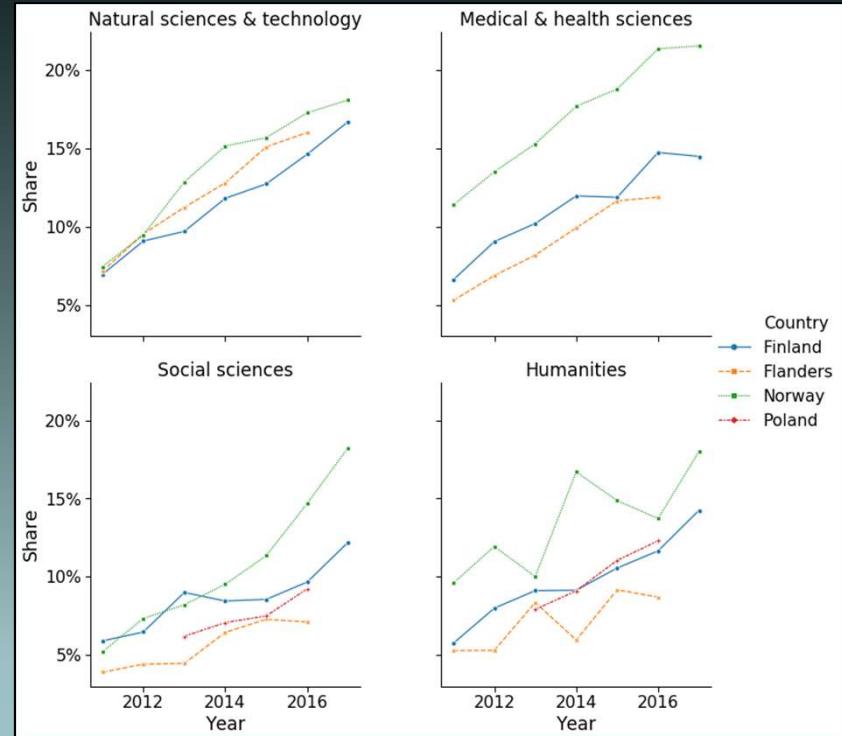


Institutional  
funding criteria

# Current research information systems (CRIS): Norway

May also serve the purpose of **statistics**





## The use of Gold Open Access in four European countries: An analysis at the level of articles

Gunnar Sivertsen<sup>1</sup>, Raf Guns<sup>2</sup>, Emanuel Kulczycki<sup>3</sup>, Janne Pölönen<sup>4</sup>

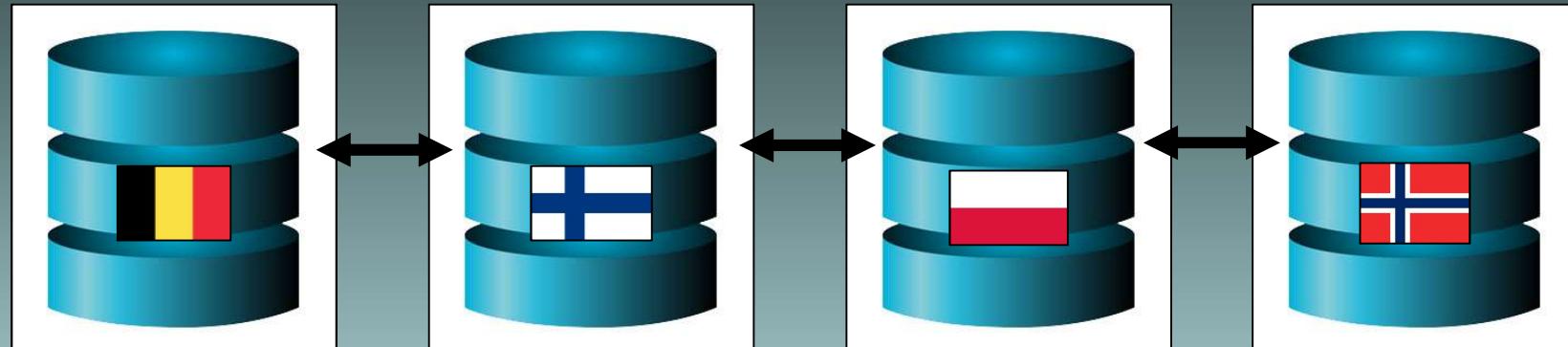
1. Nordic Institute for Studies in Innovation, Research and Education, Oslo, Norway

2. Centre for R&D Monitoring, Faculty of Social Sciences, University of Antwerp, Belgium

3. Scholarly Communication Research Group, Faculty of Social Sciences, Adam Mickiewicz University, Poland

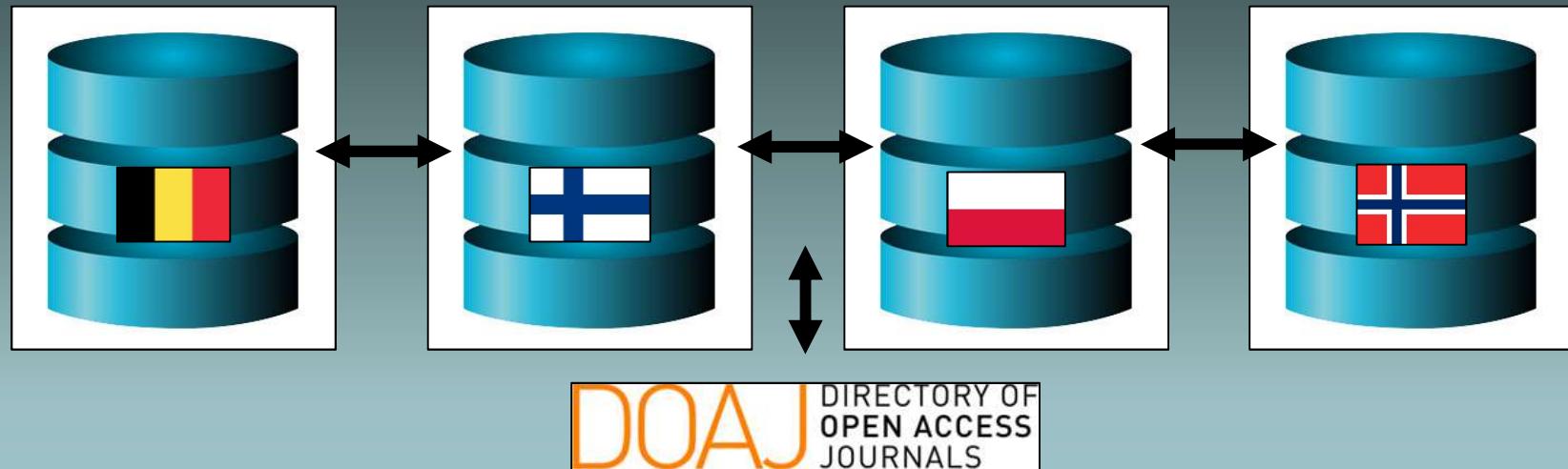
4. Federation of Finnish Learned Societies, Helsinki, Finland

## Four comprehensive national publication databases, structured to yield comparable data for scholarly journal publishing



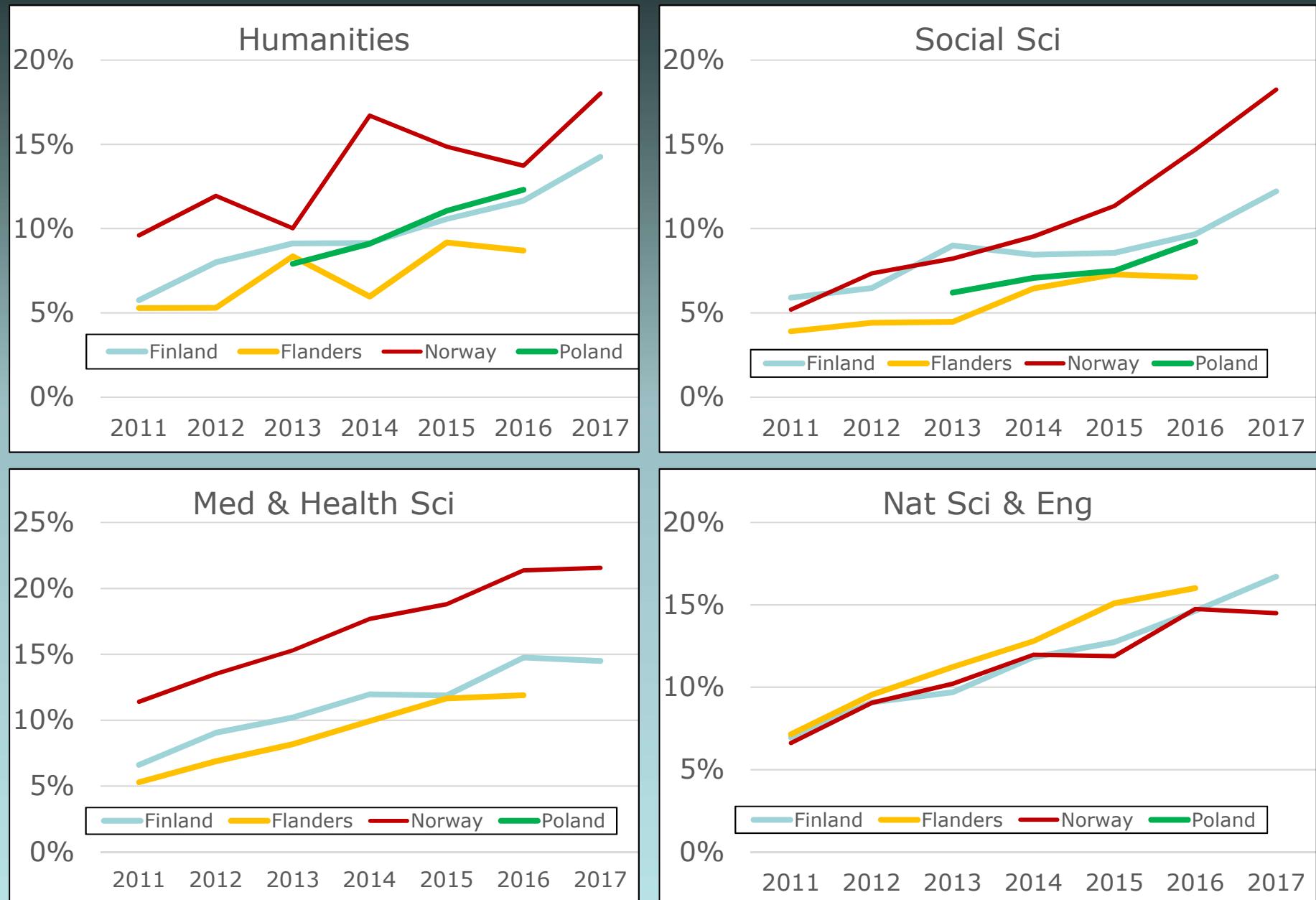
Country	Period	Fields	Articles	Journals
Finland	2011-2017	All fields	169,231	15,434
Flanders	2011-2016	All fields	114,134	12,214
Norway	2011-2017	All fields	123,865	14,173
Poland	2013-2016	SSH	120,111	8,577

## Data matched to DOAJ to measure proportions of Gold Open Access articles (as represented i DOAJ)



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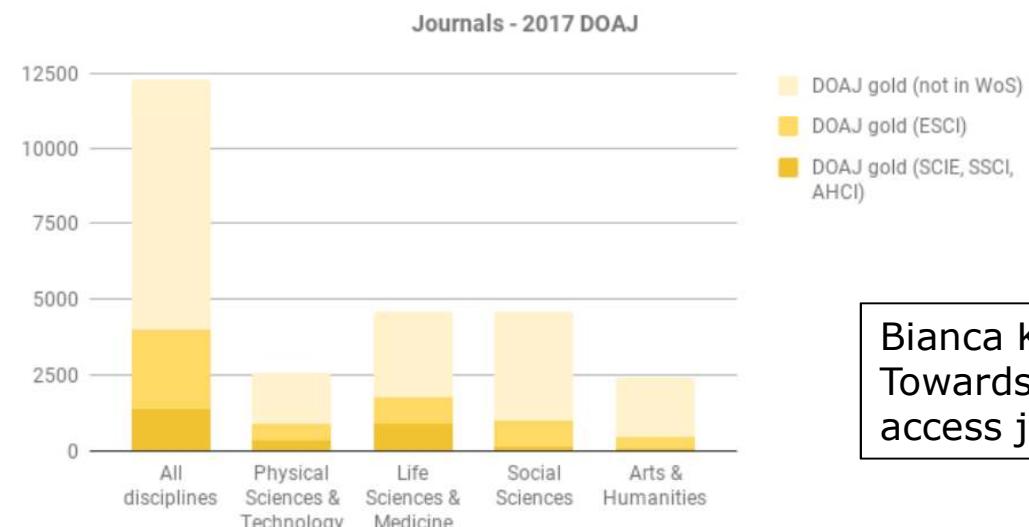
## Evolution of the share of Gold OA articles per field and country



## Limited coverage of DOAJ journals in WoS and Scopus, particularly in the SSH

"For Social Sciences and Humanities, the proportion of DOAJ journals included in WoS is only 20%, and >80% of these journals are covered in ESCI, not SSCI/AHCI."

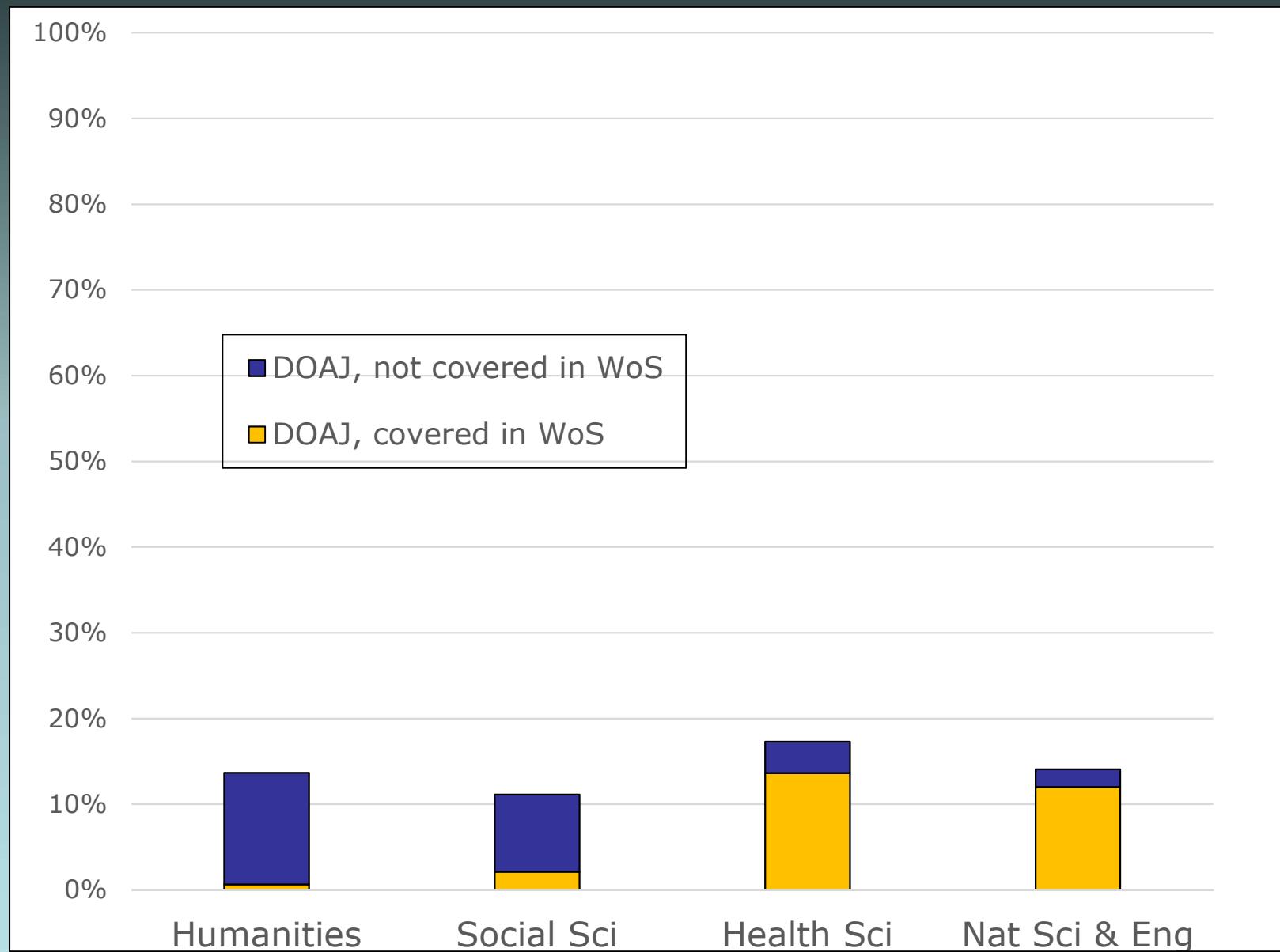
Looking at the total number of journals in DOAJ and the proportion thereof included in Web of Science (Fig 1, Table 1) shows that Web of Science covers only 32% of journals in DOAJ, and 66% of those are covered in ESCI. For Social Sciences and Humanities, the proportion of DOAJ journals included in WoS is only 20%, and >80% of these journals are covered in ESCI, not SSCI/AHCI. This means that only looking at WoS leaves out 60-80% of DOAJ journals (depending on discipline), and only looking at the 'traditional' citation indexes SCIE/SSCI/AHCI restricts this even further.



Bianca Kramer & Jeroen Bosman (2018):  
Towards a Plan S gap analysis? Gold open  
access journals in WoS and DOAJ

## Shares of Norway's scientific journal articles in DOAJ journals

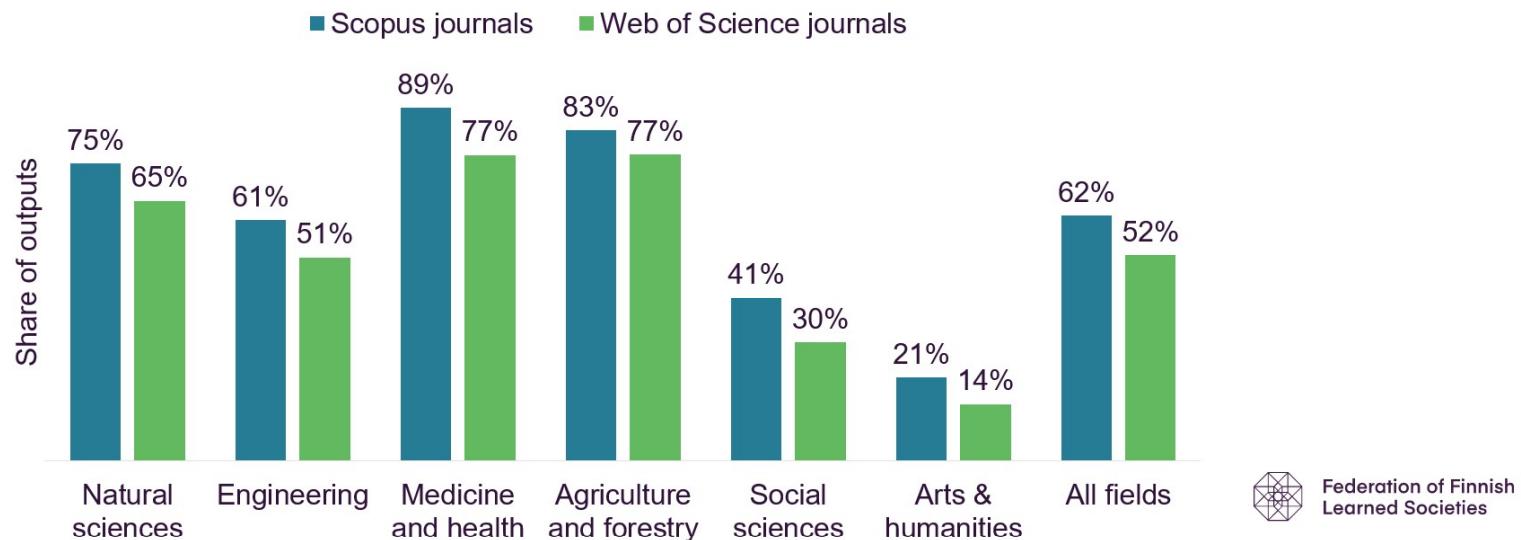
Data from 2011-2017



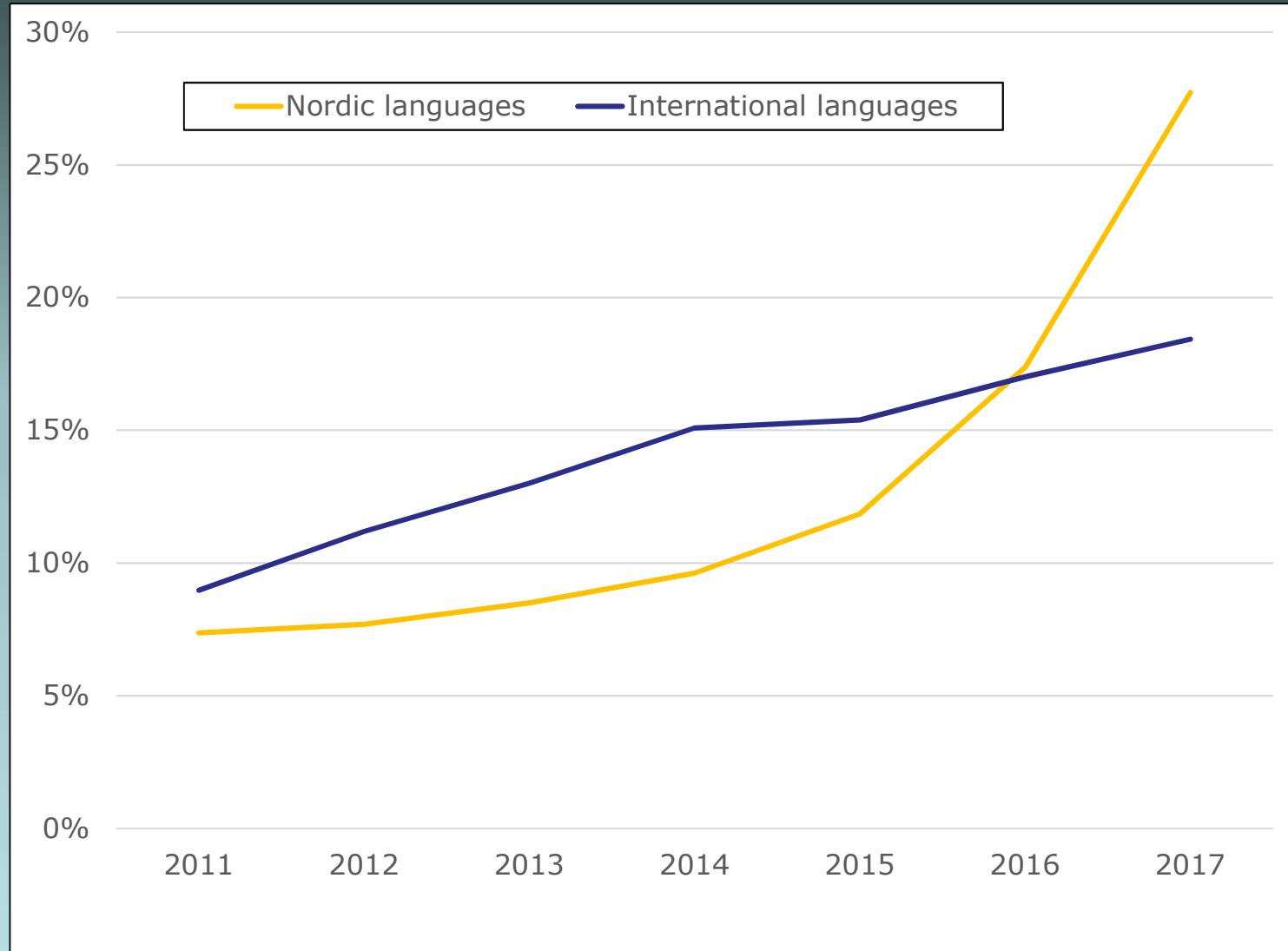
## WoS and Scopus coverage in Finland

### WOS AND SCOPUS COVERAGE

- Only 62 % of the 48177 peer-reviewed outputs are published in journals indexed in Scopus and 52 % in WoS journals.
- SSH is underrepresented because of the importance of books and local journals



## **Share of scientific articles in DOAJ journals 2011-17. Languages. All Norwegian institutions**



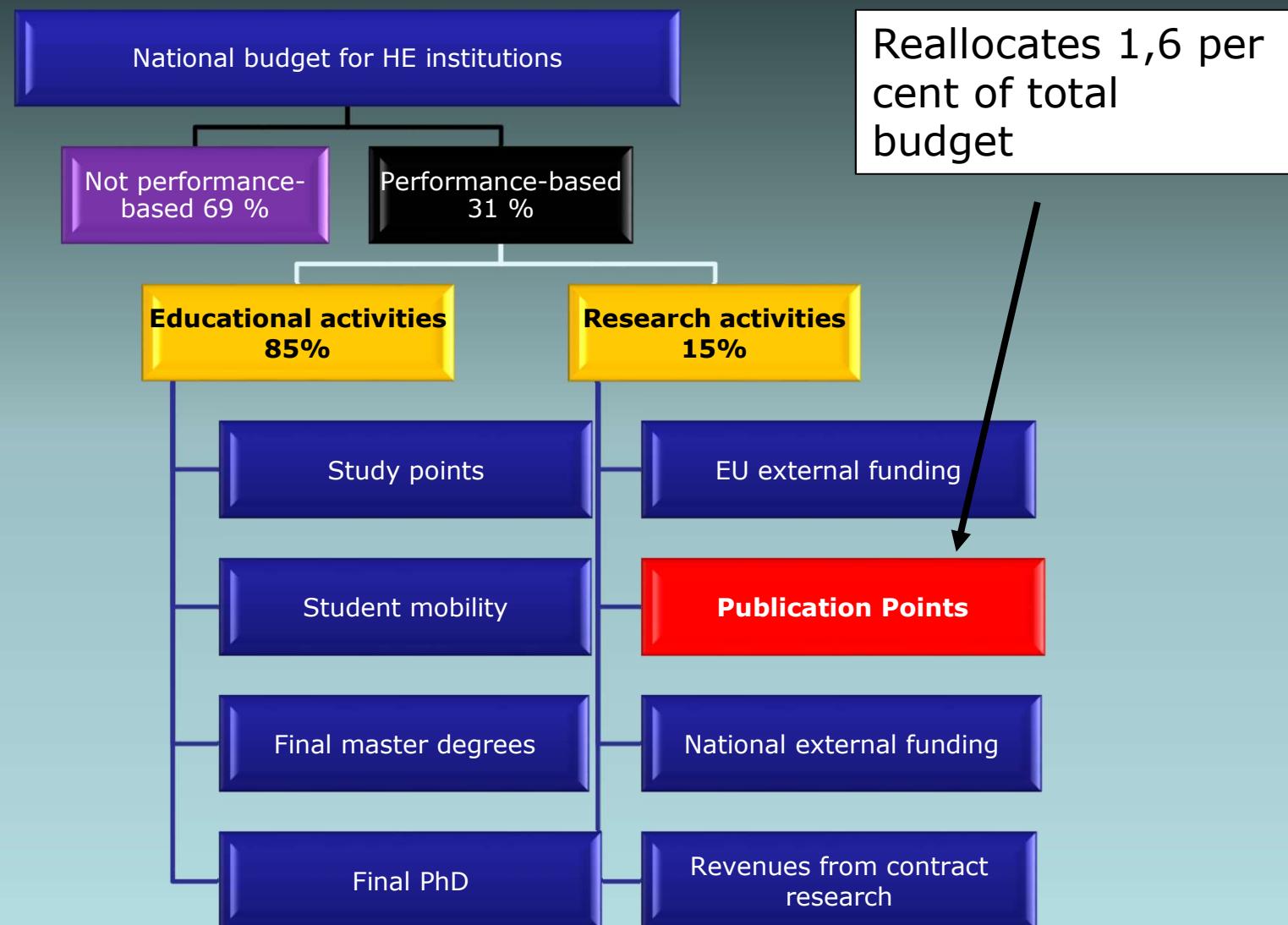
## **Number of non-English or multilingual journals among 10 most used OA journals**

	<b>Educational sciences</b>	<b>Languages and literature</b>
Finland	4/10	6/10
Flanders	3/10	4/10
Norway	9/10	5/10
Poland	9/10	6/10

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# A funding indicator representing research activity and promoting research quality



# Data for the publication indicator

NPI NORWEGIAN PUBLICATION INDICATOR

Results: 20  
(from Web of Science Core Collection)

You searched for: AUTHOR IDE  
NTIFIERS: (M-3007-2017) ...More

Create Alert

Refine Results

Search within results for...

Sort by: Date Times Cited Usage Count Relevance

Page 1 of 2

Select Page 5K Save to EndNote online Add to Marked List Create Citation Report Analyze Results

1. A citation-based cross-disciplinary study on literature ageing: part II-diachronous aspects  
By: Zhang, Lin; Glanzel, Wolfgang  
SCIENTOMETRICS Volume: 111 Issue: 3 Pages: 1559-1572  
Published: JUN 2017  
Einstein Library View Abstract

Times Cited: 0 (from Web of Science Core Collection)  
Usage Count

2. A citation-based cross-disciplinary study on literature aging: part I-the synchronous approach  
By: Zhang, Lin; Glanzel, Wolfgang  
SCIENTOMETRICS Volume: 111 Issue: 3 Pages: 1573-1589  
Published: JUN 2017  
Einstein Library View Abstract

Times Cited: 0 (from Web of Science Core Collection)  
Usage Count

3. Science deserves to be judged by its contents, not by its wrapping: Revisiting Seglen's work on journal impact and research evaluation  
By: Zhang, Lin; Rousseau, Ronald; Sivertsen, Gunnar  
PLOS ONE Volume: 12 Issue: 3 Article Number: e0174205  
Published: MAR 28 2017  
Einstein Library View Abstract

Times Cited: 2 (from Web of Science Core Collection)  
Usage Count

CrisStin

Norsk versjon

In order to register data in CrisStin, you must be an academic or administrative employee.

Mainpage Research results/NVI Researchers Projects Research units Log in About CrisStin

Current Research Information System In Norway

Back to search Short format Full format Export to EndNote

Search criteria:  
Surname: Sivertsen First name: Gunnar From: 2017 To: 2017 Reporting year Main category: Journal publication Main category: Book All publishing channels

Showing results 1-4 of 4

1. Giménez-Toledo, Elea; Manana-Rodríguez, Jorge; Sivertsen, Gunnar.  
Scholarly book publishing: Its information sources for evaluation in the social sciences and humanities. *Research Evaluation* 2017; NIFU
2. Lavik, Gry Ane Vikanes; Sivertsen, Gunnar.  
Erlit Plus – Making the Ssh Visible, Searchable and Available. *Procedia Computer Science* 2017; Volume 106. p. 61-65  
NIFU
3. Sivertsen, Gunnar.  
Unique, but still best practice? The Research Excellence Framework (REF) from an international perspective. *Palgrave Communications* 2017; Volume 3(1). Article number: 10  
NIFU
4. Zhang, Lin; Rousseau, Ronald; Sivertsen, Gunnar.  
Science deserves to be judged by its contents, not by its wrapping: Revisiting Seglen's work on journal impact and research evaluation. *PLOS ONE* 2017; Volume 12(3). Article number: e0174205  
NIFU

Cristinv1.1.0, 01.11.2017 [drift@crisstn.no]

Data from Web of Science or Scopus are **imported** to a National Research Information System (CRIS)...

and **extended** there, ...

and then used directly in an **indicator for funding**

## Example: Two publications imported from Web of Science, two publications added



**Cristin**

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Added

Added

PLOS one

www.plosone.org

## Extension beyond international data sources

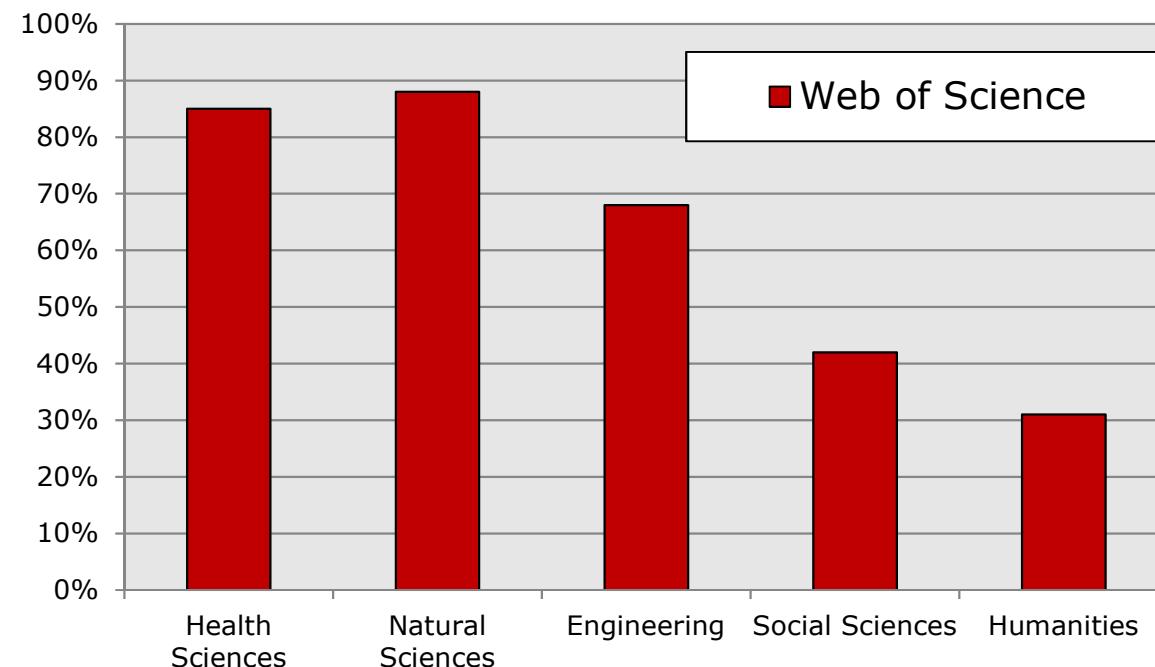
How to cover  
100 per cent?

Books

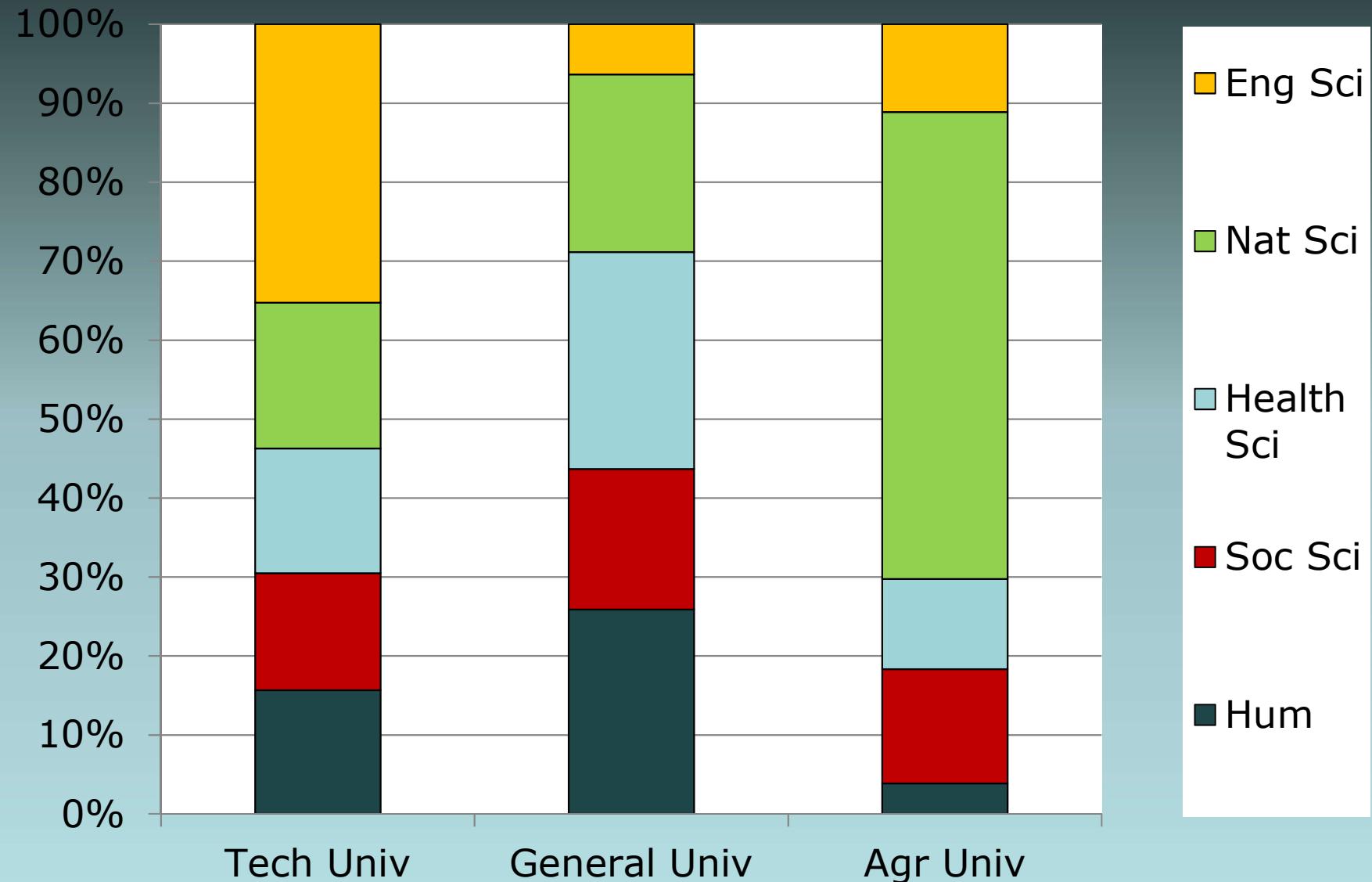
Indexed  
journals

Journals  
and series

**Coverage of 128,000 scholarly publications  
from Norway**



## Institutions have different research profiles: need for balance and comprehensive representation



# Developed and organized in collaboration between the government, the institutions and bibliometric expertise

**NPI** NORWEGIAN PUBLICATION INDICATOR

Home Information Scientific fields Organisation Help Log in

You are here: Home

The purpose of the Norwegian Publication Indicator (NPI) is to promote high-quality research and provide an overview of and insight into research activity.

The National Board of Scholarly Publishing

The National Board of Scholarly Publishing (NPU) is responsible for the administration and development of the NPI and reports to the board of the Norwegian Association of Higher Education Institutions (UHR). UHR's strategic academic units (scientific panels) assess the publication channels' level classification in their specific scientific field. If you wish to propose journals for level 2 or comment directly to the responsible scientific panel, you can do this on the respective scientific field's page.

The National Board of Scholarly Publishing  
Go to overview of scientific panels  
Go to overview of scientific fields  
See decisions relating to level 2

The Norwegian Register for Scientific Journals, Series and Publishers

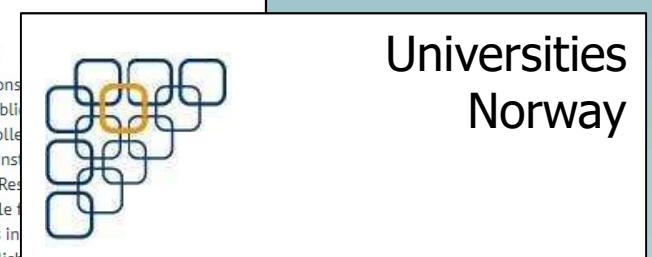
The registry is operated jointly between The National Board of Scholarly Publishing (NPU) and NSD - Norwegian Centre for Research Data on behalf of the Norwegian Ministry of Education and Research. NSD has operational responsibility. NPU has approval authority of journals, series and publishers. The register helps you find relevant approved channels and lets you propose new additions. The register shows which scientific publications are recognized in the weighted funding model. New proposals are processed at three annual meetings. The decisions are published after each meeting.

Search the register  
Add a new proposal  
See decisions relating to level 1

CRISTin

CRISTin is a national system for registering and reporting the research activity of institutions in the institute sector, the health trusts and the university and university college sector. CRISTin is also responsible for national coordination of open access activities and manages consortiums of a range of different electronic resources suppliers for academic and research libraries in Norway.

Register research activity  
Reporting  
Go to open access



## Outline

1. What is CRIS?
2. The multiple purposes of CRIS
3. Requirements for CRIS to serve *monitoring, funding, evaluation and studies* of research
4. Examples of CRIS-based:
  - Monitoring of research
  - Funding of research
  - Evaluation of research
  - Studies of research

# Research Evaluation

The screenshot shows the website of The Research Council of Norway. The header includes the logo, a search bar, and navigation links for funding applications, events, news, policy and strategy, international relations, industry, and the research council. The current page is 'Subject-specific evaluations' under the 'Policy and strategy' section. The sidebar on the left lists various evaluation categories. The main content area describes the aim of subject-specific evaluations: to provide a critical review of the Norwegian research system in an international perspective and to provide recommendations on measures to encourage increased quality and efficiency of research. It also mentions current evaluations for humanities and social sciences, previous evaluations from 2014-2010, and a link to the report on Science & Technology Indicators for Norway.

The aim of the subject-specific evaluations is to provide a critical review of the Norwegian research system in an international perspective, and to provide recommendations on measures to encourage increased quality and efficiency of research.

**Current evaluations**

Evaluation of humanities research in Norway (2015-17)  
Evaluation of social science research in Norway (2016-18)

**Previous evaluations**

[Evaluation of basic and long-term research within technology](#) (2014-15)  
Evaluation of Norwegian Climate Research (2012)  
Nordic Evaluation of Sports Sciences (2012)  
Evaluation of Basic Research in ICT (2012)  
Evaluation of Mathematical Sciences (2011)  
Evaluation of Earth Sciences (2011)  
Evaluation of Biology, Clinical Medicine and Health Science (2011)  
Evaluation of Research in Anthropology (2011)  
Evaluation of Norwegian Geography Research (2011)  
Evaluation of Research in Sociology (2010)  
Evaluation of Norwegian Research in Ecological Agriculture (2010) In Norwegian only  
Evaluation of Philosophy and History of Ideas in Norway (2010)  
Evaluation of Basic Physics Research in Norway (2010)  
Evaluation of Law (2009) In Norwegian  
Evaluation of Basic Chemistry Research in Norway PDF - 3,3 MB  
Evaluation of Norwegian Historical Research (2008), English summary  
Evaluation of Norwegian Development Research (2007) PDF - 698 KB  
Evaluation of Economic Research in Norway (2007)

Performed by international expert panels every 5-10 years to provide:

1. a critical review of Norwegian research in an international perspective
2. recommendations for increased quality and efficiency.

Does **not** influence institutional funding directly.

# Research Evaluation

The screenshot shows a webpage from The Research Council of Norway. At the top, there's a navigation bar with links for 'APPLY FOR FUNDING', 'EVENTS', 'NEWS', 'POLICY AND STRATEGY', 'INTERNATIONAL', 'FOR INDUSTRY', and 'THE RESEARCH COUNCIL'. Below the navigation is a search bar. The main content area features a large image of a mountain landscape. Overlaid on the image is text about 'Norwegian climate research' and 'Evaluation'. To the right of the image, there's a detailed description of subject-specific evaluations, mentioning their purpose to provide a critical review and recommendations for increased quality and efficiency. A red arrow points from the word 'recommendations' in this text to the second point in the list on the right.

The Research Council of Norway

Search

APPLY FOR FUNDING EVENTS NEWS POLICY AND STRATEGY INTERNATIONAL FOR INDUSTRY THE RESEARCH COUNCIL

Subject-specific evaluations

Norwegian climate research

An evaluation

Evaluation

Division for Energy, Resources and the Environment

subject-specific evaluations

specific evaluations is to provide a critical review of the research system in an international perspective and to provide recommendations on measures to increase the quality and efficiency of research.

that the Research Council has the necessary resources to carry out its strategic research activities and efforts vis-à-vis the institutions and proposals in the subject-specific evaluations. This is a starting point for establishing general measures and recommendations that also serve as a tool for the institutions to refine their own strategic and scientific

research in Norway (2015-17)

research in Norway (2016-18)

arm research within technology (2014-15)

te Research (2012)

ences (2012)

ICT (2012)

ences (2011)

2011)

edicine and Health Science (2011)

topology (2011)

raphy Research (2011)

iology (2010)

search in Ecological Agriculture (2010) In Norwegian

History of Ideas in Norway (2010)

earch in Norway (2010)

orwegian

Evaluation of Basic Chemistry Research in Norway PDF - 3,3 MB

Evaluation of Norwegian Historical Research (2008), English summary

Evaluation of Norwegian Development Research (2007) PDF - 698 KB

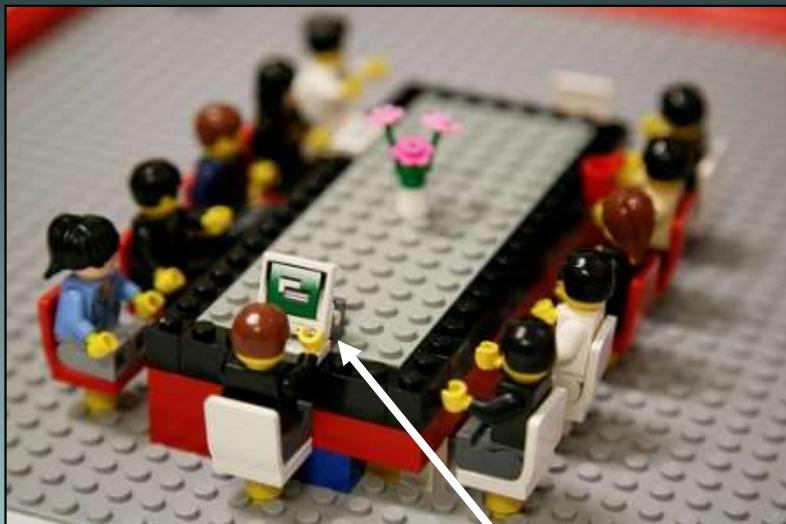
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# CRIS-data informing experts panels in research evaluation



Results: 20  
(from Web of Science Core Collection)

You searched for: AUTHOR IDE NTIFIERS: (M-3007-2017) ...More

Create Alert

Refine Results

Search within results for...

Filter results by:

Highly Cited in Field (1)  
 Open Access (2)

Refine

Publication Years

2012 (4)  
 2016 (3)  
 2017 (3)  
 2009 (2)  
 2010 (2)

more options / values...

Sort by: Date Times Cited Usage Count Relevance

Page 1 of 2

Select Page  Save to EndNote online Add to Marked List Create Citation Report Analyze Results

1. A citation-based cross-disciplinary study on literature ageing: part II-diachronous aspects  
By: Zhang, Lin; Glanzel, Wolfgang  
SCIENTOMETRICS Volume: 111 Issue: 3 Pages: 1559-1572 Published: JUN 2017 Einstein Library View Abstract

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PLOS ONE Volume: 12 Issue: 3 Article Number: e0174205 Published: MAR 28 2017 Einstein Library View Abstract

Times Cited: 0 (from Web of Science Core Collection) Usage Count

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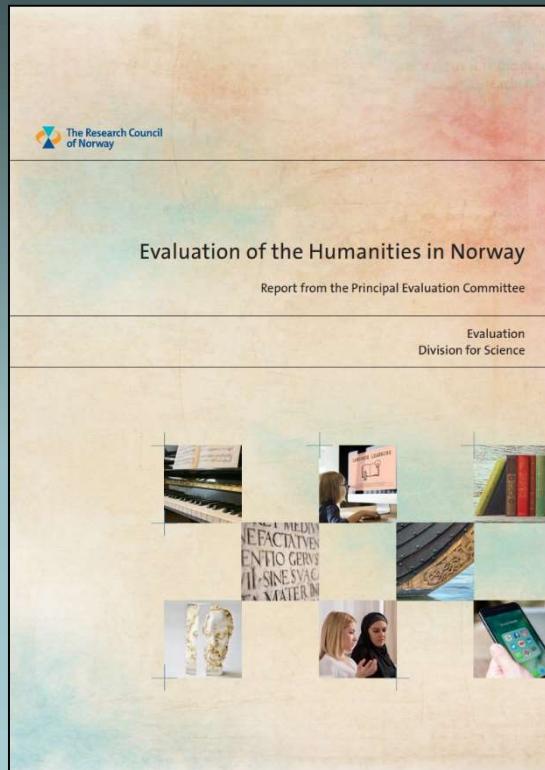
CrisInn v1.0, 01.11.2017 [drift@crisinn.no]

Data from Web of Science or Scopus are **imported** to a National Research Information System (CRIS)...

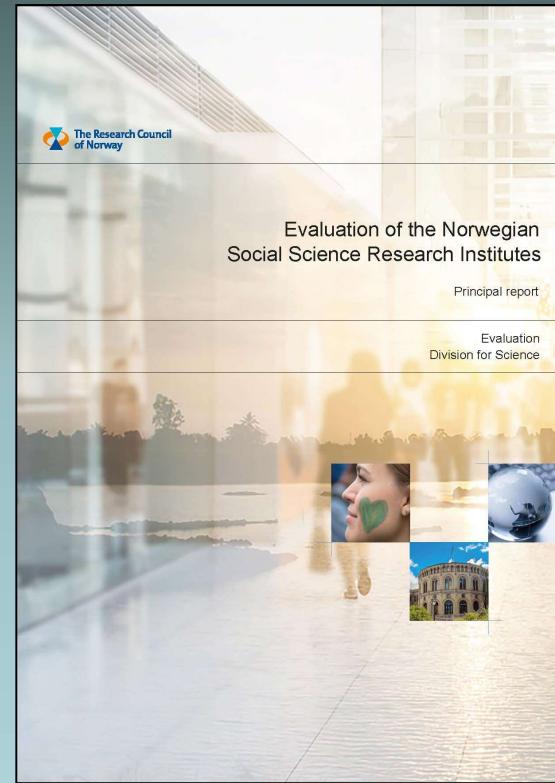
and **extended** there, ...

and then used to **inform** panels

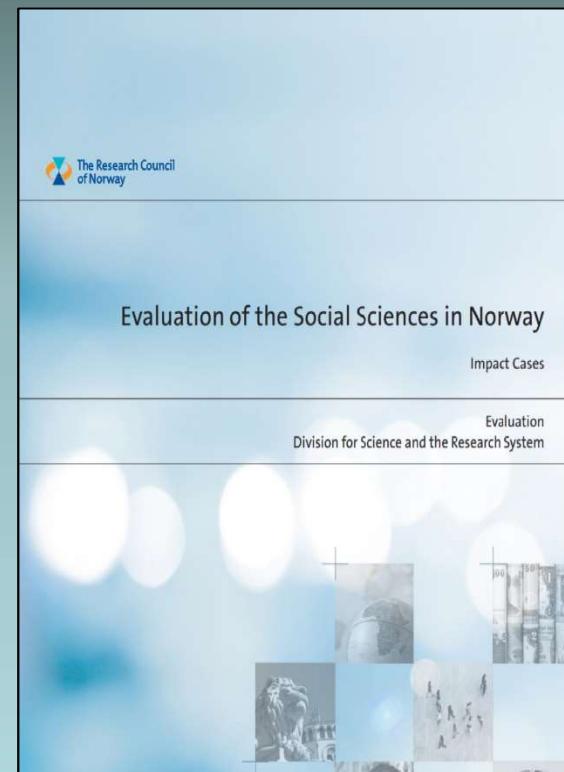
# CRIS data have been particularly important in evaluations of the SSH



Humanities in 2017



Social Science research institutes in 2017

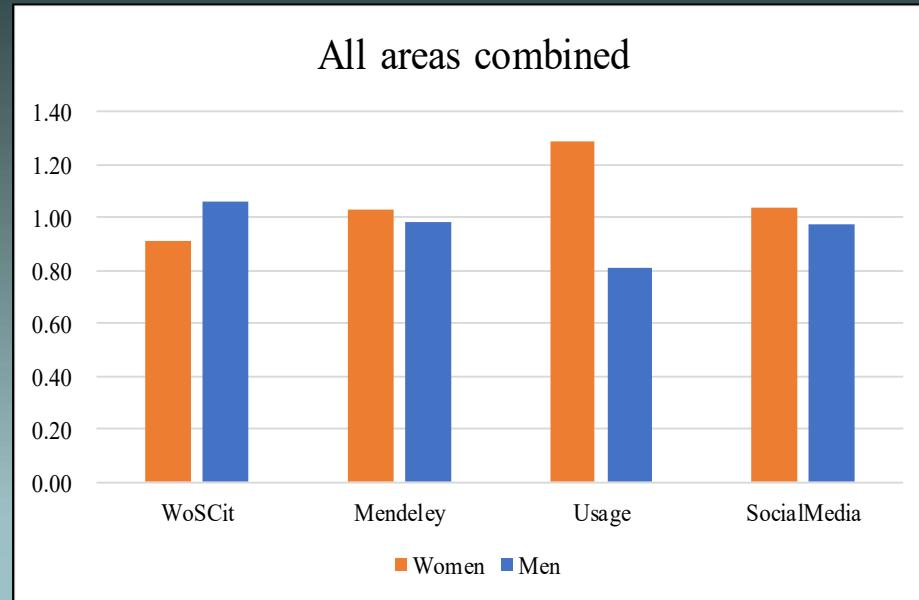


Social Sciences in 2018

## Outline

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**17th INTERNATIONAL CONFERENCE ON SCIENTOMETRICS & INFORMETRICS**  
Sapienza University, Rome, Italy, September 05, 2019



# **Gender, age, position, and broader impact**

## **A study of persons, not just authors**

Lin Zhang, Huiying Du, Ying Huang, Wolfgang Glänzel, Gunnar Sivertsen



武汉大学  
WUHAN UNIVERSITY

KATHOLIEKE UNIVERSITEIT  
**LEUVEN**

**NIFU**

## **Data and methods: Web of Science and the Norwegian Science Index**

### ■ Web of Science:

- 30,003 research articles published in 2011-2017 and cited until the end of 2018 with:
- first authors from Norway's four largest universities
- DOIs that could be linked to *PlumX* broader impact data

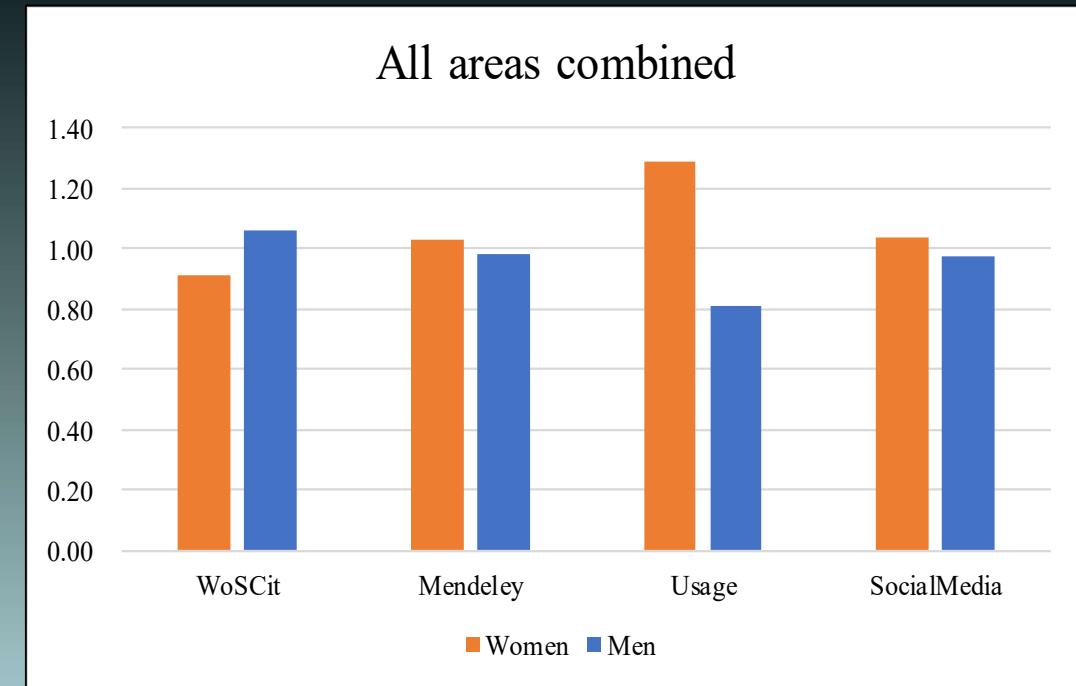
### ■ The Norwegian Science Index:

- The WoS articles could be matched to 14,204 identifiable persons as the first authors.
- Among these, 7,767 (55%) are men and 6,437 (45%) are women.
- We also know the age and the academic position of each researcher at the time of publishing.

## Data and methods: PlumX

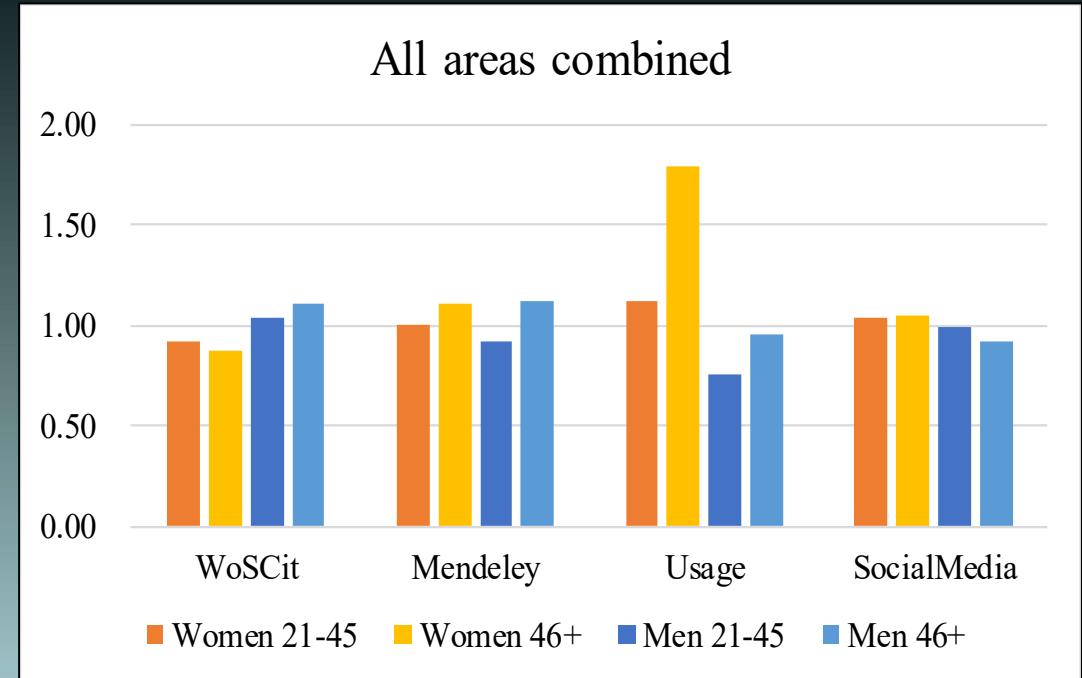
- After testing the PlumX Metrics data with regard to reliability and validity for meaningful statistical analysis (several indicators have low frequencies), we selected three different metrics by aggregating specific indicators:
  - The **Mendeley** indicator is based on the **number of readers** a paper has had in Mendeley.
  - The **Usage** indicator represents the frequency of the **abstract views or full-text views**. The two frequencies are summed up.
  - The **SocialMedia** indicator represents the number of times a publication is **referred to in Twitter and Facebook**. The two frequencies are summed up.

## Gender and impact



- Papers by **male** first authors are relatively more frequent among papers with high **citation** impact
- Papers by **female** first authors are relatively more frequent among papers with high **broader** impact
- The difference is clearest between the indicators of **citation impact and usage**

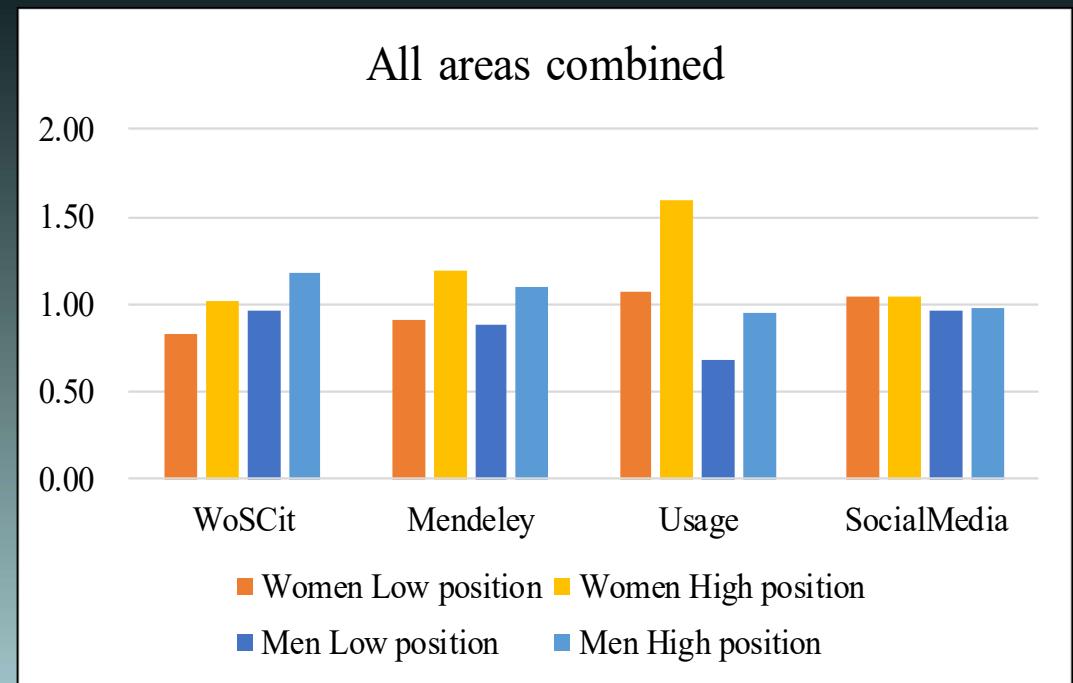
## Gender, age and impact



- Papers by **younger** first authors are relatively **less** frequent among papers with high **citation and broader** impact

## Gender, position and impact

High position =  
Professors or Associate  
Professors  
= 45 percent of all  
papers



- Papers by **low position** first authors are relatively **less** frequent among papers with high **citation and broader** impact

## Conclusions

- Papers by **male first authors** are relatively more frequent among papers with **high citation impact**
- Papers by **female first authors** are relatively more frequent among papers with **high broader impact**

## Conclusions

- Papers by **male first authors** are relatively more frequent among papers with **high citation impact**
- Papers by **female first authors** are relatively more frequent among papers with **high broader impact**
- The gender differences are largest between the indicators of **citation impact** and **usage**. The least differences are observed in **SocialMedia** impact.

## Further research

- Studying persons, not just authors, allows for:
  - Complete name ambiguation
  - and analysis by social variables
  - which brings us a couple of steps further towards answering an important question:

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  - We need to look more closely at the high impact papers, their topics, fields of research and the research questions they address
  - After this analysis, we will find out the male and female researchers (at total of more than 14,000) are distributed among these research topics, fields and research questions

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- Hypothesis:
  - Female researchers are relatively more engaged in research of higher societal and educational interest

## Thank you for your attention

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