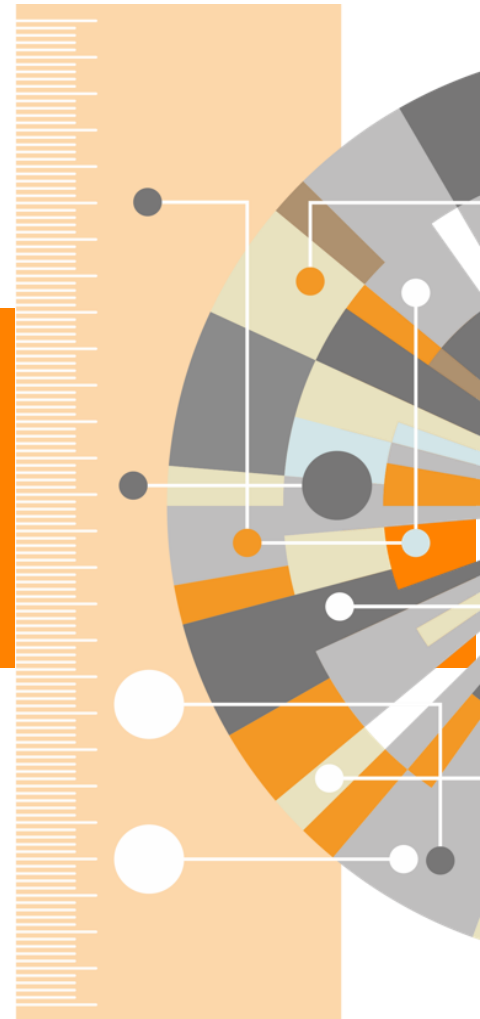Research Intelligence

Bibliometrics as a tool for research assessment
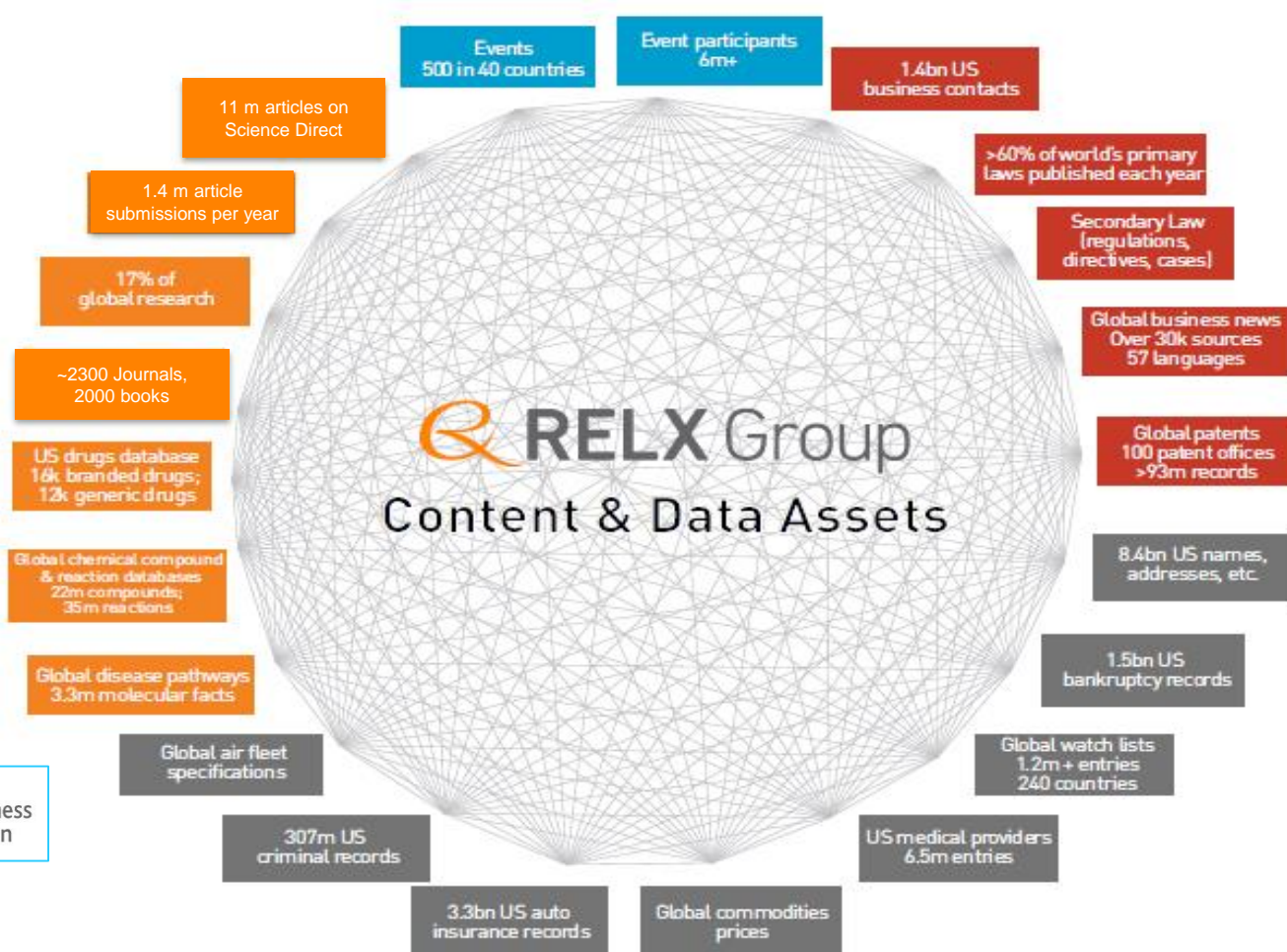
M'hamed el Aisati
VP Product Management, Elsevier

Riga, 05 April 2019
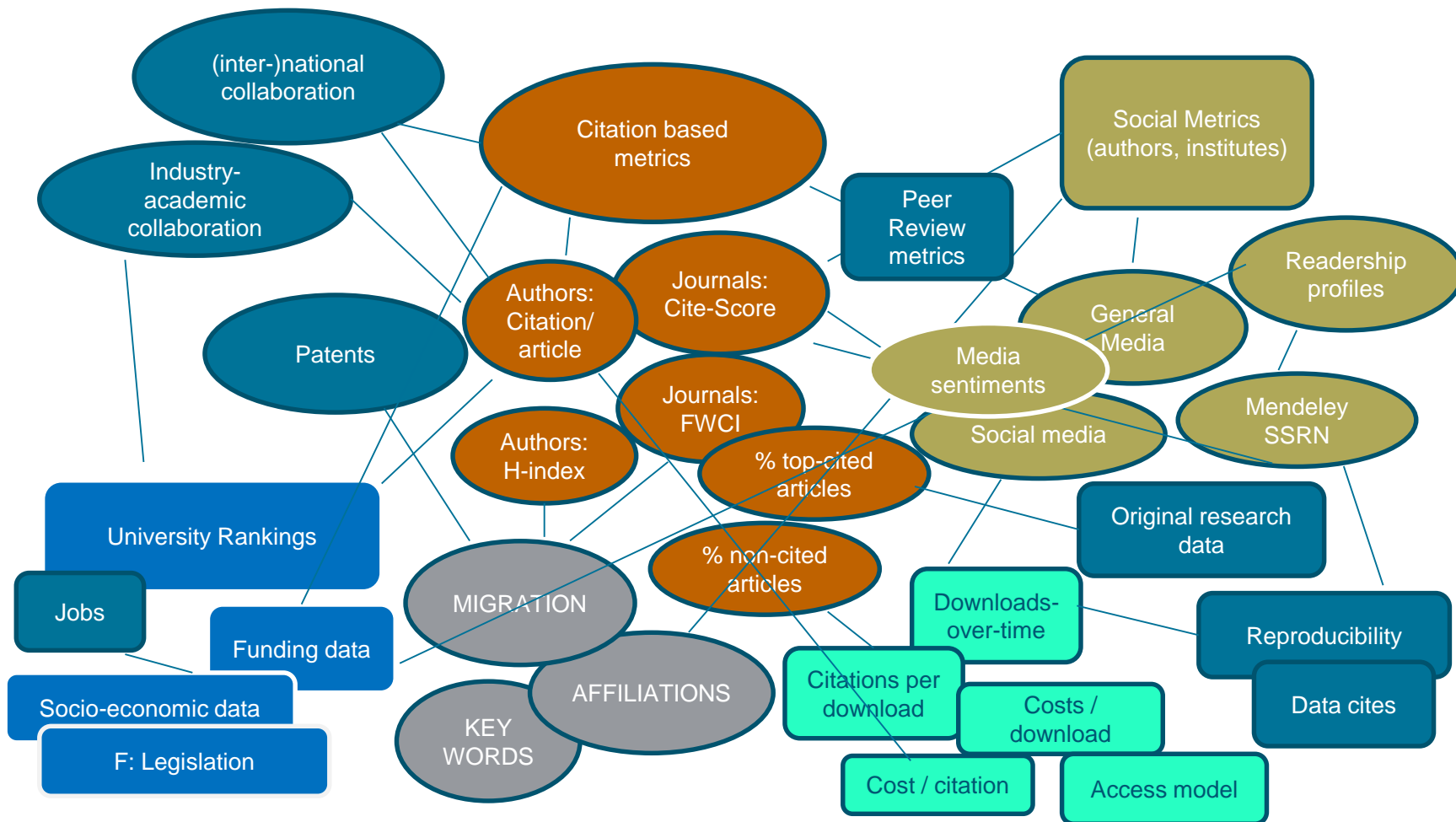
ELSEVIER

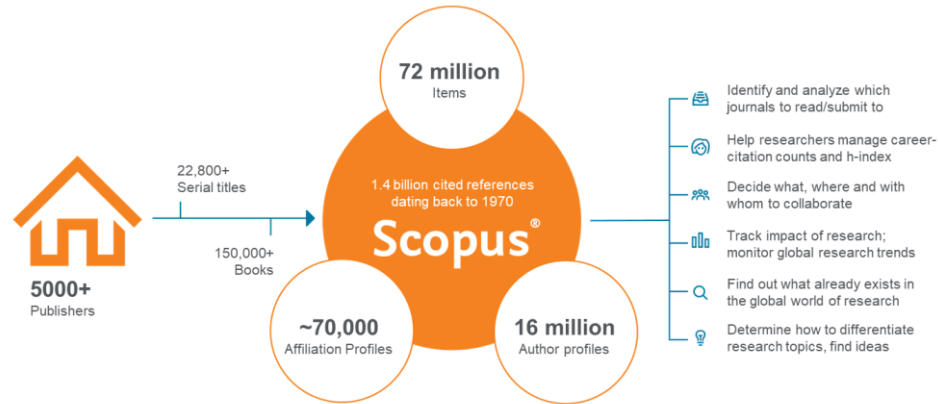Empowering Knowledge

Research metrics

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Empowering Knowledge

RELX Group: information and analytics for professionals across industries

Reed Exhibitions

Events 500 in 40 countries

Event participants 6m+

1.4bn US business contacts

11 m articles on Science Direct

>60% of world's primary laws published each year

1.4 m article submissions per year

Secondary Law (regulations, directives, cases)

LexisNexis Legal

17% of global research

ELSEVIER

~2300 Journals, 2000 books

Global business news Over 30k sources 57 languages

US drugs database 16k branded drugs; 12k generic drugs

RELX Group
Content & Data Assets

Global patents 100 patent offices >93m records

Global chemical compound & reaction databases 22m compounds; 35m reactions

8.4bn US names, addresses, etc.

Global disease pathways 3.3m molecular facts

1.5bn US bankruptcy records

Global air fleet specifications

LexisNexis RISK SOLUTIONS

Reed Business Information

307m US criminal records

Global watch lists 1.2m + entries 240 countries

US medical providers 6.5m entries

3.3bn US auto insurance records

Global commodities prices

Data and content enables METRICS @ ELSEVIER

Scopus is the largest abstract and citation database of peer-reviewed literature that delivers a comprehensive view on the world of research.

72 million
Items

1.4 billion cited references dating back to 1970

Scopus®

5000+
Publishers

22,800+
Serial titles

150,000+
Books

~70,000
Affiliation Profiles

16 million
Author profiles

Identify and analyze which journals to read/submit to

Help researchers manage career-citation counts and h-index

Decide what, where and with whom to collaborate

Track impact of research; monitor global research trends

Find out what already exists in the global world of research

Determine how to differentiate research topics, find ideas

Number of Journals by subject area

	Journals	Conference	Books
Physical Sciences 12,263	**23,507** Peer-reviewed journals	**106K** Conference events	**613** Book series
Health Sciences 13,819	**301** Trade journals	**8.3M** Conference papers	**38K** Volumes
Social Sciences 10,905	**3,784** Active Gold Open Access journals	Mainly Engineering and Computer Sciences	**1.5M** Items
	>8,000 Articles in Press		**174,236** Stand-alone books
Life Sciences 6,809	Full metadata, abstracts and cited references		**1.34M** Items
			Focus on Social Sci and A&H

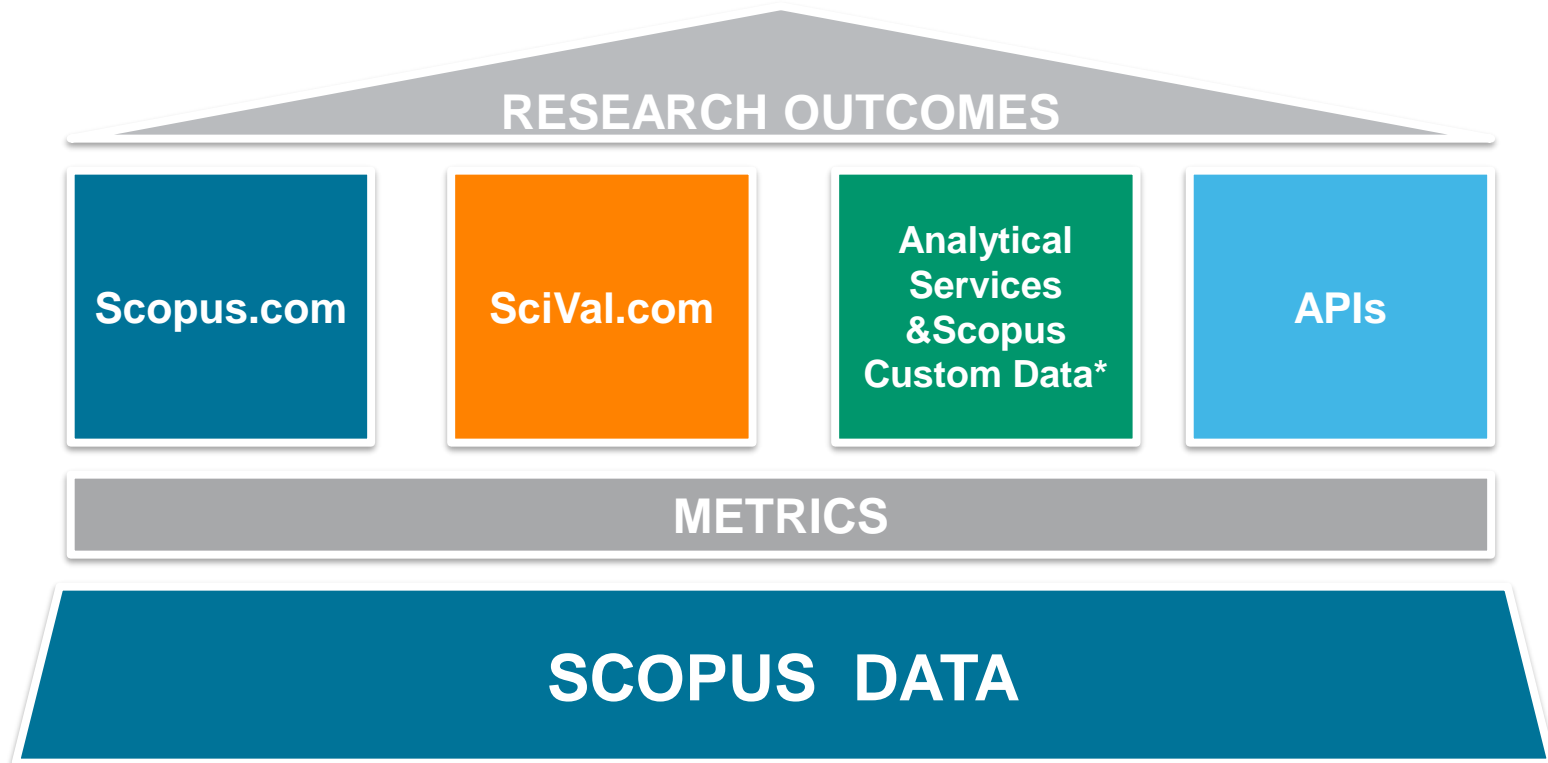# Who is using Scopus Custom Data (some examples)
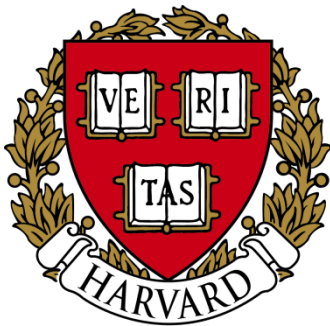
One common database with different applications on top of the data that work together

RESEARCH OUTCOMES

| Scopus.com | SciVal.com | Analytical Services &Scopus Custom Data* | APIs |

METRICS

SCOPUS DATA

*Analytical Services refers to the use of Scopus Custom data (and other data) in reports, assessment exercises, rankings and other Custom Data commercial projects.

Capturing other metrics to better tell the story of Research

9.4 BILLION

Total number of interactions with research in PlumX

USAGE
MOST IMPORTANT METRIC AFTER CITATION*

CAPTURES
LEADING INDICATOR OF CITATIONS

MENTIONS
WHERE THE STORIES OF RESEARCH ARE FOUND

SOCIAL MEDIA
INDICATES HOW RESEARCH IS PROMOTED

CITATIONS
TRADITIONAL MEASURE OF IMPACT

ELSEVIER

Innovation in Research Metrics : Clinical and Policy "citations"

Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis.

Citation data: Diabetologia, ISSN: 1432-0428, Vol: 55, Issue: 11, Page: 2895-905
Publication Year: 2012

USAGE ⌄	239	CAPTURES ⌄	349	MENTIONS ⌄	4	SOCIAL MEDIA ⌄	311	CITATIONS ⌄	303
Abstract Views ⊙	152	Readers ⊙	318	Blog Mentions ⊙	2	Shares, Likes & Comments	159	Citation Indexes ⊙	301
Link-outs ⊙	39	Exports-Saves ⊙	31	Links ⊙	1	Tweets ⊙	151	Clinical Citations ⊙	2
Clicks ⊙	32			News Mentions ⊙	1	+1s ⊙	1	Policy Citations ⊙	3
HTML Views ⊙	15								
PDF Views ⊙	1								

REVIEW SUMMARY	TWEETS	BLOG MENTIONS	NEWS MENTIONS	WIKIPEDIA	DYNAMED PLUS TOPICS	POLICY CITATIONS

This review has 3 Policy Citations.

WHO South-East Asia Journal of Public Health
Published: April 29, 2016
Topic: Domestic & Global Health
Read More ⬀

Aboriginal and Torres Strait Islander health performance framework 2014 report: New South Wales
Topic: Domestic & Global Health
Read More ⬀

Let's get Scotland Walking - The National walking Strategy
Published: 2004
Read More ⬀

Two Golden Rules of using research metrics
to give a balanced, multi-dimensional view

Always use both qualitative and quantitative input into your decisions

This is about benefitting from the strengths of both approaches, not about replacing one with the other

Combining both approaches will get you closer to the whole story

Valuable intelligence is available from the points where these approaches differ in their message

Always use more than one research metric as the quantitative input

A research metric's strengths can complement the weaknesses of others

There are many different ways of being excellent

Using multiple metrics drives desirable changes in behaviour

Using bibliometrics to understand and evaluate the research landscape

Empowering Knowledge

Latvian research output in metrics

Metric	2013	2014	2015	2016	2017	Growth
International Collaboration (%)	32.6	36.3	35.8	42.3	40.6	8.0
Academic-Corporate Collaboration (%)	1.7	1.6	1.7	1.7	1.3	-0.4
Scholarly Output	1,670	1,607	2,011	2,040	2,360	9.03%
Field-Weighted Citation Impact	0.94	1.01	1.18	1.39	1.33	0.4
Outputs in Top Citation Percentiles (top 10%)	6.1	7.1	7.1	8.5	9.1	3.0
Publications in Top Journal Percentiles (top 10% by CiteScore Percentile)	13.7	15.3	15.1	18.7	19.2	5.5
Views	52,684	48,576	60,517	72,045	73,115	8.54%
Views per Publication	31.5	30.2	30.1	35.3	31	-0.5
Authors	2,514	2,376	2,856	2,716	3,054	4.98%

Research strengths and potential

View: ■ number of publications   ■ Field-Weighted Citation Impact

Key strength

Potential

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SciVal Latvian Topics of prominence (1/2)
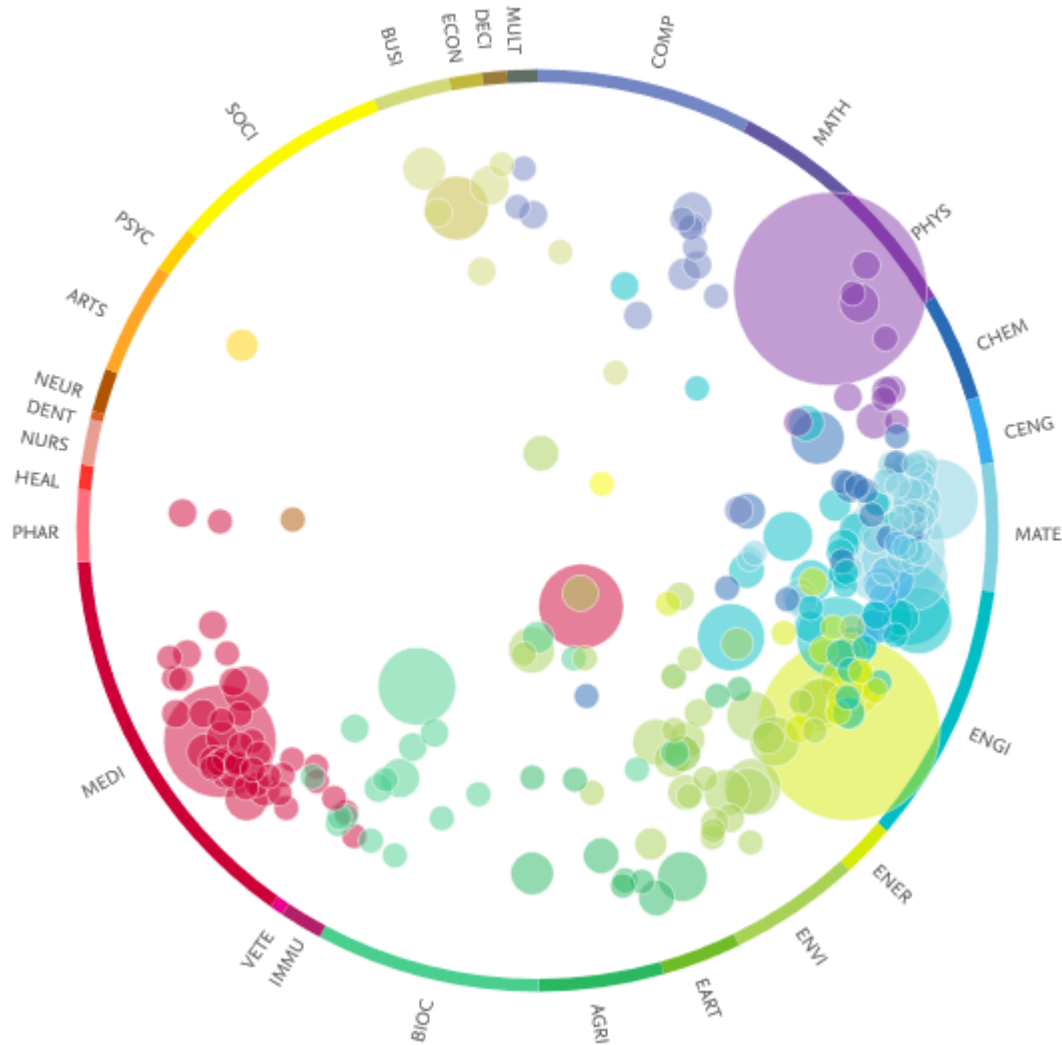
- 4,302 topics overall (out of ~100,000)
- Bubble size is the # of Latvian papers
- Showing only topics in the 1% most prominent topics

SciVal Latvian Topics of prominence (2/2)

| | In this Country | | | Worldwide |
Topic	Scholarly Output	Publication Share	Field-Weighted Citation Impact	Prominence percentile ↓
Perovskite; Solar cells; methylammonium lead ... T.20	1	0.01% ▲	0.00	100.000
Electric batteries; Lithium compounds; batteries SIBs ...	2	0.07% ▲	0.20	99.998

1 of 1

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[Full Text]   [Library Catalogue]   [Order Document]

Latvian Journal of Physics and Technical Sciences   Open Access
Volume 54, Issue 4, 1 August 2017, Pages 58-68

Influence of the Preparation Method on Planar Perovskite $CH_3NH_3PbI_{3-x}Cl_x$ Solar Cell Performance and Hysteresis (Article) (Open Access)

Ivanova, A.[a,b], Tokmakov, A.[c], Lebedeva, K.[a], Roze, M.[b], Kaulachs, I.[a] ✉

[a]Institute of Physical Energetics, 11 Krivu Str., Riga, LV-1006, Latvia
[b]Riga Technical University, 14/24 Paula Valdena Str., Riga, LV-1048, Latvia, Latvia
[c]LU Institute of Solid State Physics, 8 Kengaraga Str., Riga LV-1063, Latvia, Latvia

Abstract
∨ View references (38)

Organometal halide perovskites are promising materials for lowcost, high-efficiency solar cells. The method of perovskite layer deposition and the interfacial layers play an important role in determining the efficiency of perovskite solar cells (PSCs). In the paper, we demonstrate inverted planar perovskite solar cells where perovskite layers are deposited by two-step modified interdiffusion and one-step methods. We also demonstrate how PSC parameters change by doping of charge transport layers (CTL). We used dimethylsupoxide (DMSO) as dopant for the hole transport layer (PEDOT:PSS) but for the electron transport layer [6,6]-phenyl C_{61} butyric acid methyl ester (PCBM)) we used N,N-dimethyl-N-octadecyl(3-aminopropyl)trimethoxysilyl chloride (DMOAP). The highest main PSC parameters (PCE, EQE, V_{OC}) were obtained for cells prepared by the one-step method with fast crystallization and doped CTLs but higher fill factor (FF) and shunt resistance (R_{sh}) values were obtained for cells prepared by the two-step method with undoped CTLs. © 2017 A. Ivanova et al., published by De Gruyter Open 2017.

SciVal Topic Prominence ⓘ

Topic: Perovskite | Solar cells | methylammonium lead

Metrics �ⓘ

0 ❝❝ Citations in Scopus

0 ⚖ Field-Weighted Citation Impact

✱ PlumX Metrics ∨
Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:
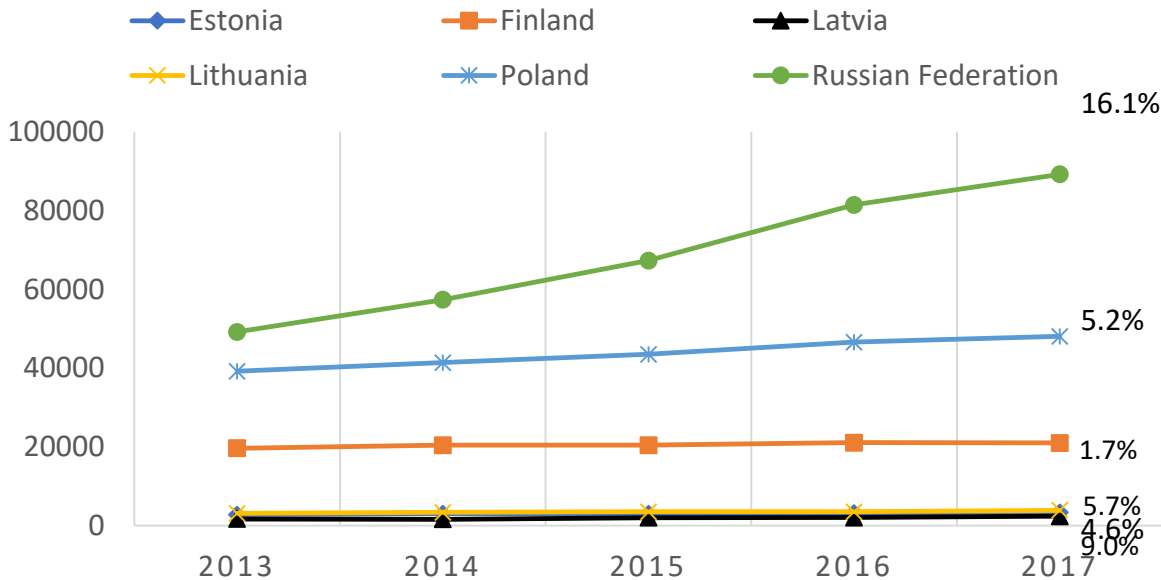
[Set citation alert ›]   [Set citation feed ›]

Related documents

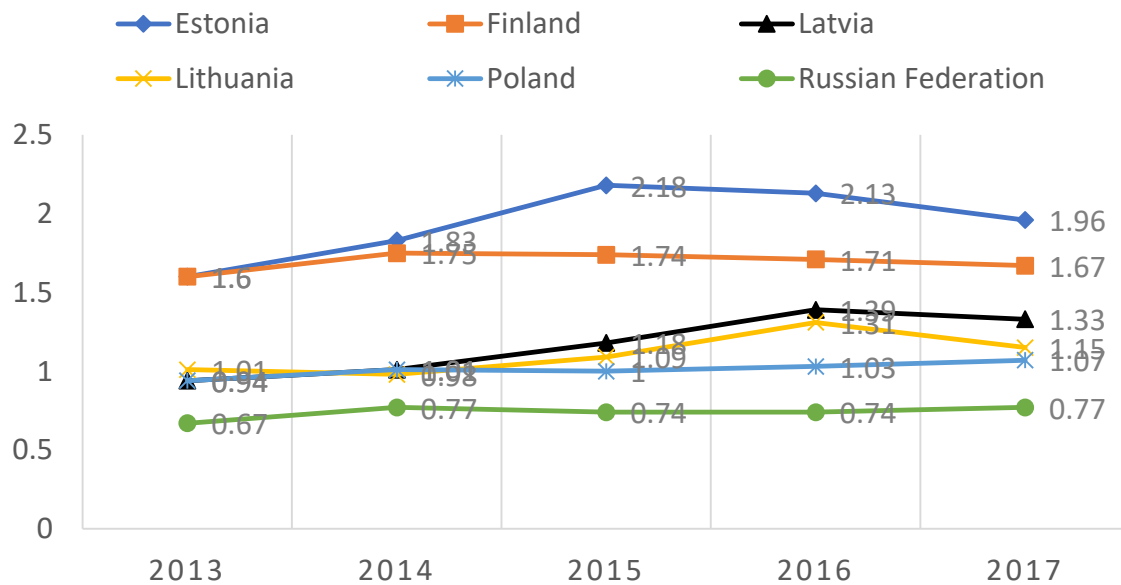Charge transport layer doping influence on perovskite CH3NH solar cell performance

Ivanova, A. , Lebedeva, K. , Tokmakov, A.
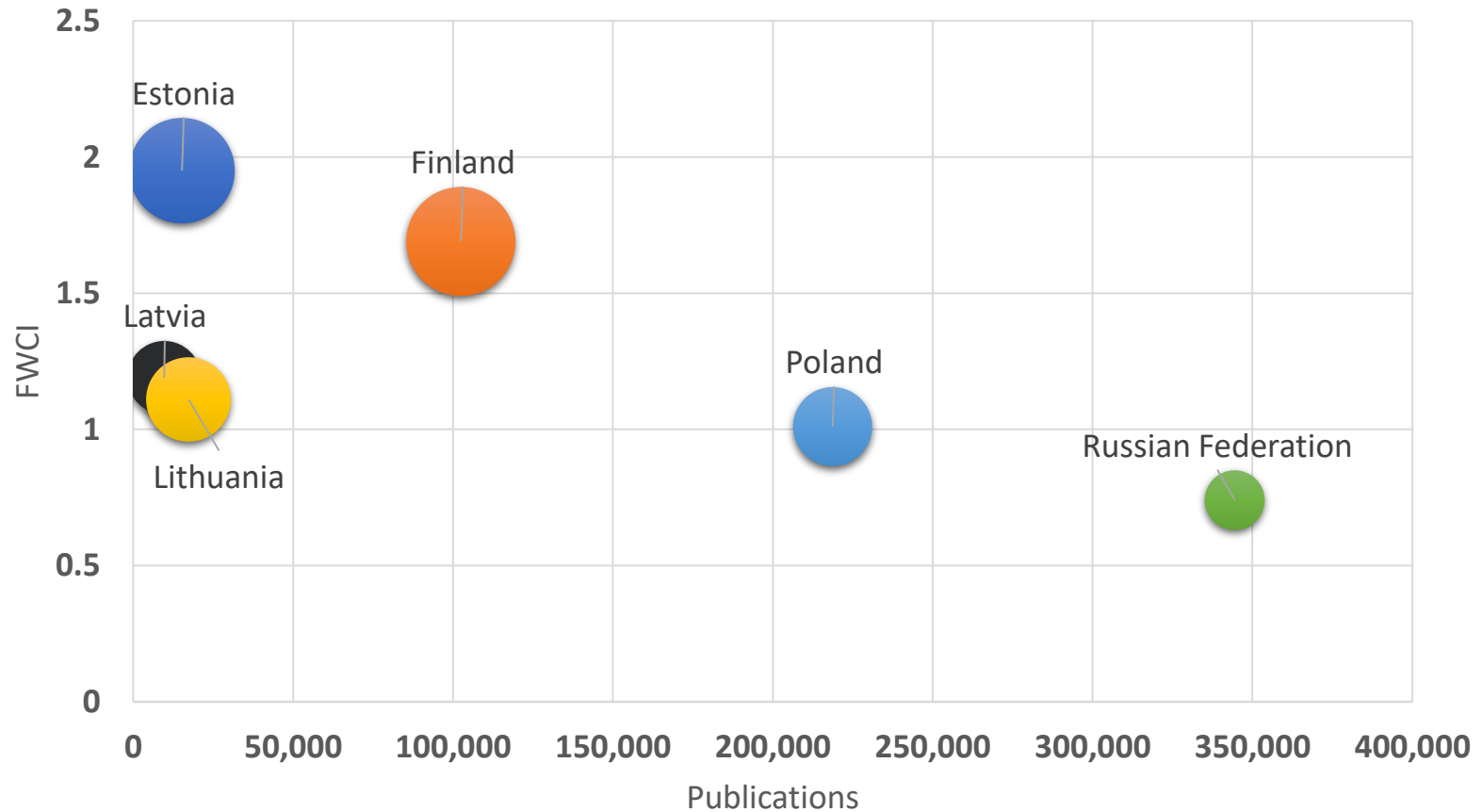(2018) Key Engineering Materials

Quantity and Quality

PUBLICATIONS

Legend: Estonia, Finland, Latvia, Lithuania, Poland, Russian Federation

Labels at 2017: 16.1%, 5.2%, 1.7%, 5.7%, 4.6%, 9.0%

FIELD WEIGHTED CITATION IMPACT

Legend: Estonia, Finland, Latvia, Lithuania, Poland, Russian Federation

Estonia: 1.6, 1.83, 2.18, 2.13, 1.96
Finland: 1.6, 1.73, 1.74, 1.71, 1.67
Latvia: 0.94, 1.01, 1.18, 1.39, 1.33
Lithuania: 1.01, 0.98, 1.09, 1.31, 1.15
Poland: 0.94, 1.01, 1, 1.03, 1.07
Russian Federation: 0.67, 0.77, 0.74, 0.74, 0.77

Quantity vs Quality vs Excellence

- Bubble size represent the percentage of publications in the top 10% most cited papers globally

Collaboration profile
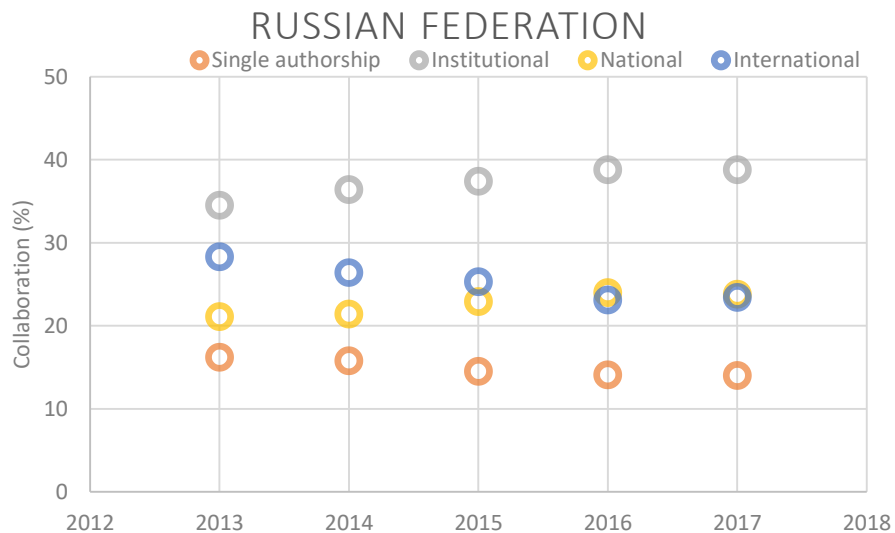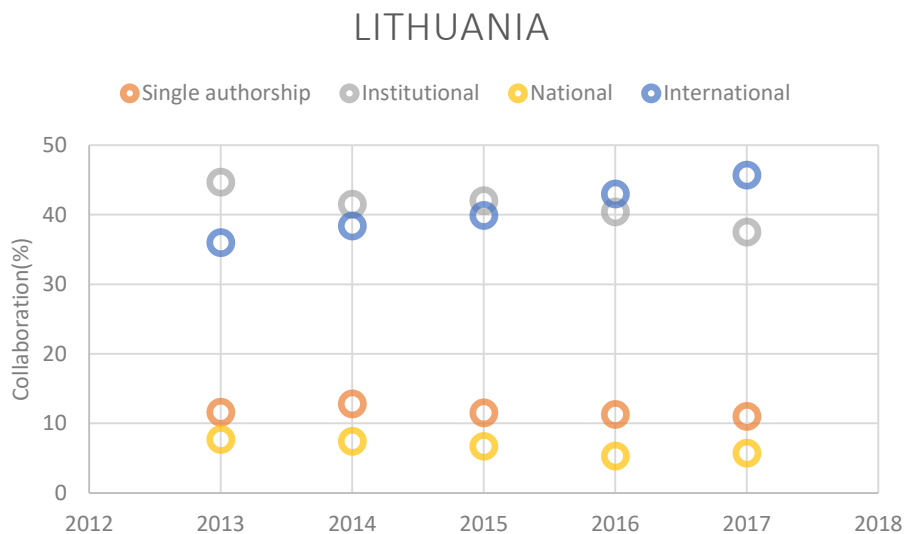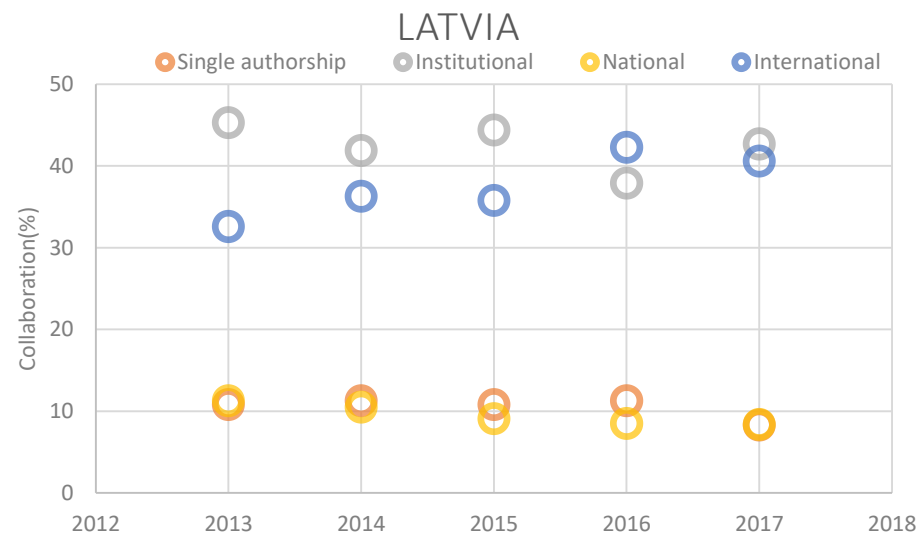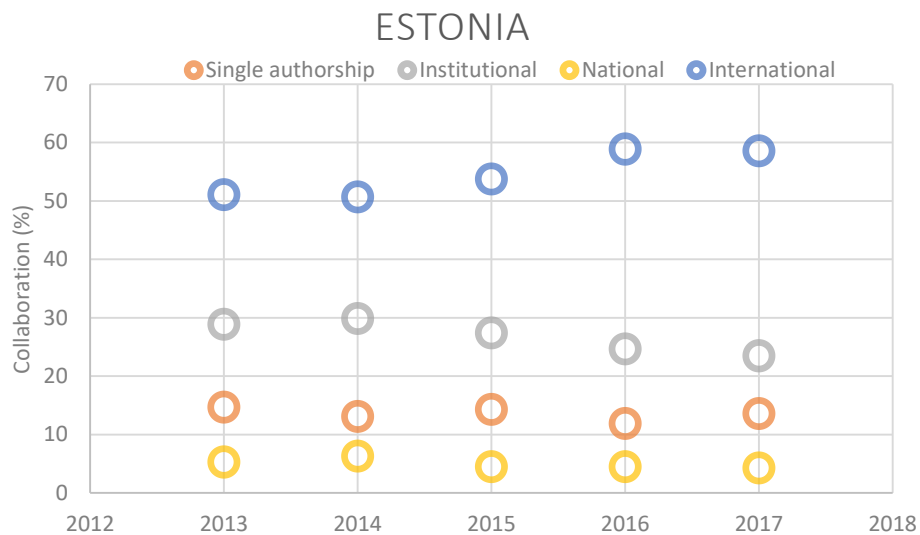
FWCI vs. International Collaboration
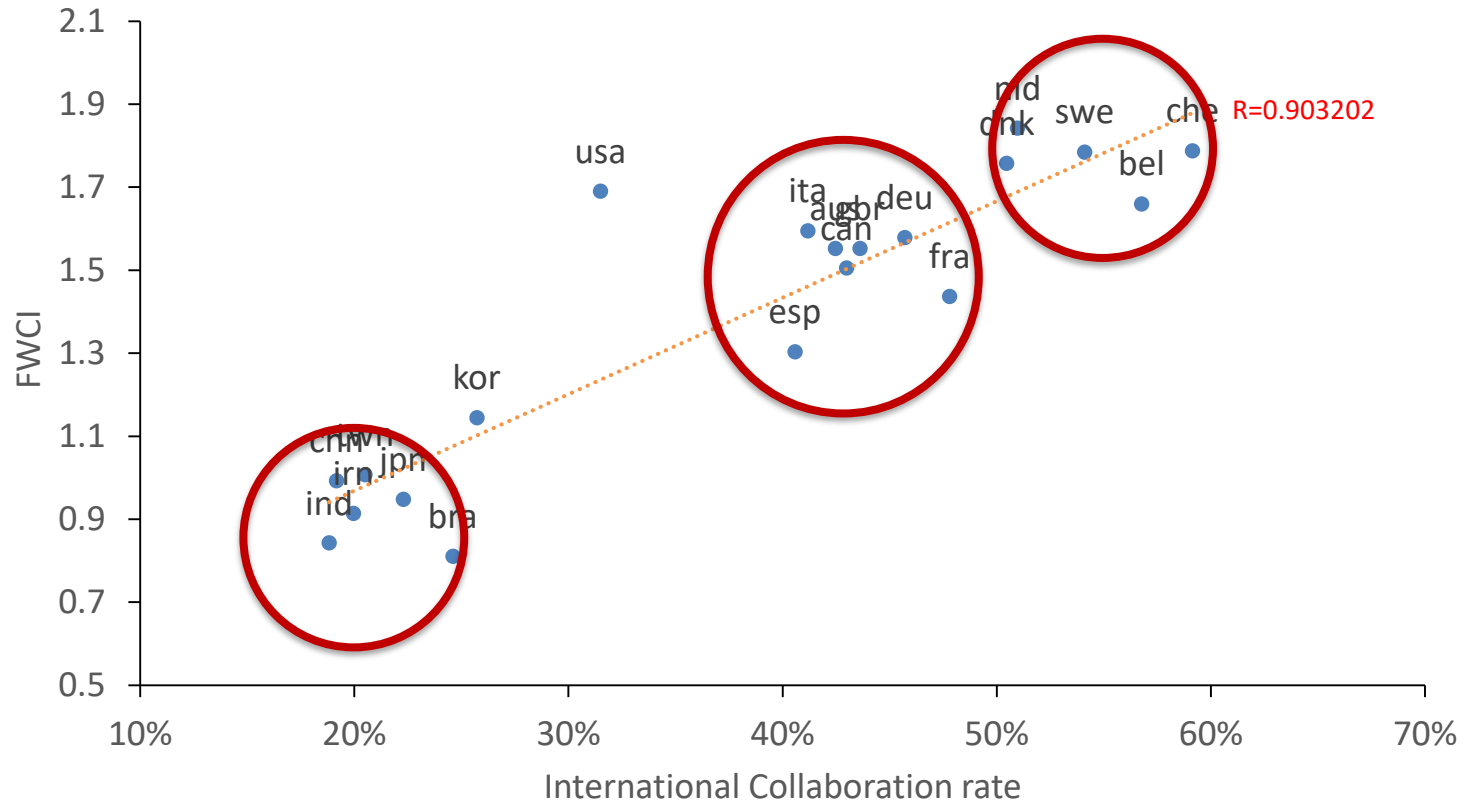
Source: THE WUR 2017 bibliometric
data based on Scopus dataset

Latvia international collaboration partners

Bubble size represents the number of co-authored papers
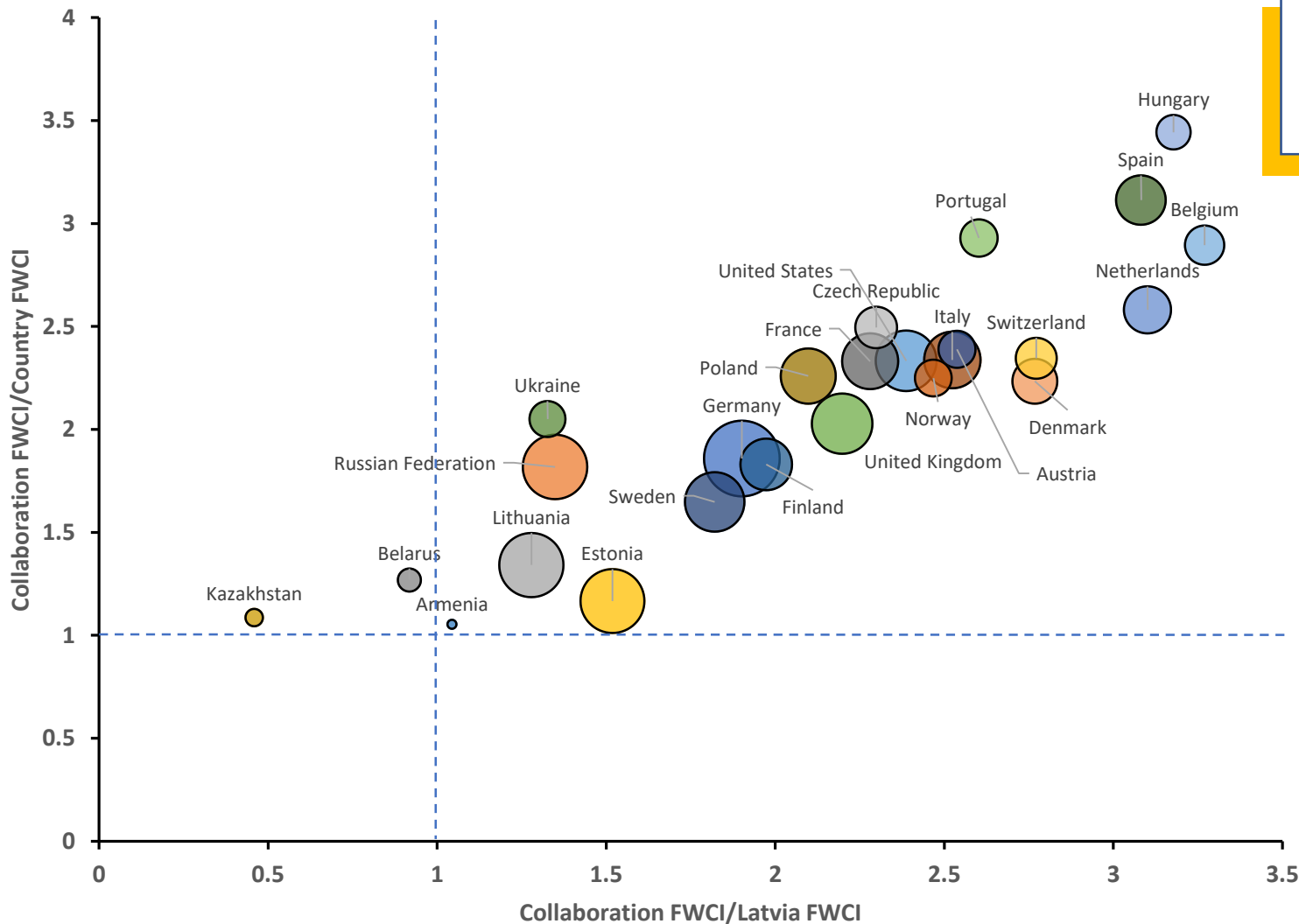
Legend:
- −+ Beneficial for partner only
- ++ Mutually beneficial
- −− Beneficial for none
- +− Beneficial for subject only
- 0, 1, 1, 0

Axes:
- X-axis: Collaboration FWCI/Latvia FWCI
- Y-axis: Collaboration FWCI/Country FWCI

Data points: Hungary, Spain, Belgium, Portugal, Netherlands, United States, Czech Republic, Italy, Switzerland, France, Poland, Norway, Denmark, Germany, United Kingdom, Austria, Ukraine, Finland, Sweden, Russian Federation, Lithuania, Estonia, Belarus, Armenia, Kazakhstan

Beyond the traditional bibliometrics: Demonstrating impact, knowledge exchange

Empowering Knowledge

The UK is awarded approx. 2% of global patents annually, but cited in 9%

Share of global patent grants
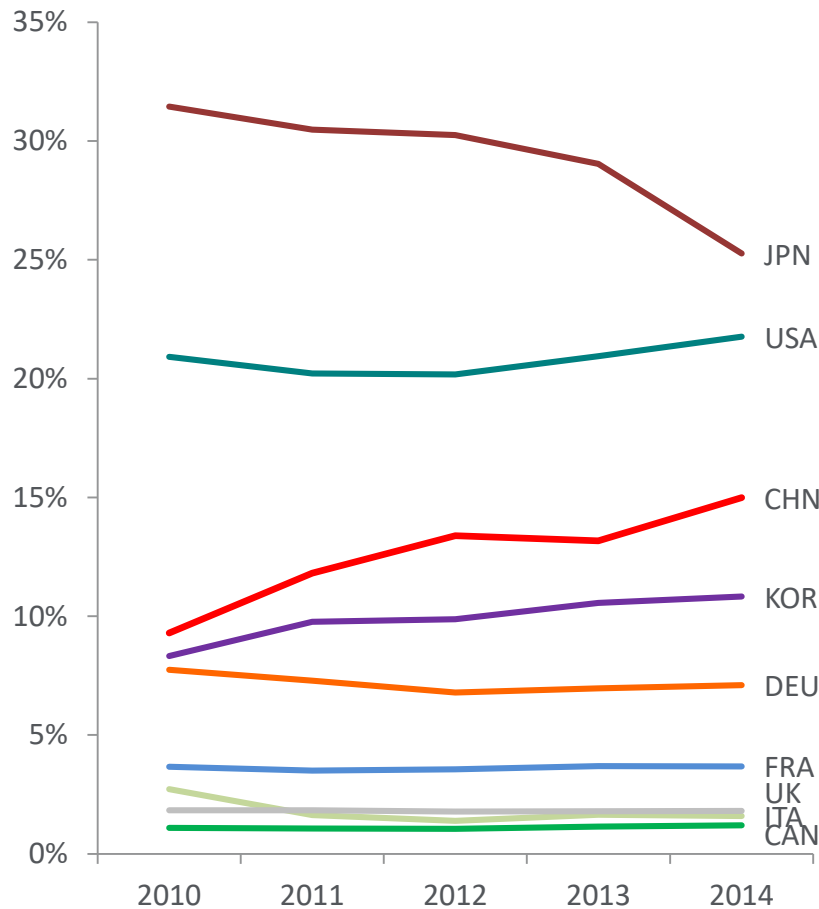
Share of patent citations to articles published
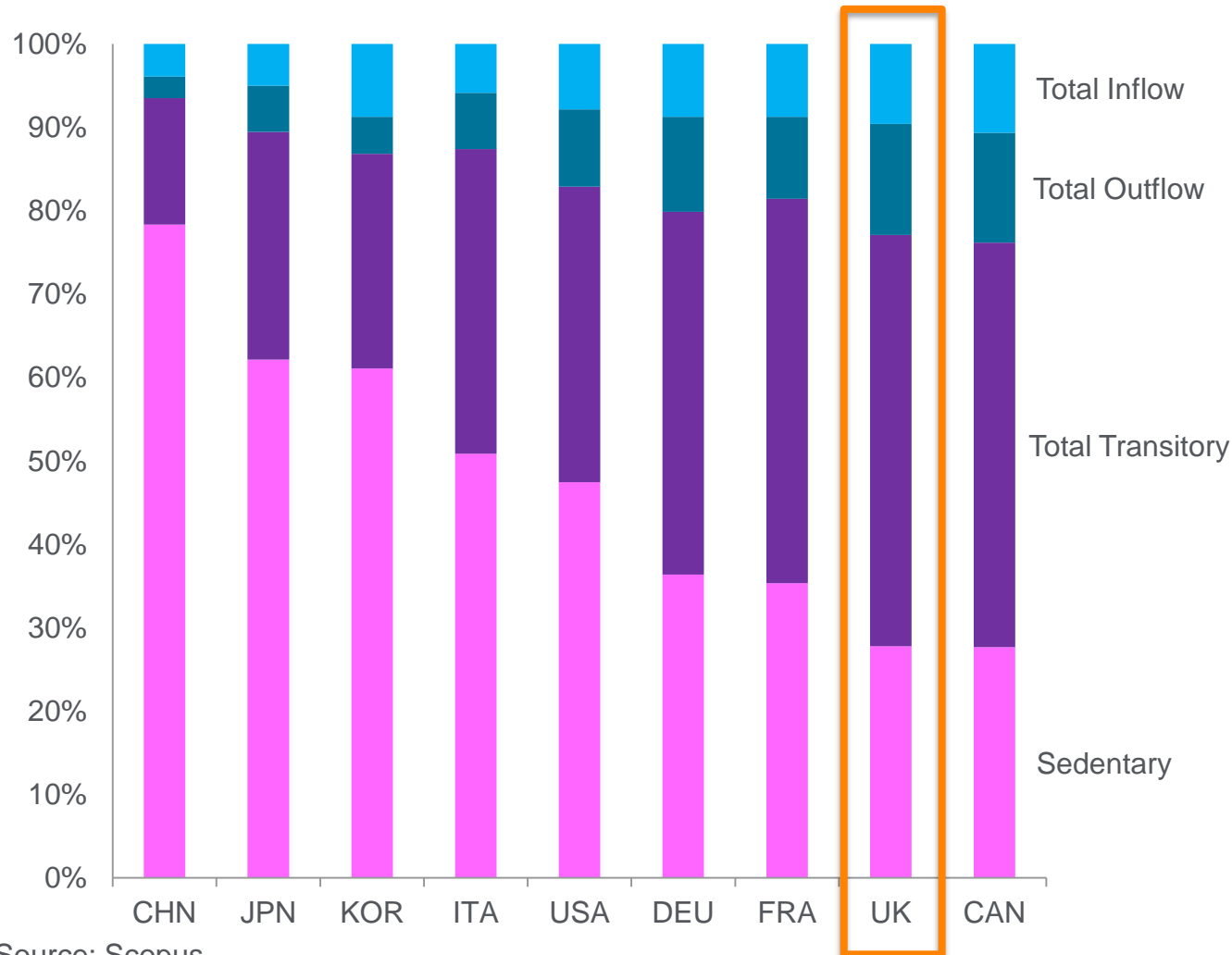
USA approx. 40-45% of patent citations
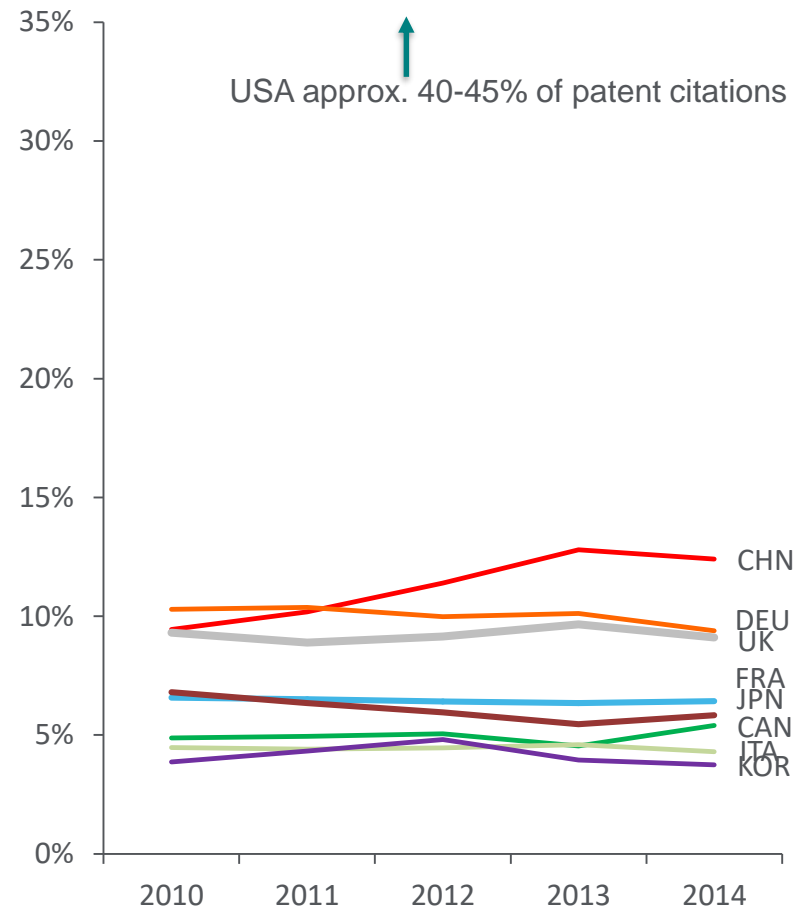
Researcher Mobility: UK has high share of transitory researchers (<2 years)

international mobility of researchers 1996-2015

The transitory and inflow groups in UK are both more productive, and have higher FWCI, than sedentary and outflow groups

Source: Scopus

Pharmaceutical companies at the center of Amsterdam and other cities' corporate collaboration networks

Circle size: Volume of publications 2009-13

Line thickness: Volume of collaboration between cities and companies

Blue nodes indicate pharm. companies

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Gender representation: proportion of female authored papers

Distribution of Female Researchers

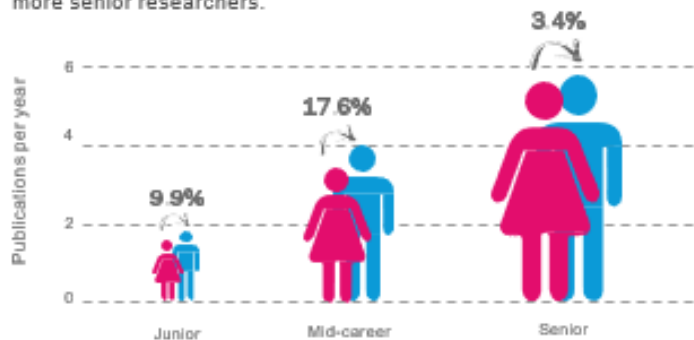The number and proportion of female researchers in Germany is increasing.

28.2%   30.9%
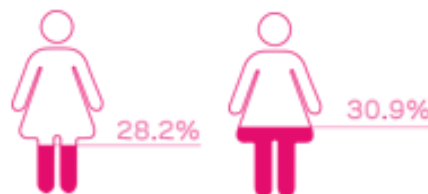
In general, Agriculture, Medicine, and Health related subject areas have the highest share of female researchers.

Subject areas in the Natural Sciences and Engineering have the lowest shares.

Research Productivity

The differences between publication productivity and citation impact between female and male researchers in Germany are smaller for more senior researchers.

3.4%

17.6%

9.9%

Publications per year

Junior   Mid-career   Senior

Societal Impact – Clinical Citations

Top 20 most prominent topics in the Science & Engineering research area – NSF contribution (3/3)

3

25 - Organometallics, Java programming language, imidazolate frameworks

(Prominence score vs year chart: 2012–2017)

23 - Microbial fuel cells, Bioelectric Energy Sources, cell MFC

(Prominence score vs year chart: 2012–2017)

Bubble chart axes:
- Y-axis: Share (%)
- X-axis: Prominence trend score (-1.5 to 3.5)

Topic labels:
- 3 - Molybdenum compounds, Monolayers, dichalcogenides TMDs
- 22 - Electro... Electro... electro... conv...
- 1 - Perovskite, Solar cells, methylammonium lead
- 29 - Organometa... Metals, framewor...
- 28 - Energy harvesting, Piezoelectricity, nanogenerator TENG
- 21 - Electrolytic capacitors, Capacitors, aqueous electrolyte
- Palladium, bond functionalization
- 17 - Semiconductor quantum dots, Carbon, dots CDs
- 11 - Electrolytic reduction, Electrocatalysts, non-precious metal
- 25 - Organometallics, Java programming language, imidazolate frameworks
- 4 - Solar cells, Heterojunctions, organic photovoltaics
- 12 - Carbon nitride, Photocatalysts, g-C3N4 nanosheets
- 9 - Electrolytic capacitors, Capacitance, asymmetric supercapacitors
- 27 - Melting, Additives, laser melted
- Bioelectric Energy Sources, cell MFC

Top 20 most prominent topics in Science & Engineering – NSF contribution to US contribution

3

- NSF contribution to country (US) contribution is significant. It ranges from 8.2% on topic 27 to 54.8 on topic 12
- It has a contribution of 16.2% on the fastest growing topic within the top 20 most prominent topics. This is topic 23.
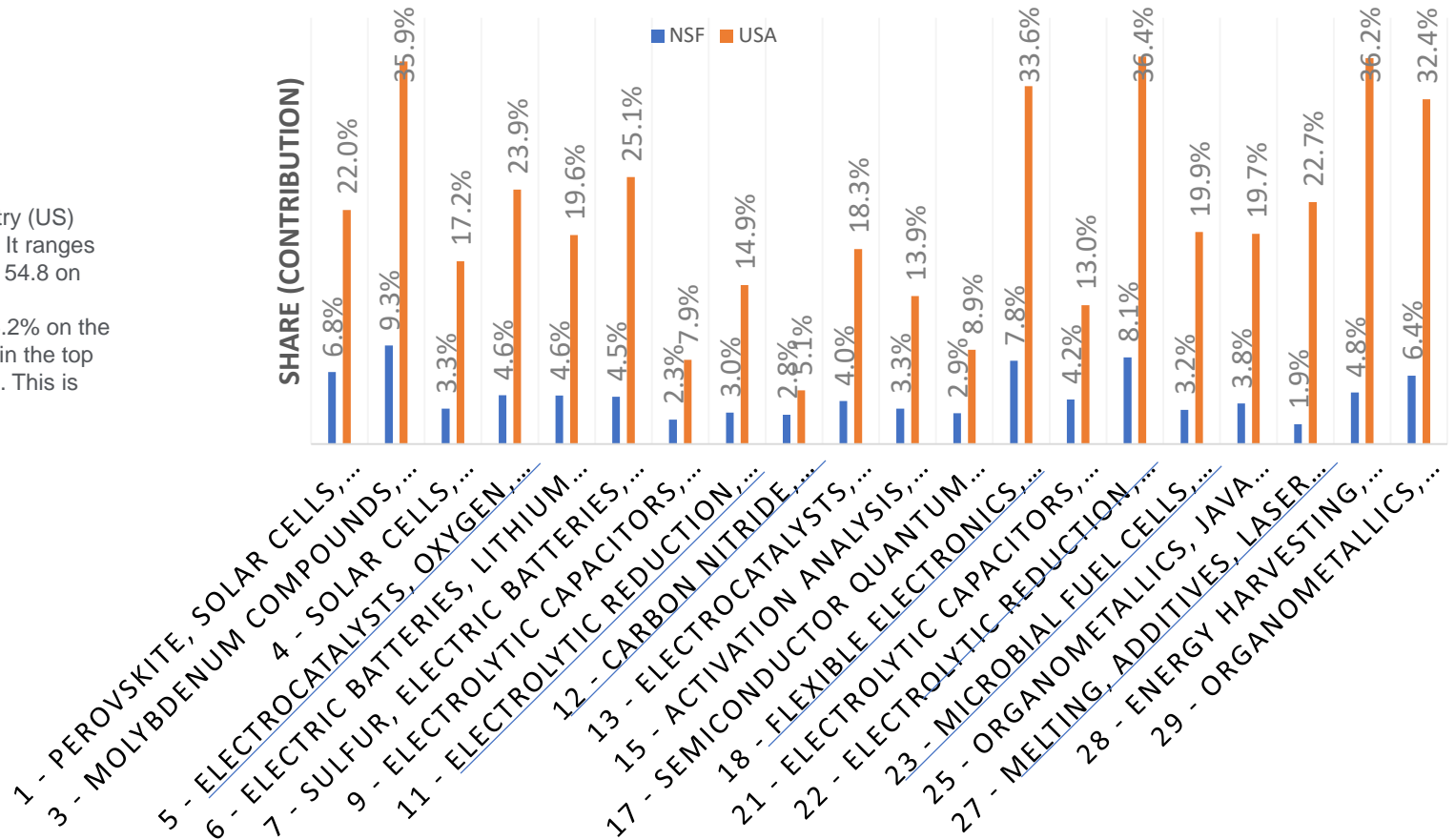
Research Intelligence

Thank you:

m.aisati@elsevier.com