



Date: 10-09-2019

Place: Tirana

Knowledge FOR Resilient soCiEty

Impacts of Sustainability and Resilience Research on Risk Governance, Management and Education

Linda Nielsen and Michael H. Faber
Aalborg University



AALBORG UNIVERSITY
DENMARK

Co-funded by the
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MEETING GOALS

PROJECT MEETING IN TIRANA

Joint meeting and intense discussion on various project implementation topics:

- *Sustainability of project results and cooperation*
- *EQUIPMENT & LABS – the final report*
- *Report on evaluation of MPs*
- *The number of flexible ICT learning platform users – update*
- *Report on applied student centered teaching skills*
- *The role of social networks in promotion of safety culture among youths*
- *B - learning material preparation and evaluation*
- *Workshops*



MEETING GOALS

PROJECT MEETING IN TIRANA

Workshops:

- *DRM&FS contemporary trends in science and education workshop*
- *Workshop Disaster Risk Management of Cultural Heritage + field observation- BUTRINTI & discussion*
- *Workshop on Project narrative reporting and outcomes*
- *Workshop on Project financial reporting and administration*



WP 1 - Define directions for development of Master programmes

FINISHED

Outputs and Outcomes

- 1.1 Report on DRM&FSE MPs in EU and WBC
 - 1.2 Report on WBC needs for DRM&FSE MPs and learning outcomes
 - 1.3 Presentation of developed DRM&FSE MPs Curricula
 - 1.4 Equipment procured, installed and activated, local staff trained in its usage
- EPOKA and UT finalized the procedures and equipment is installed, staff trained

Indicators of progress

- 4 reports compiled, published
- WBC needs survey, sample of 300 students and professionals
- Learning outcomes defined and published
- DRM&FSE MPs Curricula published
- Equipment purchased and introduced in inventory books and number of local teaching staff trained in using it
- **FINAL REPORT**



TO BE FINISHED UNTIL THE END OF SEPTEMBER:

**Equipment procured, installed and activated at all
6 HEIs - **Final report****

- **1 small procurement in progress in UBL**

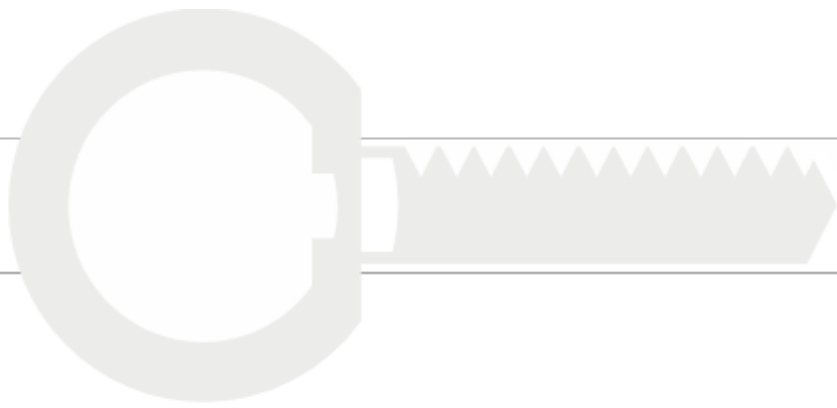
UBL to update report after finishing the last procurement.



WP 2 - Define directions for development of PhD programme

FINISHED

Outputs and Outcomes	Indicators of progress
2.1 Report on WB needs and EU trends in DRM&FSE PhD 2.2 Report on teaching staff resources for MPs and PhD 2.3 Report on compared PhD models and curricula 2.4 Presentation of developed PhD Curriculum 2.5 List of research PhD themes	<ul style="list-style-type: none">• 5 reports compiled, published• DRM&FSE PhD Curriculum published• List of research PhD themes written, published and distributed to prospective candidates and on Website



List of research PhD themes

To be distributed to prospective candidates – in November 2019 – after we enrol the PhD students.



WP 3 - Improve teaching methodologies and embed the ICT in learning material

Outputs and Outcomes	Indicators of progress
<p>3.1 Study visits reports</p> <p>3.2 Report on agreed modalities of using ICT for b-learning</p> <p>3.3 WBC teaching staff trained on DRM&FSE subjects and student-centred teaching skills</p> <p>3.4 b-learning materials for MPs and PhD developed</p> <p>3.5 Report on evaluation of MPs and PhD learning material, fine-tuned MPs and PhD</p>	<ul style="list-style-type: none">• 8 reports compiled, published• 4 study visits organized• At least 35 WBC TS trained• At least 1 script and 10 presentations/webinars per developed/modernised subject• At least 1 lecture/tutorial per subject held by professionals - practical case studies• 6 textbooks by PA published• Number of new subjects, lectures, students, guest lecturers; feedback polls; students' exam marks



TO BE DONE AND DISCUSSED:

- **Report on evaluation of MP (1st generation), including evaluation methodology description**
Reports compiled BY EPOKA
- **Report on applied STUDENT CENTERED TEACHING SKILLS**
Reports compiled BY UNTZ
- **6 textbooks by PA published – in progress**



WP 4 – Implementation of 6 MPs in 3 WBC

ALMOST FINISHED

Outputs and Outcomes

- 4.1 Accredited MPs
- 4.2 Students enrolled on master studies
- 4.3 The flexible ICT learning platform activated on time
- 4.4 Lectures held by guest lecturers
- 4.5 Report on 1st cohorts' progress and satisfaction of students and staff

Indicators of progress

- 6 Accredited MPs
- 120 students enrolled on MPs
- 150 ICT platform users
- 60 authorized guest lectures and presentations held
- 5 case studies for tutorials and project work issued
- Polls on student and staff satisfaction processed



TO BE DONE AND DISCUSSED:

Report on evaluation of MP (1st generation), including evaluation methodology description – according to institution's own evaluation rules

- **– Reports compiled BY EPOKA (Joint report 3.5 and 4.5)**



TO BE DONE AND DISSCUSED:

4.3 The flexible ICT learning platform activated on time

Target: 150 ICT platform users – teaching staff and students

Final report prepared by UT and EPOKA ,

HOW MANY USERS DO WE HAVE SO FAR?

4.4 Lectures held by guest lecturers

- Request for additional SMS – no response yet from EACEA
- **UNS – WHAT IS STILL MISSING?**
 - **Missing learning material (for a few lectures) should be sent to UNS to be published at Website**



WP 5 – Implementation of PhD studies

IN PROGRESS

Outputs and Outcomes

- 5.1 Accredited the new PhD programme
- 5.2 Enrol the PhD students
- 5.3 Selected PhD lectures held by K-FORCE guest lecturers
- 5.4 Evaluate the 1st cohorts' progress and satisfaction of students and staff

Indicators of progress

- **4 reports compiled, published**
- **1 Accredited PhD programme**
- **12 students enrolled on PhD**
- **10 authorized guest lectures and presentations held**
- **Polls on student and staff satisfaction processed**



WP 6 – Implementation LLL courses

ALMOST FINISHED

Outputs and Outcomes	Indicators of progress
<p>6.1 Report on WBC needs for LLL courses</p> <p>6.2 Report on defined LLL outcomes</p> <p>6.3 Glossary published</p> <p>6.4 Selected learning material adapted for LLL purposes</p> <p>6.5 LLL courses delivered to professionals in blended way</p>	<ul style="list-style-type: none">• 5 reports compiled• Improved professional capacity and interoperability• 18 LLL courses delivered• 400 trained professionals• 500 professionals accessing the ICT platform



DONE AND TO BE DONE:

LLL COURSE PROOF TO BE PREPARED:

- News on schedule, programme and call for apply,
- Published on HEI's website and project website
- News on completed course, accompanied with
 1. Attendance list
 2. Presentations – all
 3. Literature
- **BLENDED WAY- USE ICT PLATFORM AND WEBINARS RECORDED (GUEST LECTURES)**
- **ICT platform Counter records**



DONE AND TO BE DONE:

PROGRESS REPORT PRESENTED AT TUZLA MEETING

TARGET:

- **18 LLL courses delivered**
- **400 trained professionals**
- **500 professionals accessing the ICT platform**

this indicators must be fulfilled and justified with proof to EACEA.

**FINAL REPORT TO BE PREPARED BY VTSNS
AND UNIZA AND PUBLISHED ON WEBSITE
AFTER TIRANA MEETING**





OTHER (Quality control, Dissemination, PM...):

DONE and TO BE DONE:
External evaluation-dates, schedule and methodology for evaluation published on website, expert nomination and CD

ALL PROJECT PARTNERS – FINAL DRAFT OF FINAL REPORT TO BE DISCUSSED AND INSTRUCTION GIVEN BY UNS FOR ADDITIONAL INFORMATION NEEDED FOR FINALIZING THE TECHNICAL-NARATIVE AND FINANCIAL REPORT





What we have done since the meeting in BANJA LUKA

- *PROJECT EXTENDED*
- *Equipment Report finished*
- *Educational Labs Report finished*
- *All SMS activities are going according to plan, except Student's mobility – we proposed a change of SMS scheme to EACEA, in order to use all SMS grant – still no answer from PO*
- *Glossary – FINISHED*
- *Textbooks – final activities – on going*
- *LLL courses prepared and delivered – on-going*

Brussels, 23. 08. 2019
Appfin (2019) 19D017573
File code: 2016-2559

Mr Dejan JAKSIC, Rector
UNIVERSITY OF NOVI SAD
DR ZORANA DINDICA 1
RS 21000 NOVI SAD

Email: jaksicd@ef.uns.ac.rs
Copy to: radonv@uns.ac.rs

Subject: 573942-EPP-1-2016-1-RS-EPPKA2-CBHE-JP
Ref.: 2016-2559/001-006 - Extension of the Eligibility Period

Dear Mr JAKSIC,

Thank you for your email received of 25 July 2019.

Based on the reasons provided, we can agree to extend the eligibility period of the project by 6 months until 14 April 2020. Please note that this extension is conditional on the achievement of the project's objectives and the respect of the budget allocated to the project. No further extension of the eligibility period will be granted.

The deadline for the submission of the Final Report is now 14 June 2020.

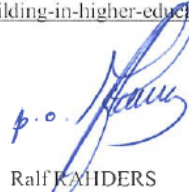
As regards your request on the budget change for the "Special Mobility Strand", you will receive a feedback in the upcoming days.

You will find attached an addendum to your Grant Agreement.

Should you require any further information, please contact Immaculada RODRIGUEZ (Tel: +32 2 29 52842, e-mail: Immaculada.RODRIGUEZ@ec.europa.eu and eacea-eplus-cbhe-projects@ec.europa.eu). We also encourage you to regularly consult our Erasmus+ CBHE website https://eacea.ec.europa.eu/erasmus-plus/beneficiaries-space/capacity-building-in-higher-education_en.

We wish you a successful continuation of your activities.

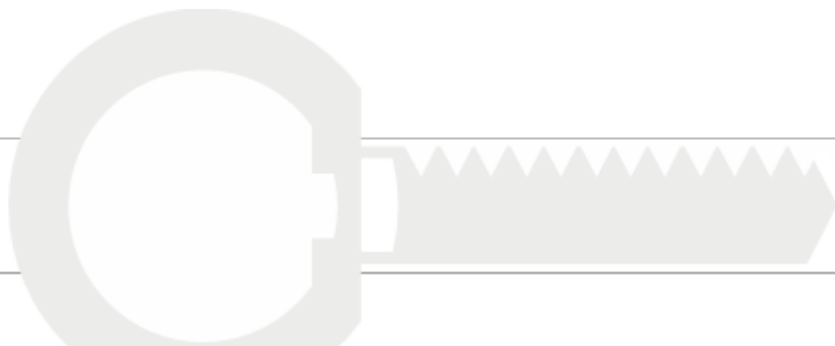
Yours sincerely,


Ralf KAHIDERS

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Activities		Total duration (number of weeks)	M37	M38	M39	M40	M41	M42
WORKPLAN FOR ADDITIONAL 6 MONTHS								
Ref.nr/ Sub-ref nr	Title							
1.1	Analyse DRM&FSE MPs in EU and WBC							
1.2	Analyse WBC needs for DRM&FSE MPs and learning outcomes							
1.3	Develop new DRM&FSE MPs Curricula aligned with EU trends							
1.4	Procure, install and activate the equipment							
2.1	Assess WB needs and EU trends in DRM&FSE PhD							
2.2	Analyse WB teaching staff resources for MPs and PhD							
2.3	Compare PhD models and curricula in EU							
2.4	Develop PhD Curriculum							
2.5	Compile a list of research PhD themes, according to disaster trends in WB							
3.1	Study visits to PR HEIs							
3.2	Analyse and agree on the modalities of using ICT for b-learning							
3.3	Train the WBC teaching staff on both DRM&FSE topics and b-learning methodologies							
3.4	Develop b-learning materials for MPs and PhD	6	2X=	2X=	2X=			
3.5	Pilot the new MPs and PhD learning material, evaluation and fine tuning	1	X	X		X	X	X
4.1	Accredit Master programmes							
4.2	Enrol the Master students							
4.3	Activate the flexible ICT learning platform							
4.4	Selected MP lectures held by K-FORCE guest lecturers							
4.5	Evaluate the 1 st cohorts' progress and satisfaction of students and staff							
5.1	Accredit the new PhD programme							
5.2	Enrol the PhD students	2	X					
5.3	Selected PhD lectures held by K-FORCE guest lecturers	4		=X	=X	=X	=X	
5.4	Evaluate the 1 st cohorts' progress and satisfaction of students and staff					2X		
6.1	Analyse the WBC needs for LLL courses							
6.2	Define LLL outcomes according to EQF/NQFs							
6.3	Create K-FORCE Glossary							



6.4	Adapt selected learning material for LLL courses							
6.5	Deliver LLL courses in blended way to professionals							
7.1	Develop Quality Assurance mechanisms and procedures	3	X=	X=	X=			
7.2	Create polls for different types of activities				X=			
7.3	Learning material peer review							
7.4	External review of the Glossary							
8.1	Create dissemination plan							
8.2	Develop, maintain and promote K-FORCE Website	6	X	X	X	X	X	X
8.3	Open/maintain e-library public access area							
8.4	Perform media, enrolment and LLL promo campaigns	6	X	X	X	X	X	X
8.5	Organise 3 K-FORCE Symposia							
9.1	Organize K-FORCE bodies meetings	2				X=		X=
9.2	Prepare and adopt the Project management plan, procedures and the Risk Plan							
9.3	Inter project coaching							
9.4	Manage all project activities and monitor their execution regarding timescale and	6	X=	X=	X=	X=	X=	X=

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UPCOMING K-FORCE EVENTS

FINAL MEETING IN NOVI SAD 7 - 9 APRIL 2020

PA PARTNERS 7-8 APRIL

PR PARTNERS 8-9 APRIL

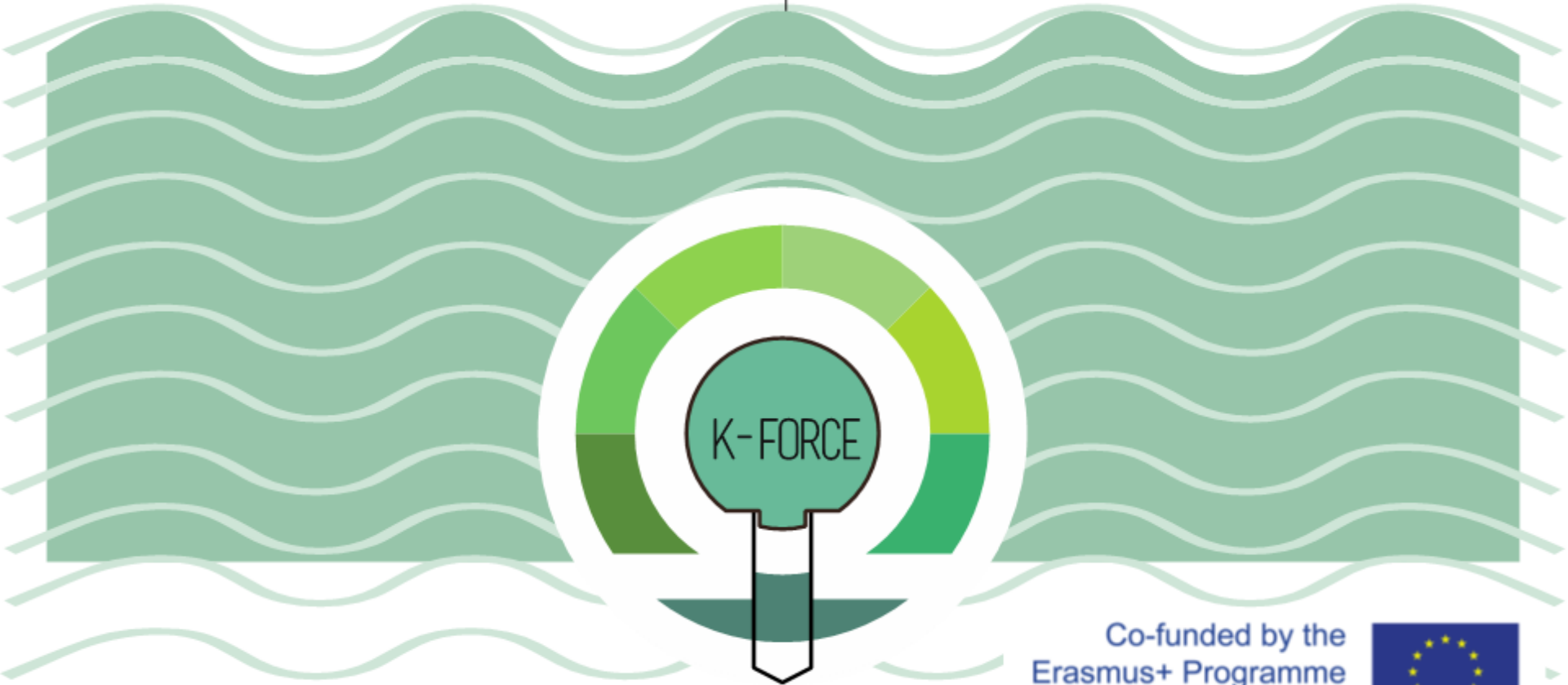
K-FORCE PROJECT ENDS ON APRIL 14TH 2020

FINAL REPORT DEADLINE MAY 10TH 2020

- *Project monitoring visits will be organized if there is a need (quality control, PM and financial reporting control)*

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Thank you for your attention

k-force.pmt@uns.ac.rs

Knowledge FOR Resilient soCiEty



Impacts of Sustainability and Resilience Research on Risk Governance, Management and Education

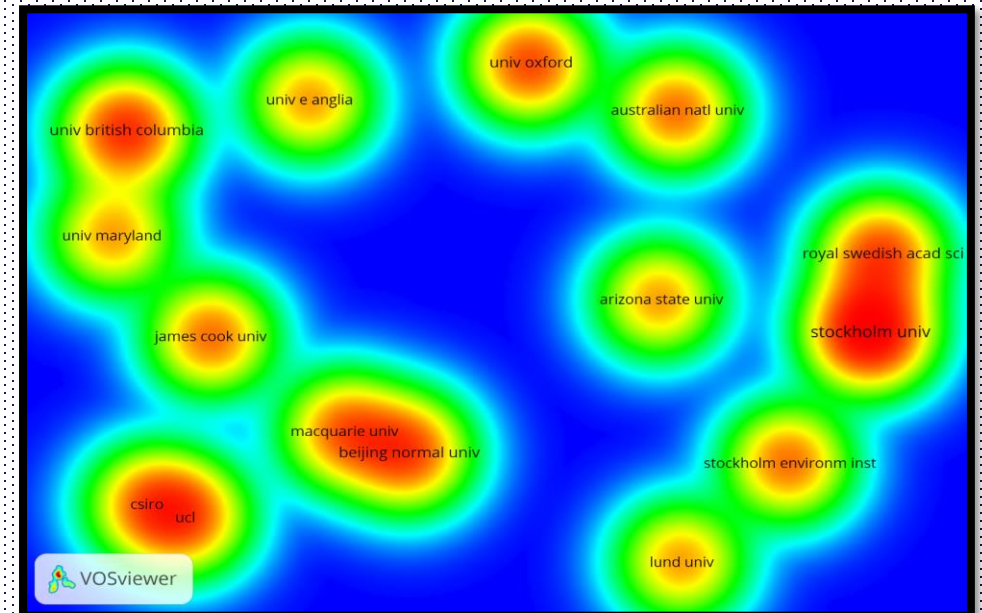
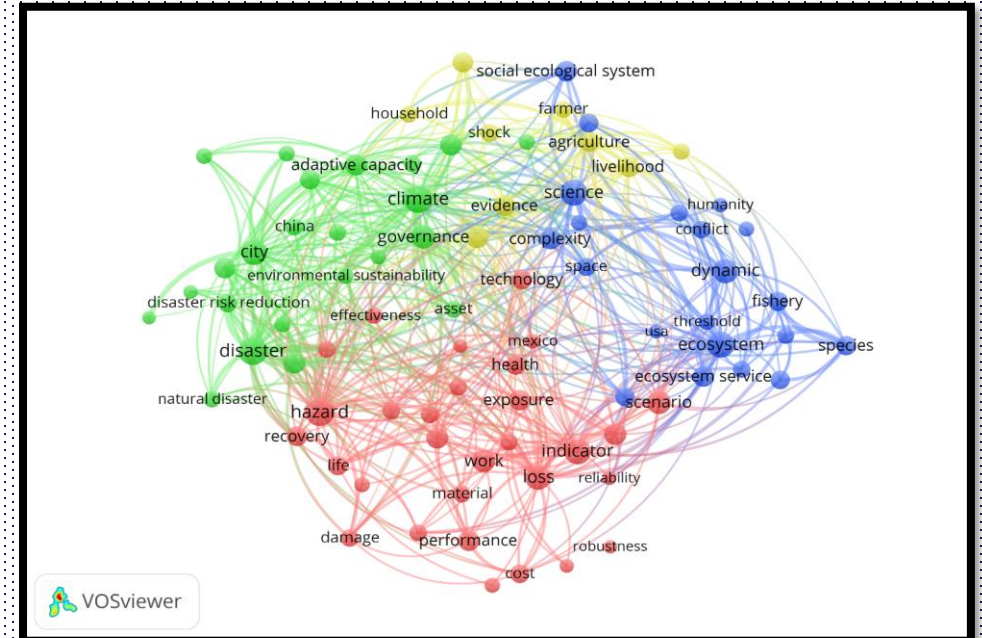
Linda Nielsen, PhD fellow & Michael H. Faber, Professor
Department of Civil Engineering



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DENMARK

Contents

- Introduction: Aim & Scope of research
- Methodology
 - Term co-occurrence & bibliographic coupling cluster analysis
- Results
 - Evolution of research
 - Composition of research
 - Selected results from term co-occurrence analysis
 - Selected results from bibliographic coupling analysis
- Conclusions
- Implications for risk governance, management & education



Introduction: Aim & Scope

Problem Context

- Need to understand implications and **define future strategic directions for risk education** in view of **exponential increase** in research on **sustainability** and **resilience** over the past 3 decades
- Part of **baseline assessment** to support the development of a **blueprint for learning design** in risk-informed decision support

Research questions

- How large is the scientific community researching resilience and sustainability in comparison to research in risk and what is the evolutionary trajectory of these knowledge domains for the period 1990-2017?
- What are the characteristics of the scientific literature on risk, sustainability and resilience (1990-2017) in terms of different disciplinary contributions, authors, countries and organizations producing research?
- To what extent are resilience and sustainability research integrated into research on risk-informed decision support and how is their influence shaping the development of the risk knowledge domain with respect to risk governance, risk management and risk education?





Methodology

Steps

- I. Identification of search terms relevant for risk, sustainability and resilience based on expert discussion between the authors;
- II. Data collection;
- III. Bibliometric networks construction;
- IV. Data results and analysis

Data

- 442,171 records extracted from the Web of Science (WoS)
- Only journal articles and book chapters included
- Records categorized as part of medical (physical and psychological) research on risk as this very large sub-domain of risk excluded
- Min. number of co-occurrence of terms adapted according to the volume of records for each search term.





Methodology

	Search Term	Search Term	Search Term	Search Term	Search Term	Search Term	Search Term	Search Term	Search Term
Group 1	Risk 1990-2000	Risk 2001-2010	Risk 2011-2017	Sustainability	Resilience	Risk AND Sustainability	Risk AND Resilience	Risk AND Sustainability AND Resilience	
Group 2	Ecological Resilience	Spatial Resilience	Engineering Resilience	Infrastructure Resilience	Robustness	Disaster Resilience	Community Resilience	Urban Resilience	(economic) Development Resilience
Group 3	Planetary Boundaries	Natural Capital and Eco-services	Circular Economy	Social OR Urban Metabolism	Inclusive Economy OR Inclusive Wealth OR Inclusive Growth	Degrowth	Adaptive Governance	Social Cohesion	Social Ecological Systems





Methodology

What is term co-occurrence?

- Data mining clustering technique based on an algorithm for solving an optimization problem
- VOSviewer text mining software, which performs part-of-speech tagging and uses a filter to identify noun phrases (terms), for which a relevance score is calculated (van Eck and Waltman 2014)
- Terms are derived from the titles and abstracts of the records from WoS

Legend

Relevance score - low relevance score indicates that a term co-occurs with other terms more or less randomly; high relevance score is attributed to noun phrases that co-occur mainly with a limited set of other noun phrases

Label & Circle - Terms are represented by their label and a circle, whose size depends on the number of publications that contain the term in the title or abstract

Links & Link strength - connections or relations between two terms. The strength depends on the number of publications in which two terms occur together; the stronger the link, the thicker the line

Cluster & Density - a set of terms strongly linked together. Terms that co-occur often are located closer to each other; terms that have no or almost no co-occurrence are located further apart





Methodology

What is bibliographic coupling?

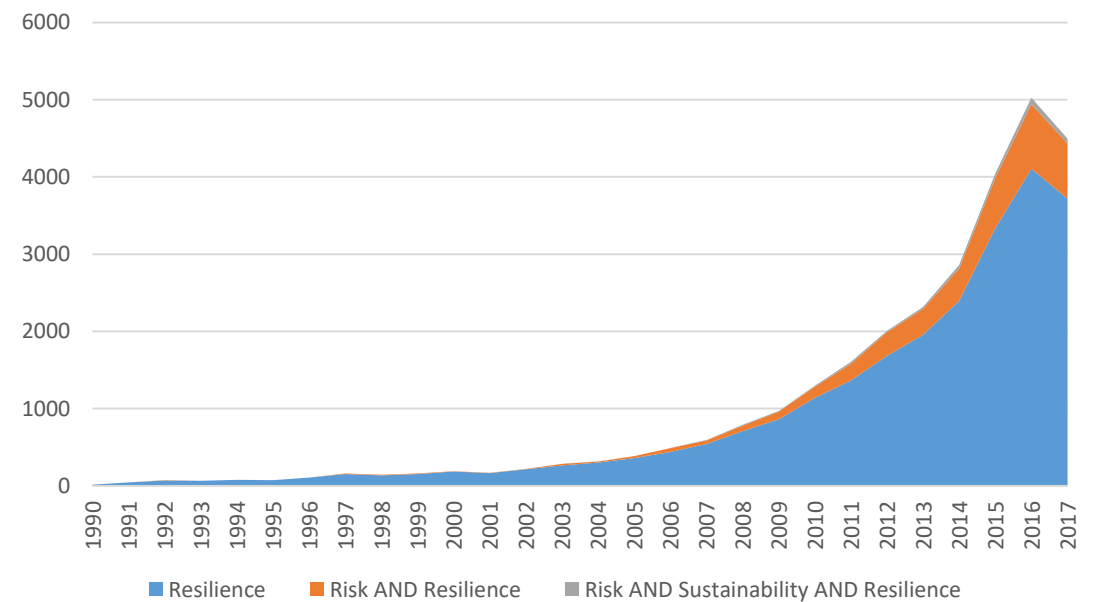
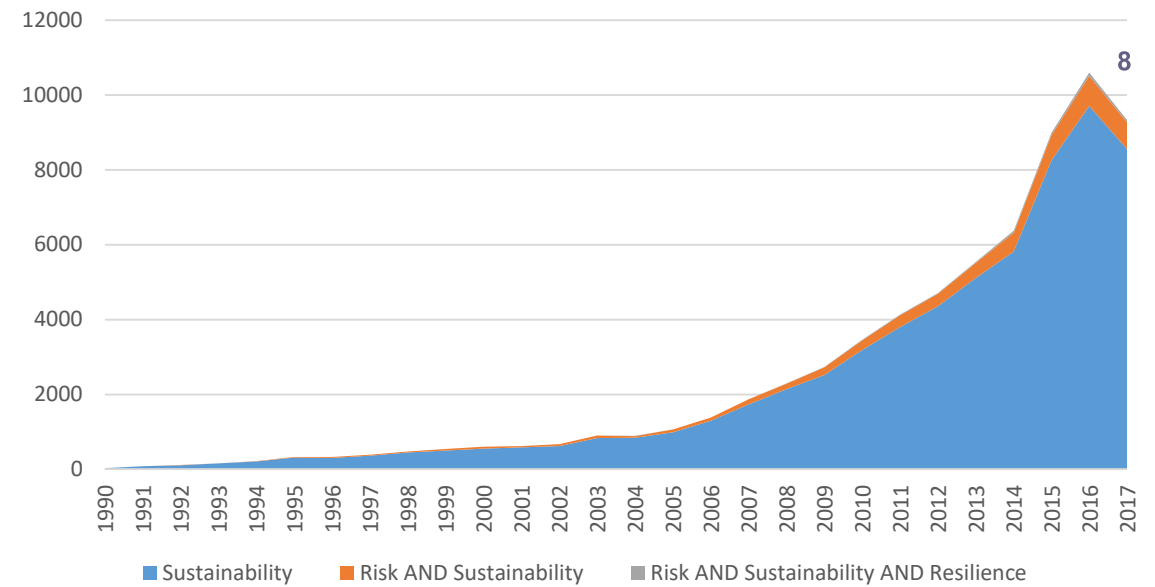
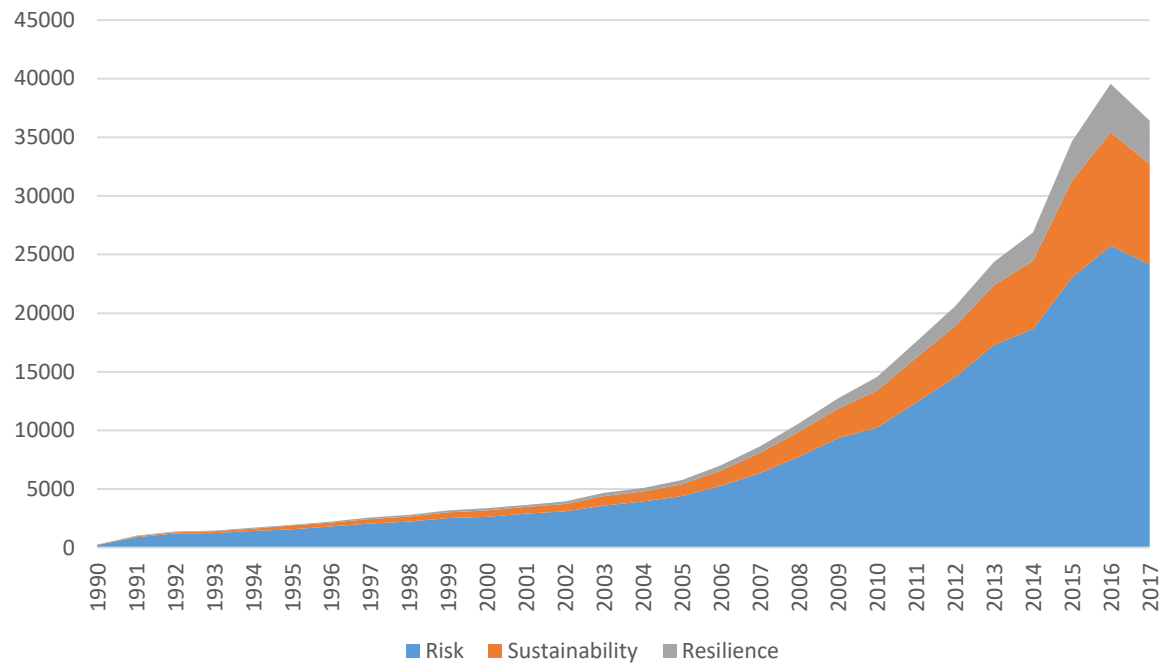
- In a bibliographic coupling analysis the relatedness of items is based on the number of references they share: the larger the number of shared references, the stronger the bibliographic coupling is between them.
 - Two publications are said to be bibliographically coupled if there is a third publication that is cited by both publications (Kessler 1963 and Van Eck and Waltman 2014).
-

Some specifications:

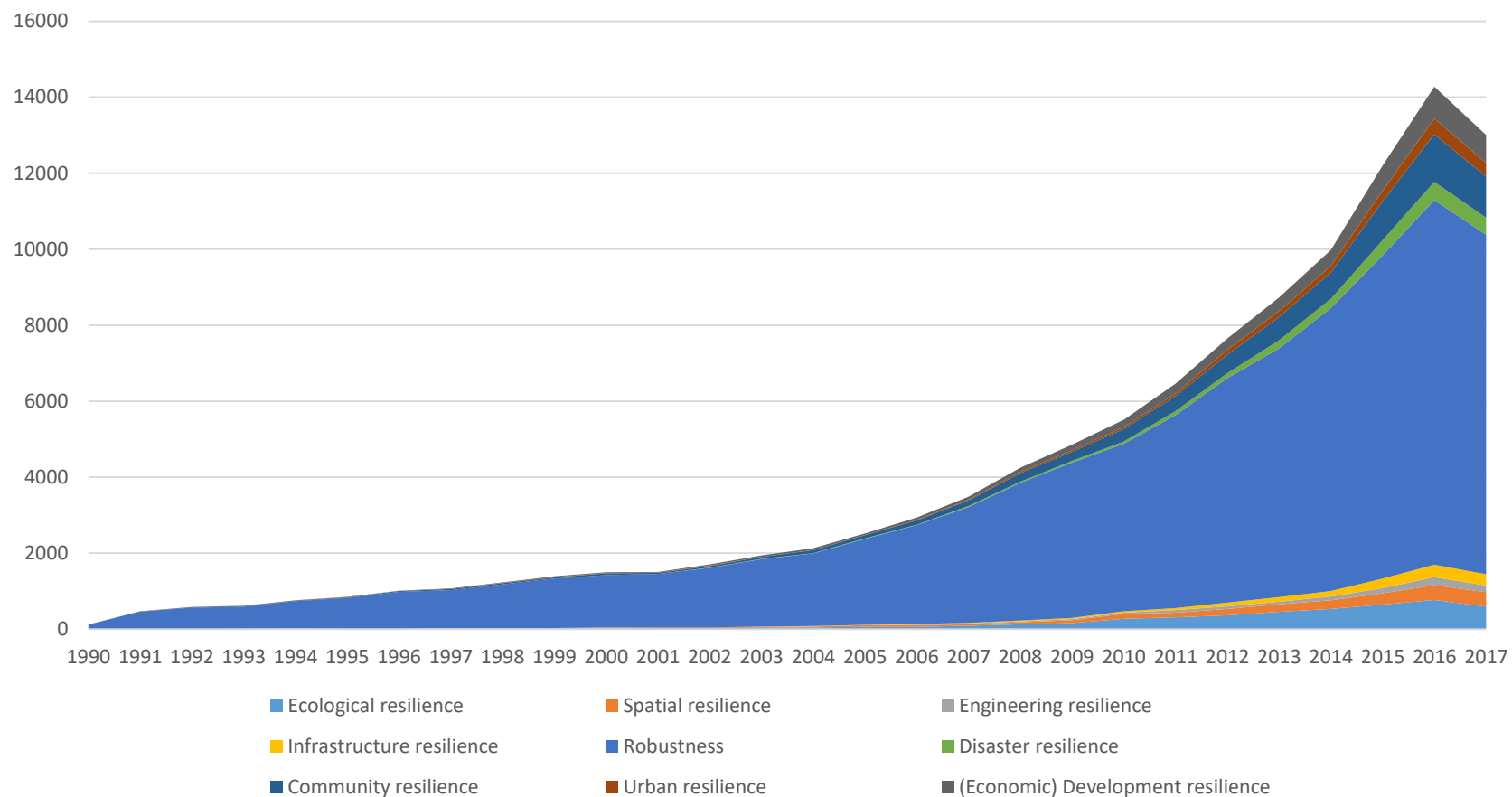
- We represent the relatedness of three items: authors, countries and organizations, using density visualization format for authors and organizations and network visualization format for countries.
- We use the fractional counting method b/c it purposefully diminishes the importance of highly cited publications, which allows us to be inclusive of perspectives that are not bound by what passes as “significant” research based on citation numbers.



Evolution of research

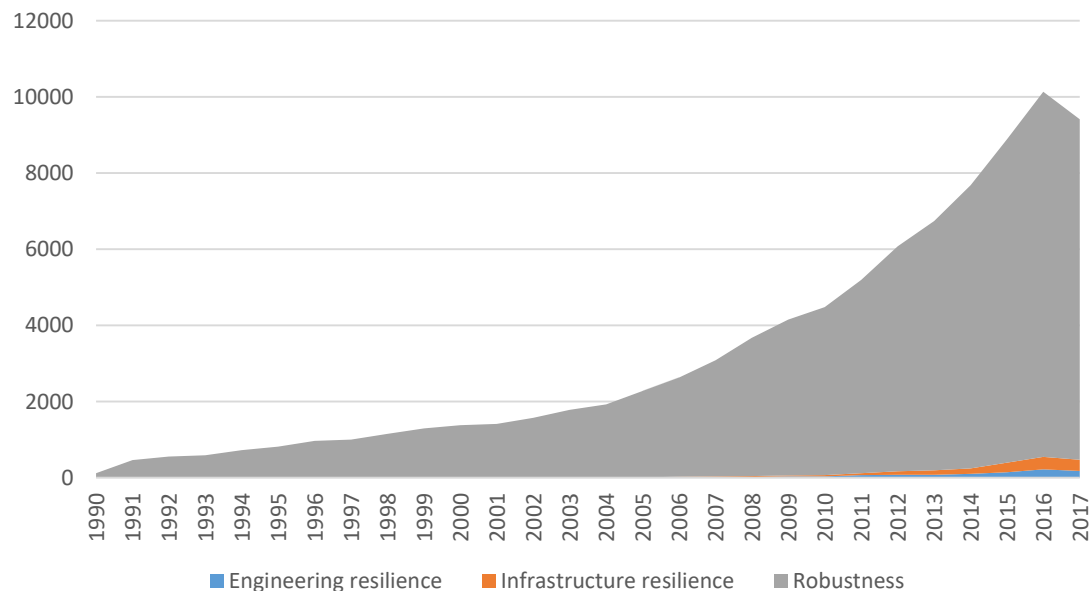


Evolution of research



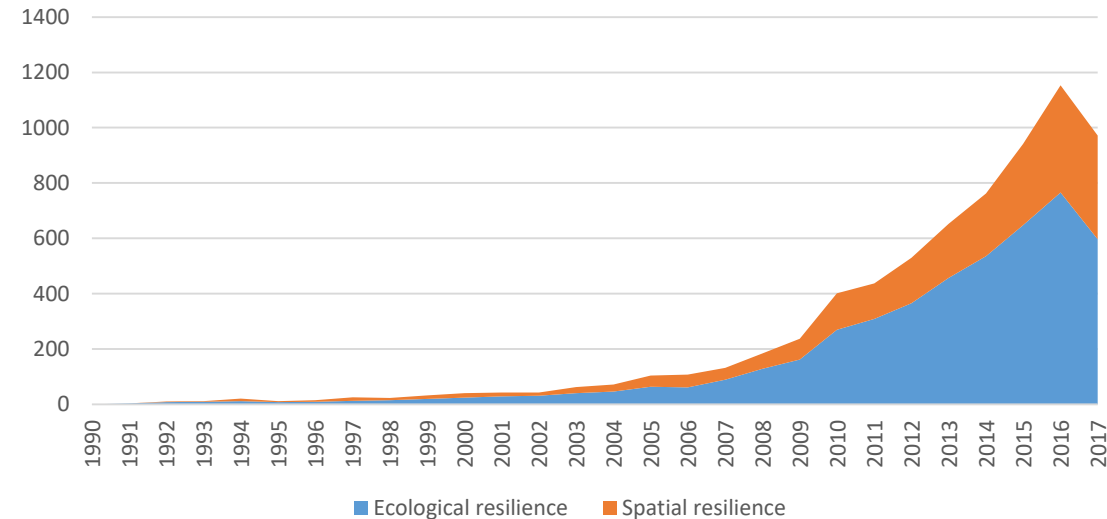
Evolution of research

Engineered systems

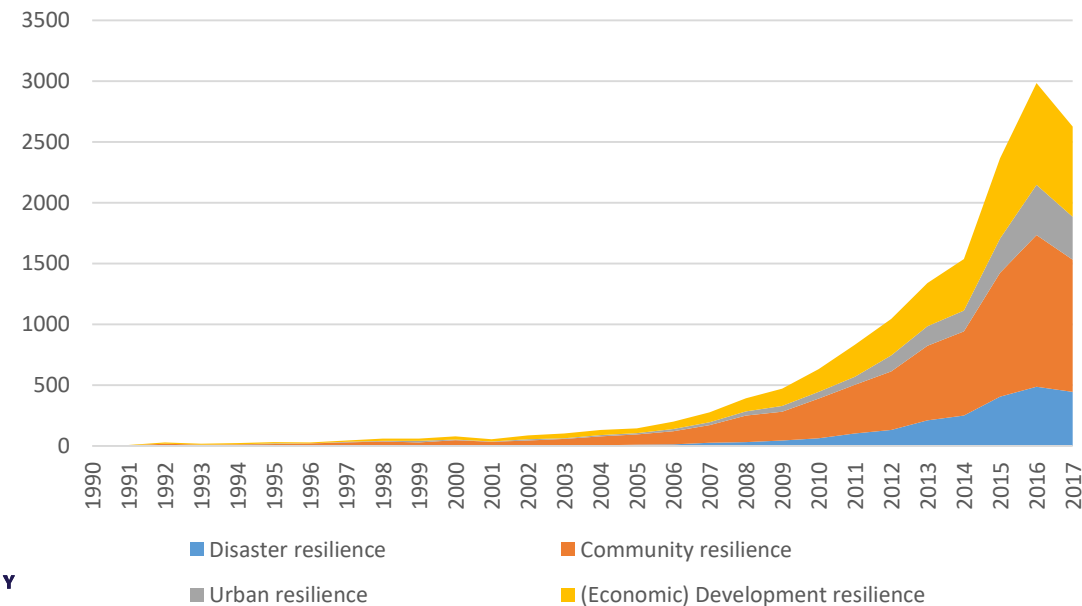


Ecological systems

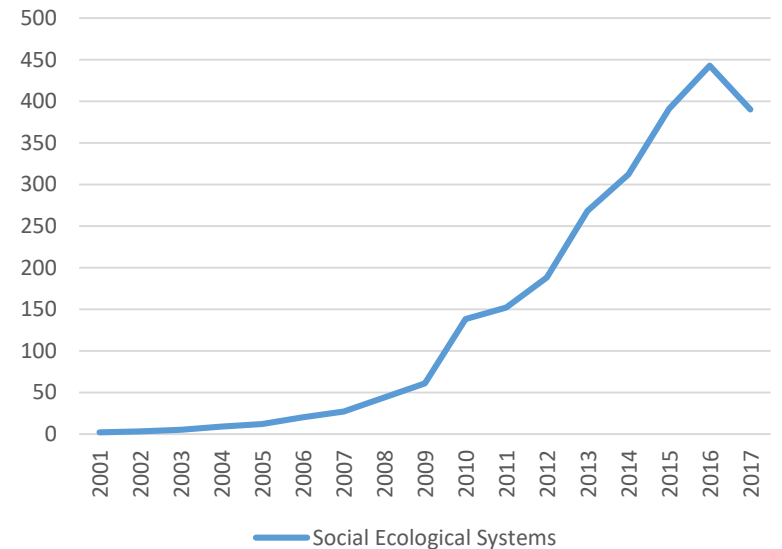
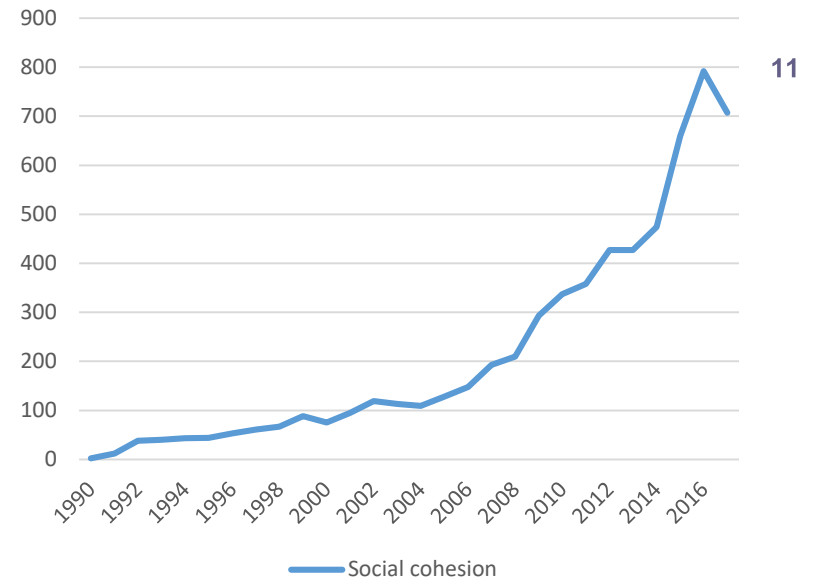
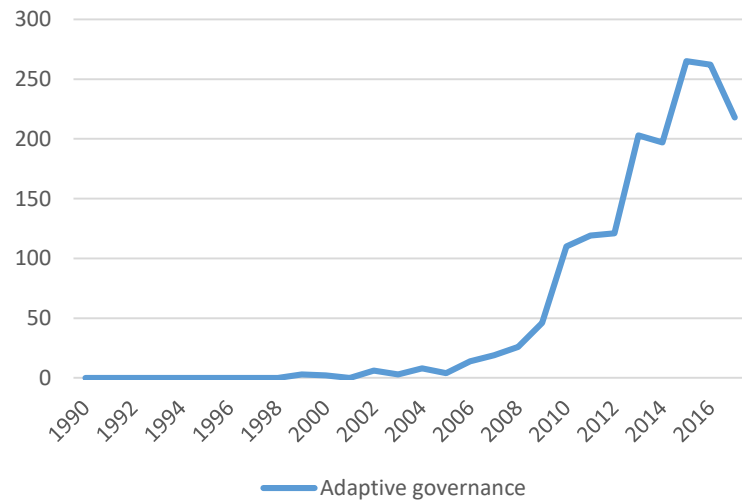
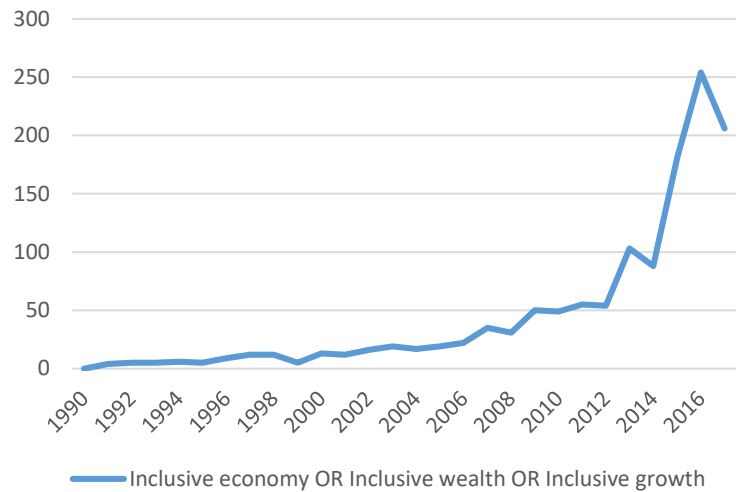
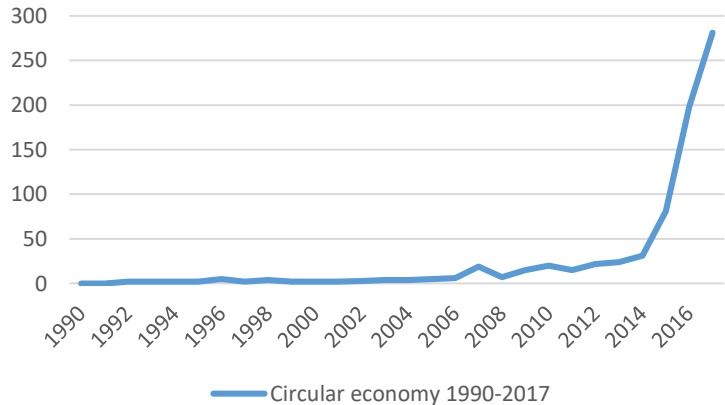
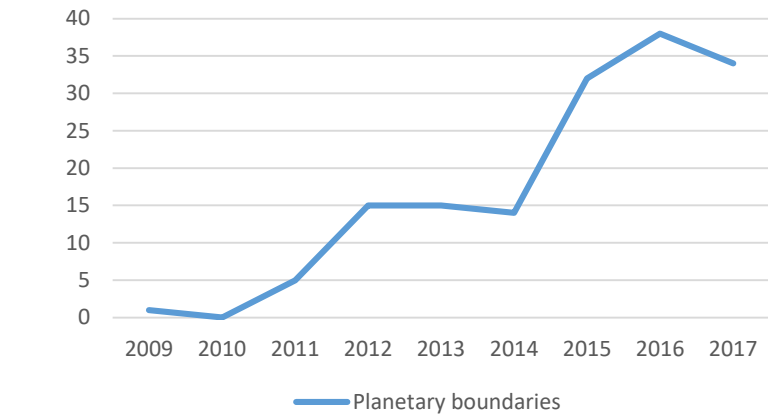
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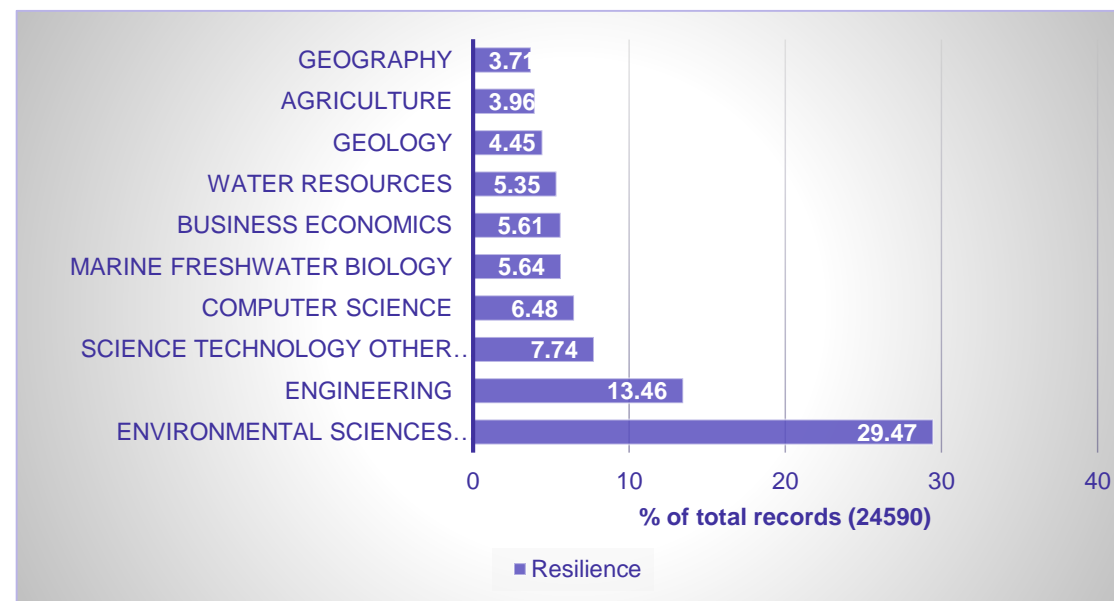
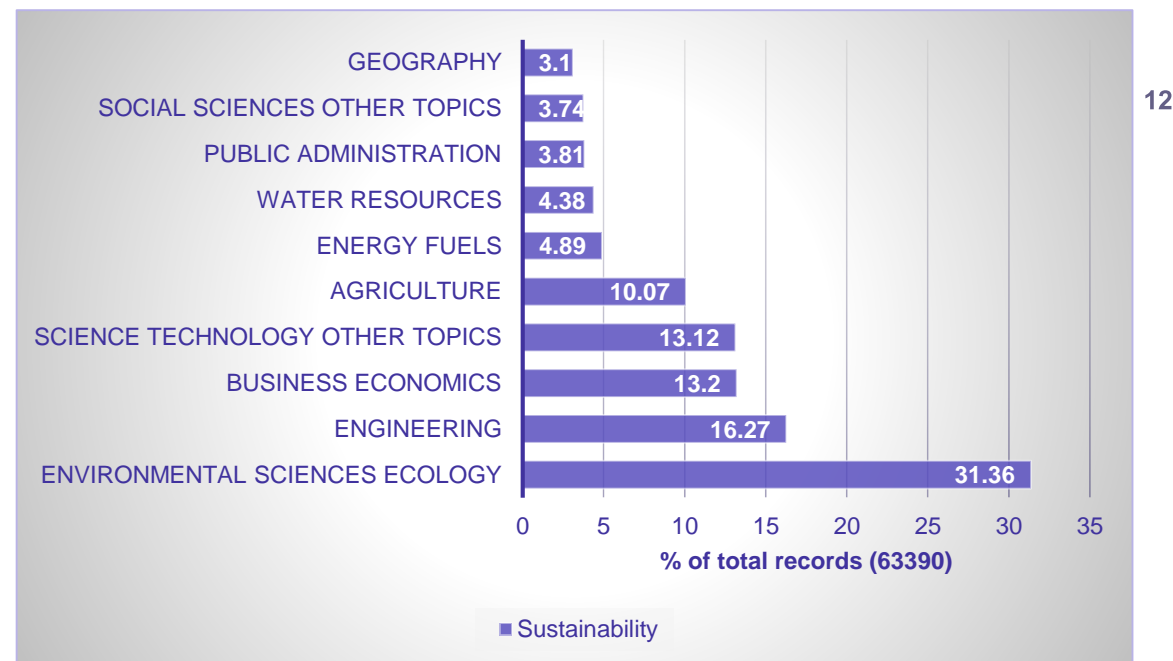
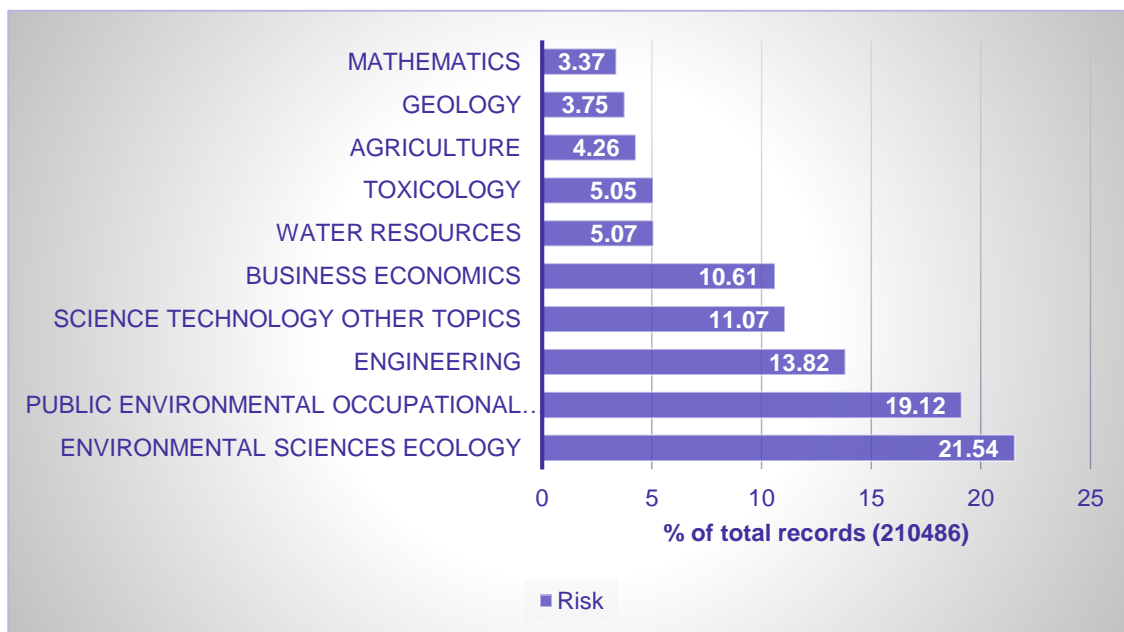
Social systems



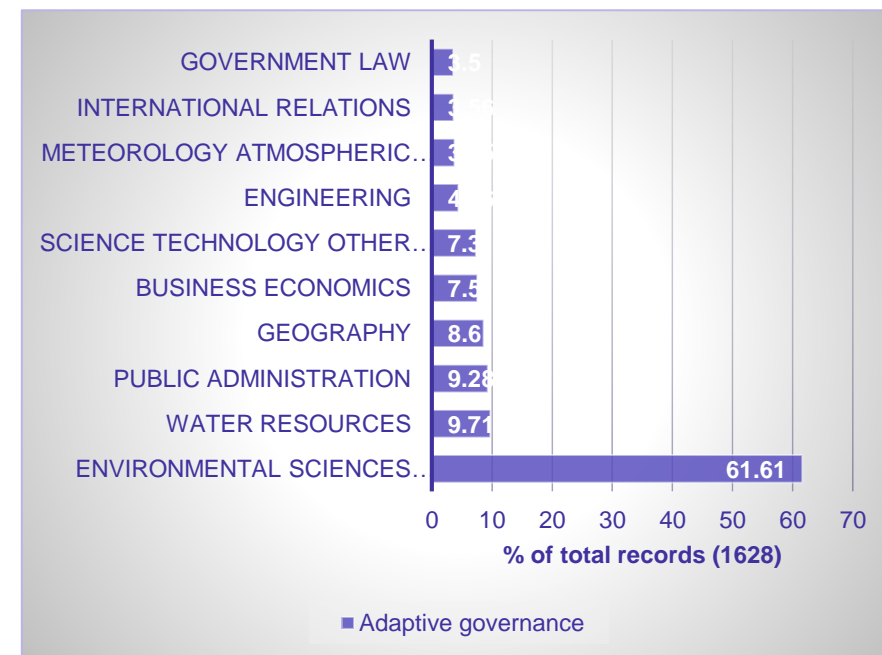
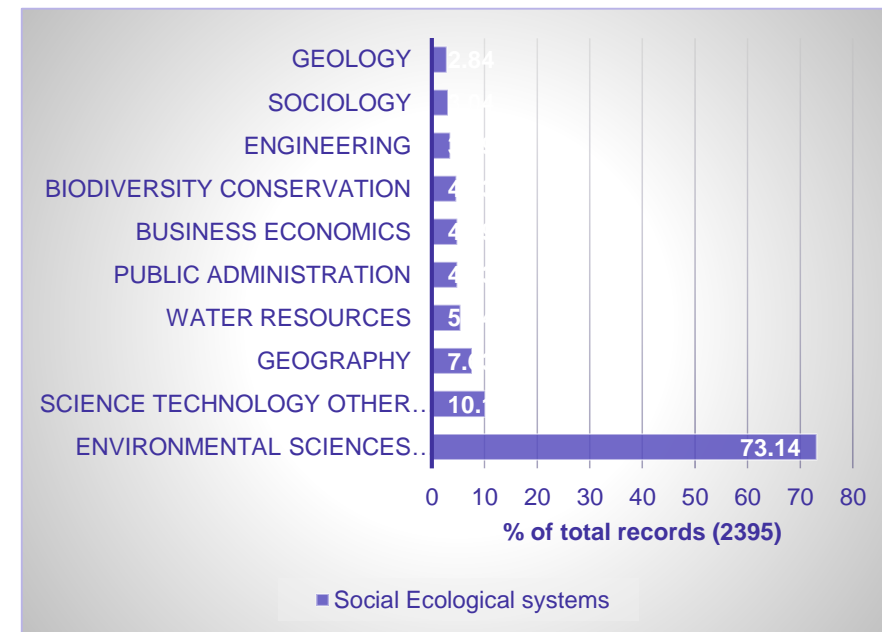
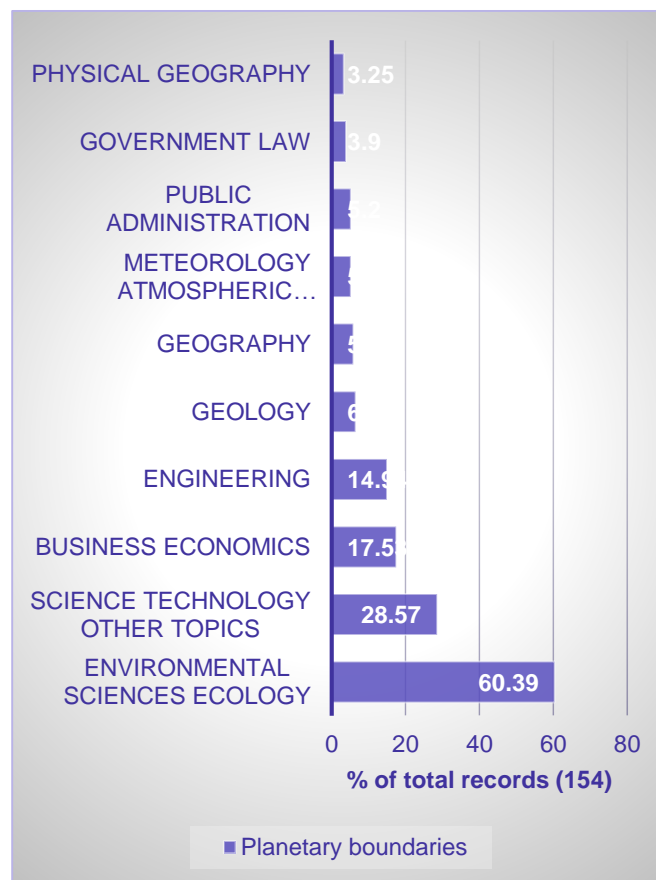
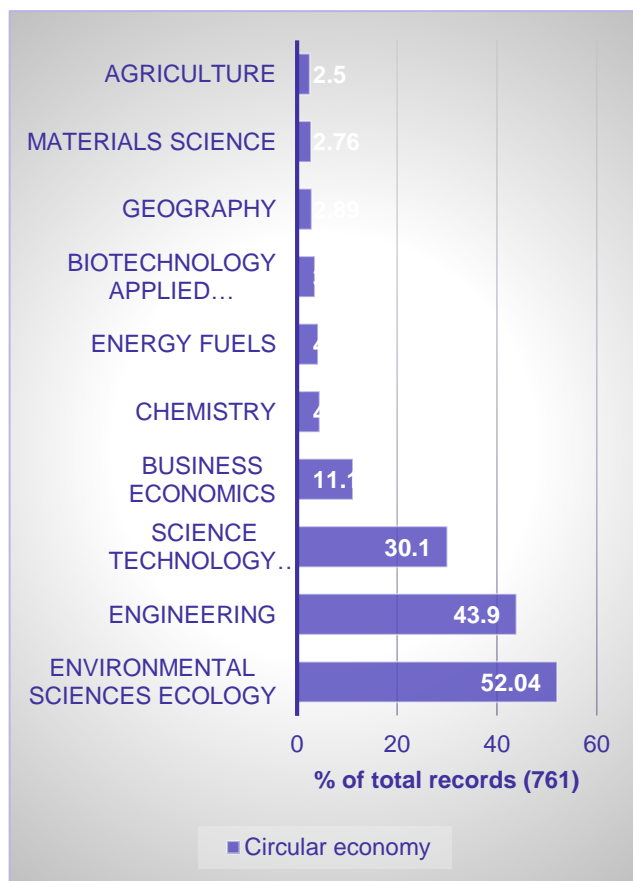
Evolution of research



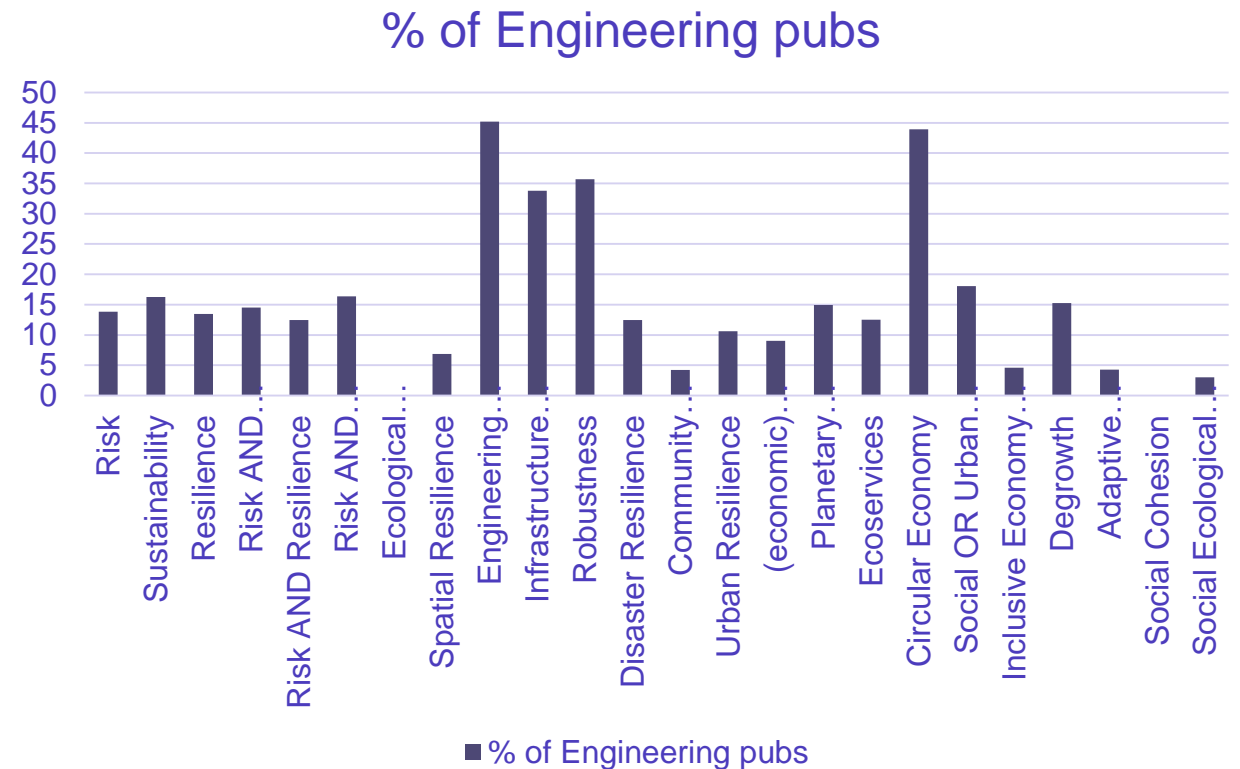
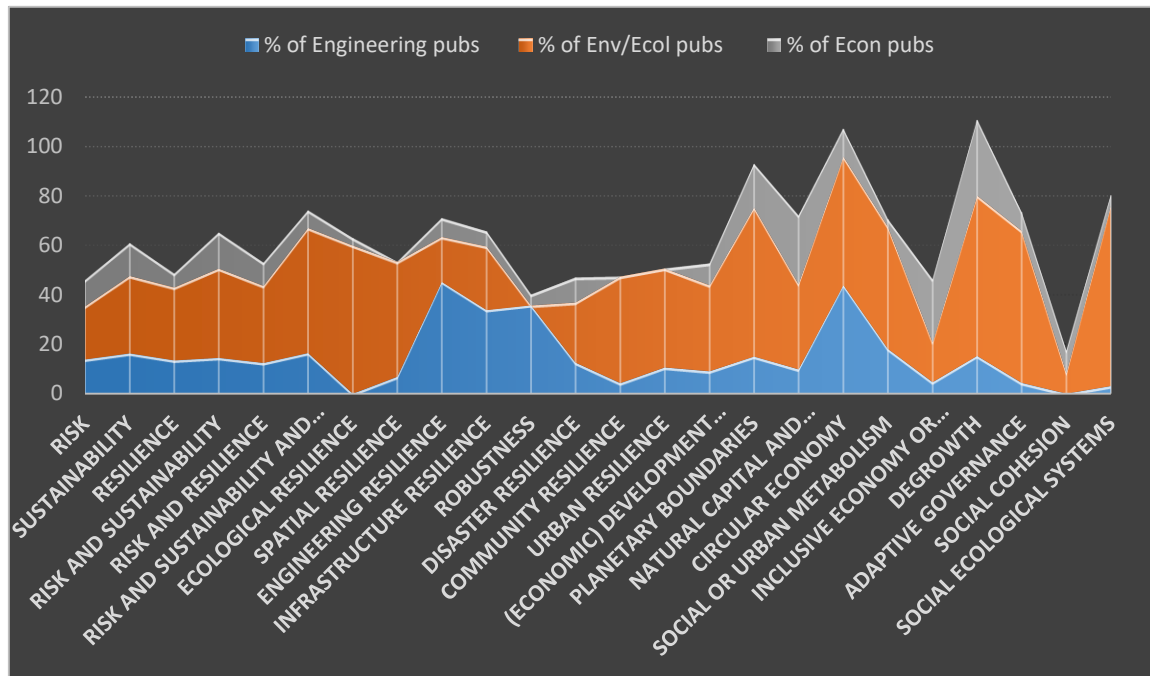
Composition of research



Composition of research



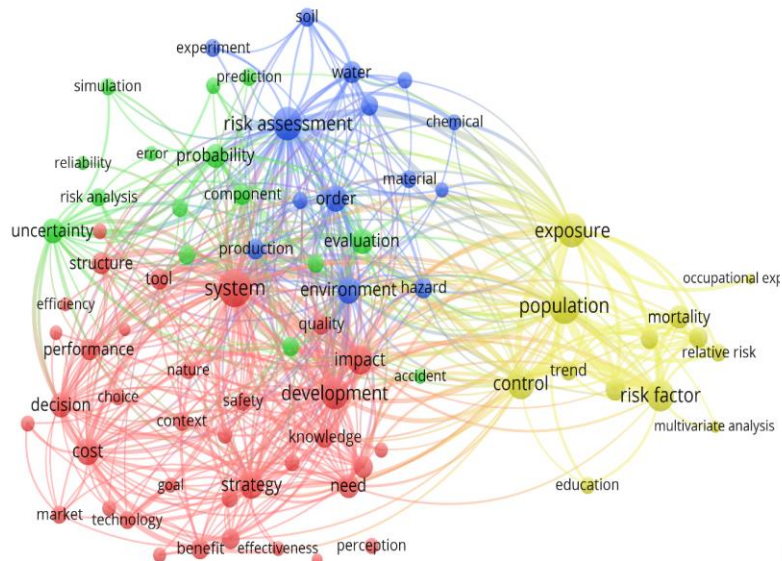
Composition of research



Term Co-occurrence

Risk 1990-2017

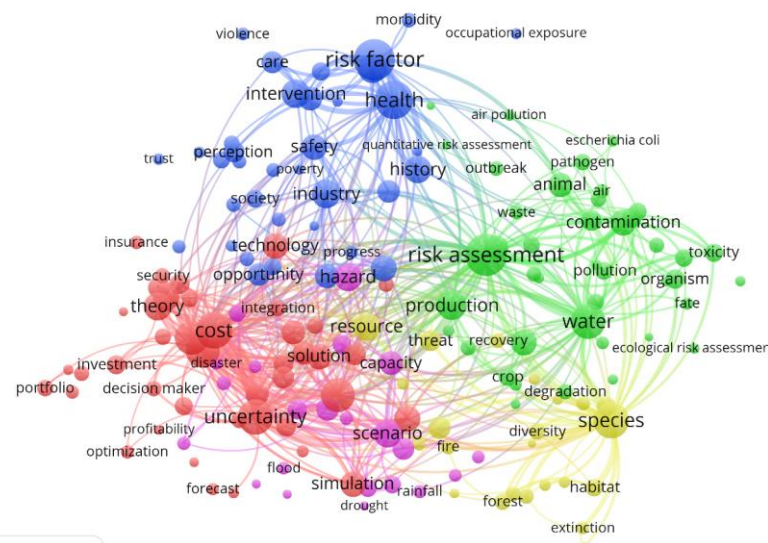
1990-2000



VOSviewer

Total nr. records: 17,729
Min. occurrence: 200
Nr. terms selected: 78 (of 349)

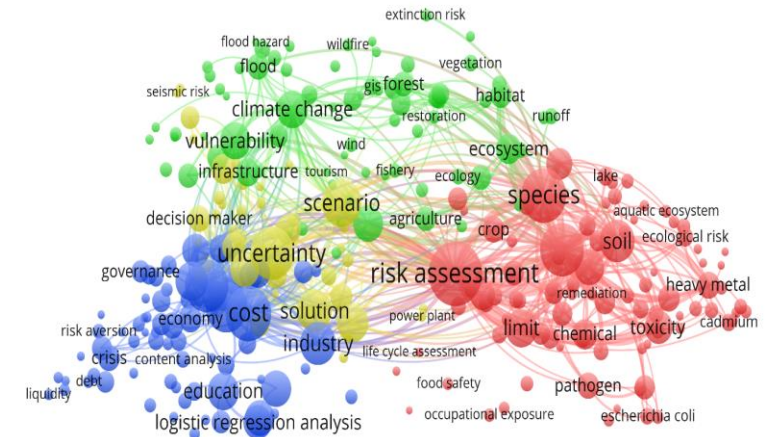
2001-2010



VOSviewer

Total nr. records: 56,622
Min. occurrence: 200
Nr. terms selected: 165 (of 1144)

2011-2017



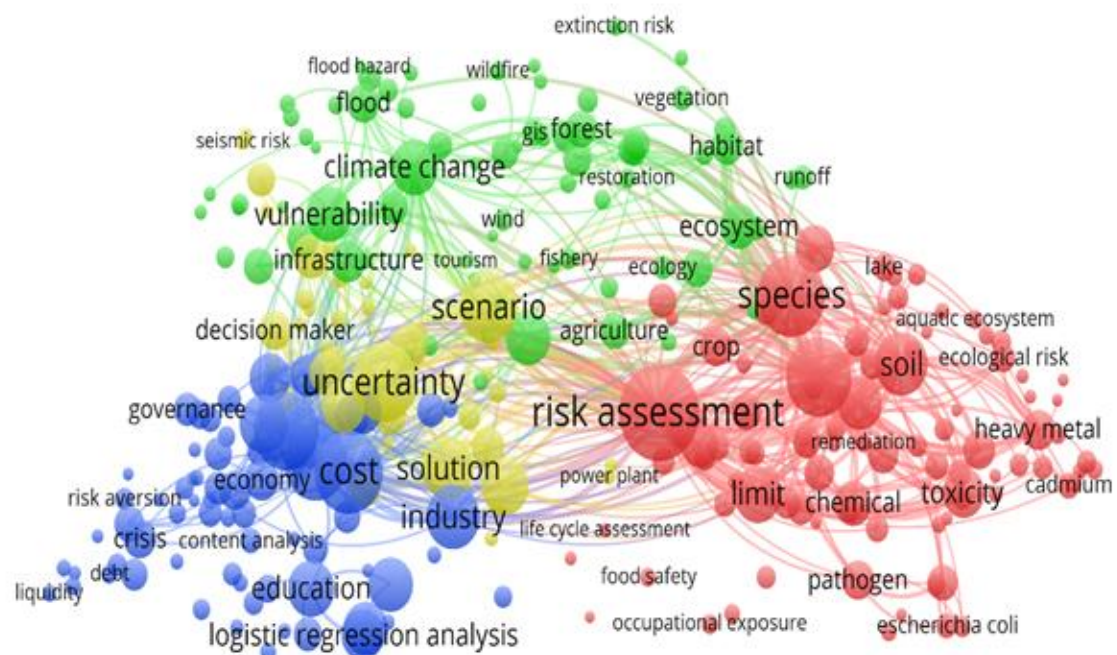
VOSviewer

Total nr. records: 143,825
Min. occurrence: 200
Nr. terms selected: 277 (of 2752)



Term Co-occurrence

Risk & Risk AND Sustainability AND Resilience

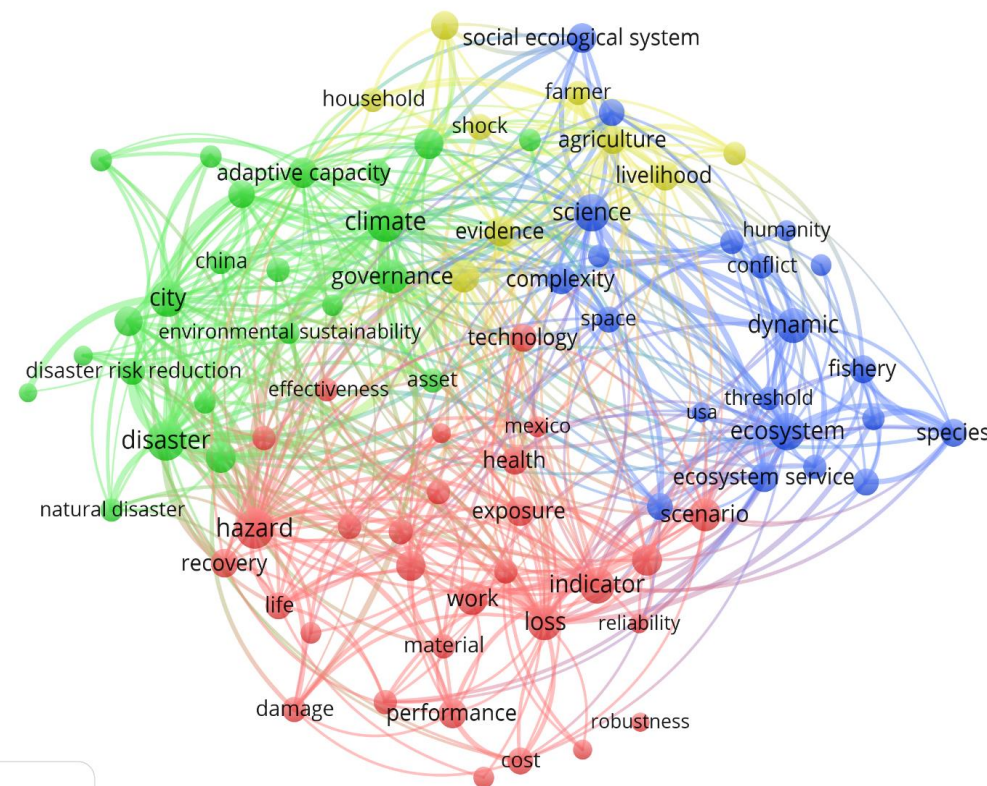


Risk 2011-2017

Total nr. records: 143,825
Min. occurrence: 200
Nr. terms selected: 277 (of 2752)



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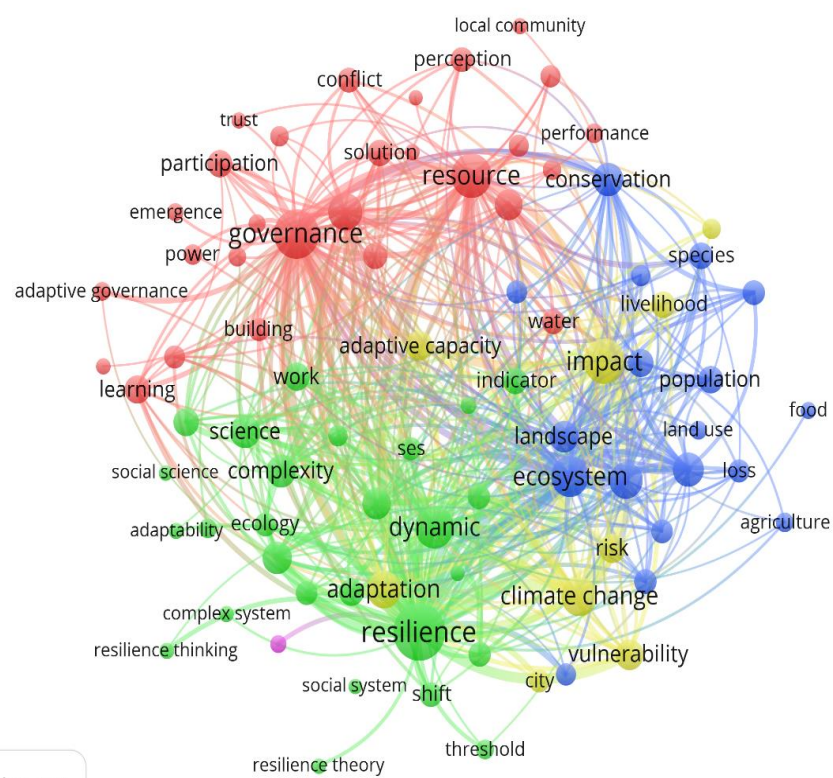


Risk AND Res AND Sust

Total nr. records: 373
Min. occurrence: 10
Nr. terms selected: 83 (of 252)

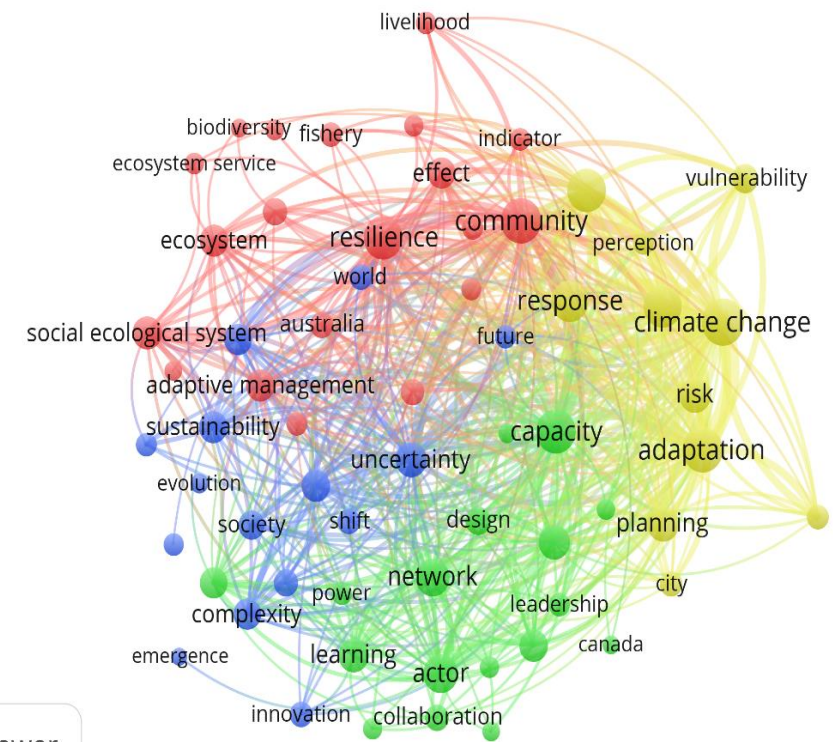
Term Co-occurrence

Social-Ecological Systems & Adaptive Governance



Social-Ecological Systems

Total nr. records: 2395
 Min. occurrence: 50
 Nr. terms selected: 83 (of 294)



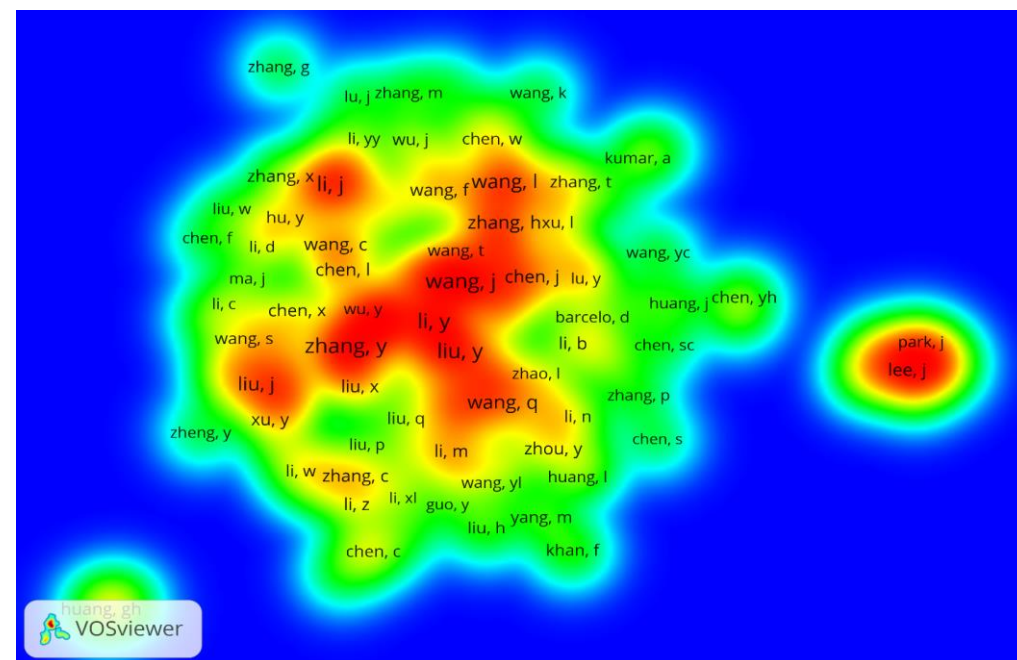
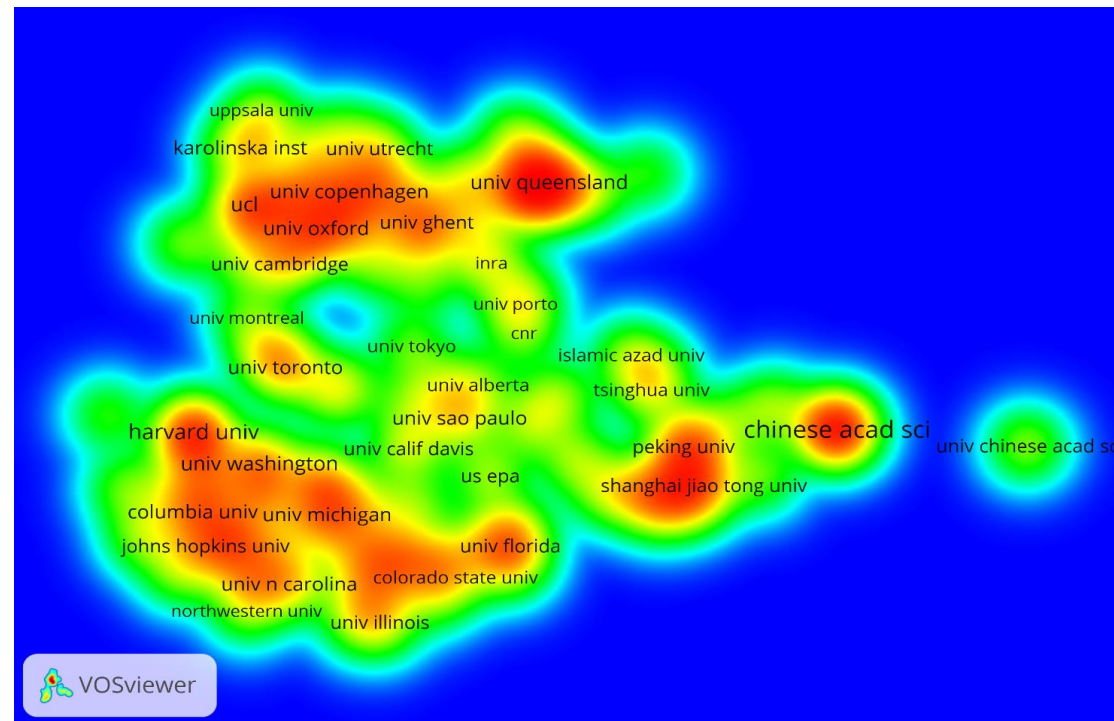
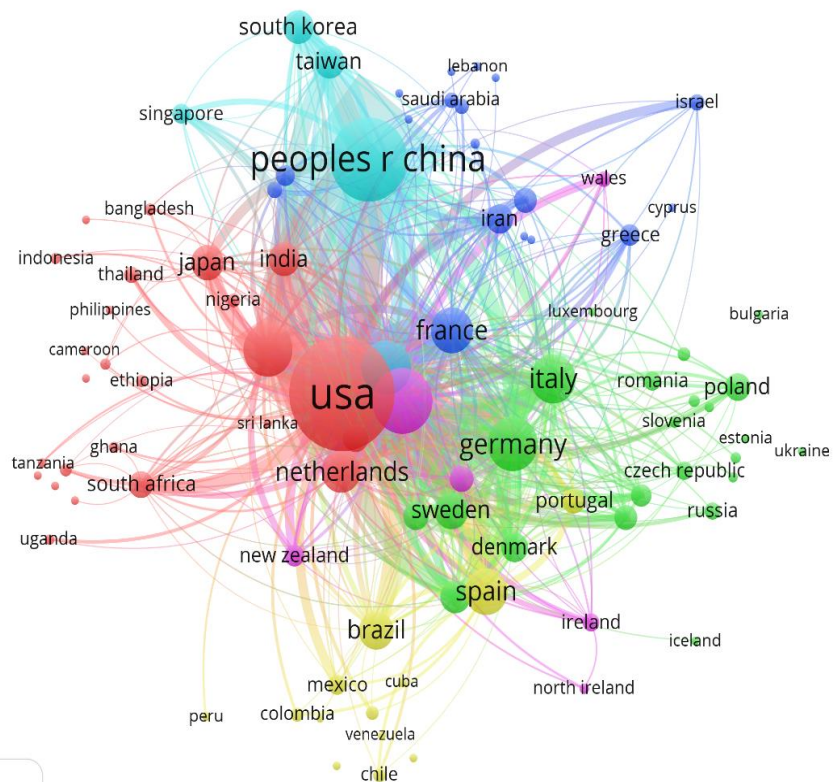
Adaptive Governance

Total nr. records: 1623
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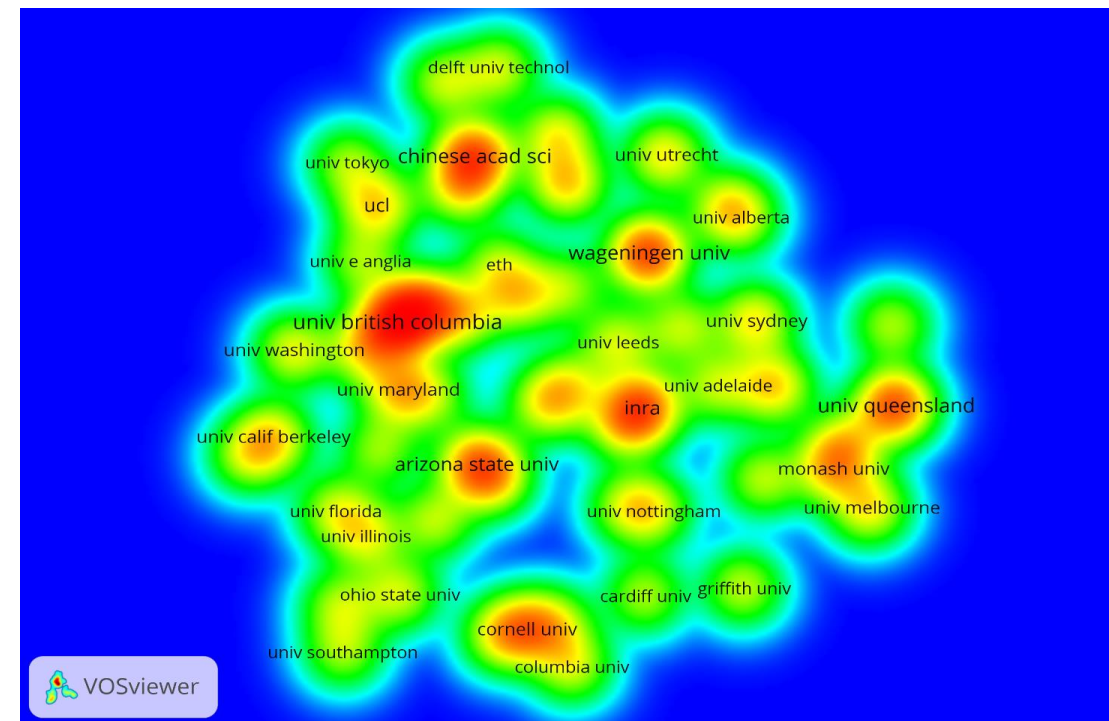
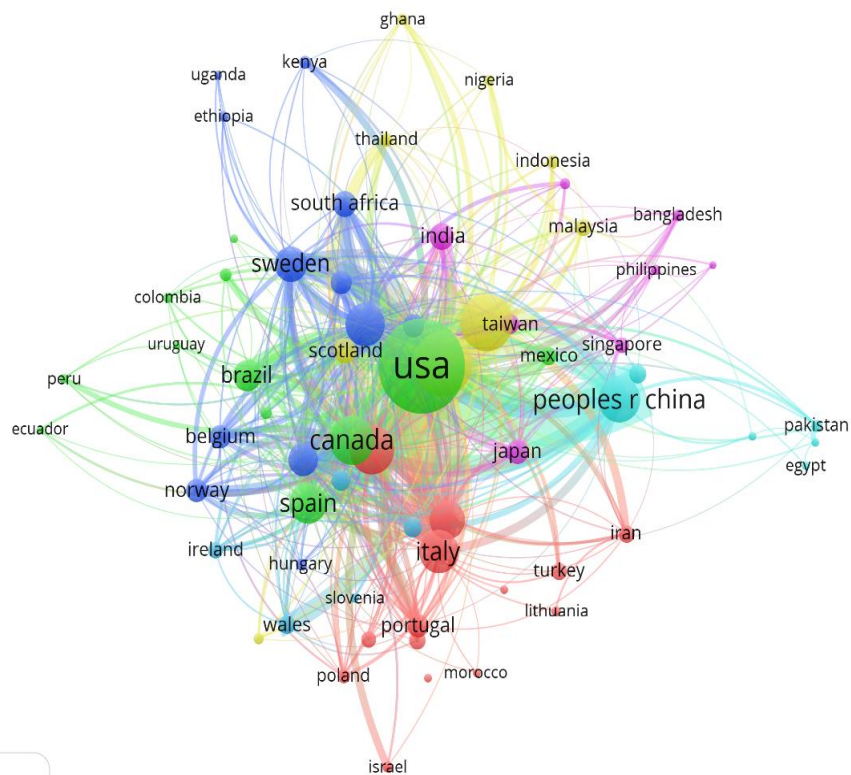
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Risk 2011-2017

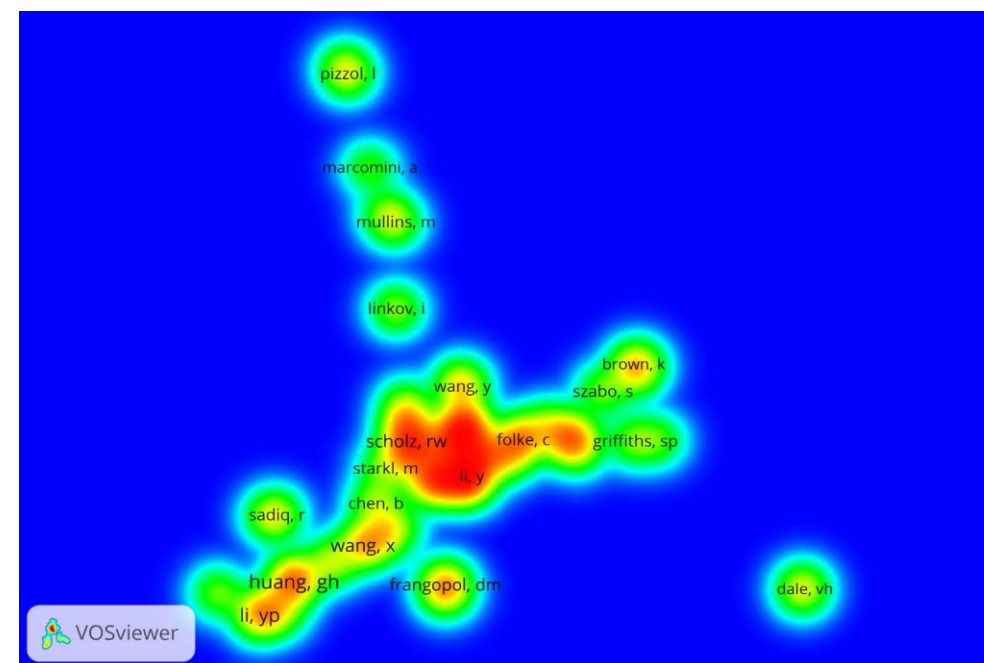


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Risk AND Sustainability



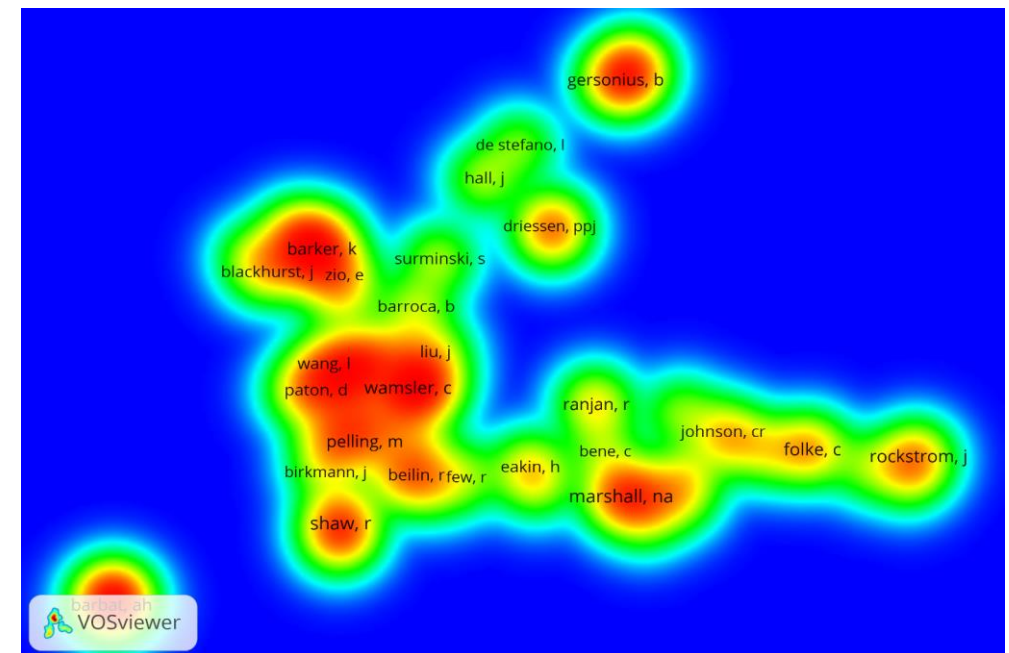
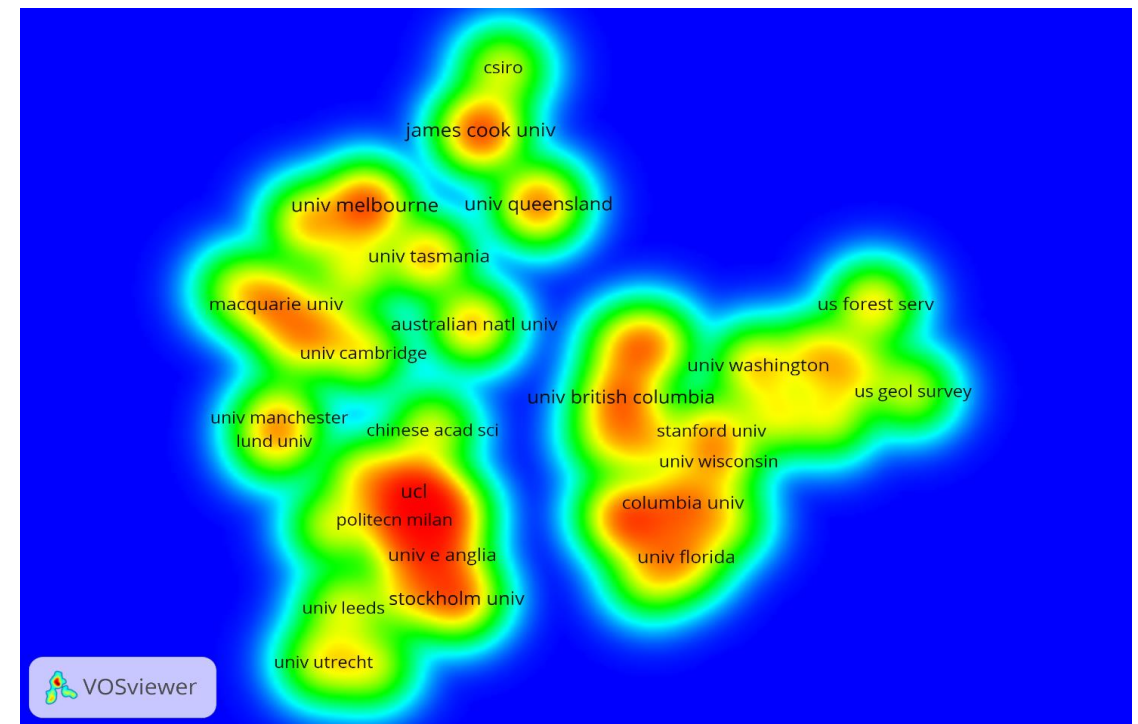
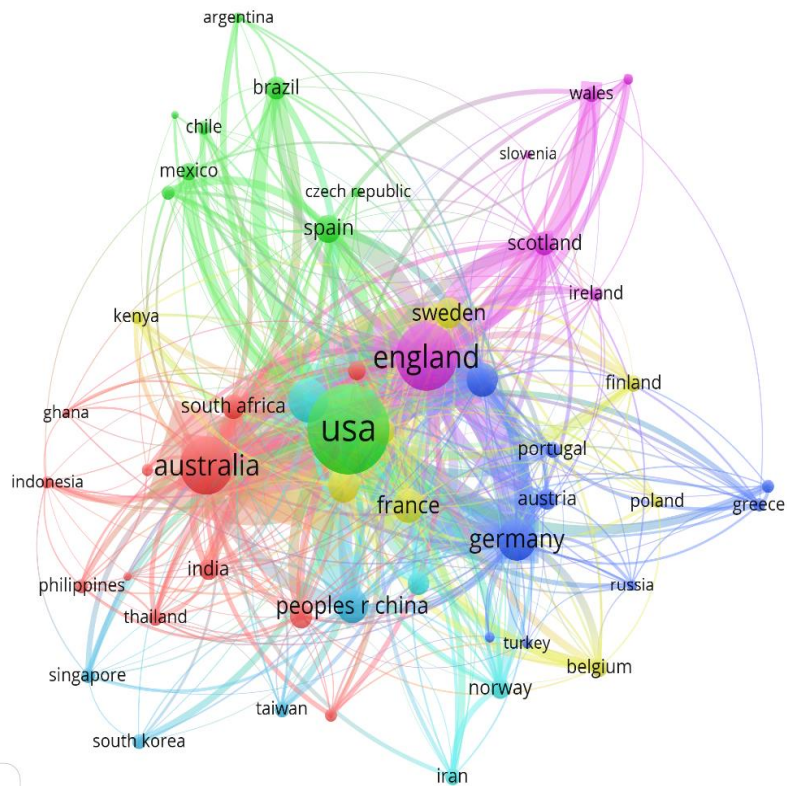
21



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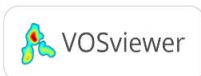
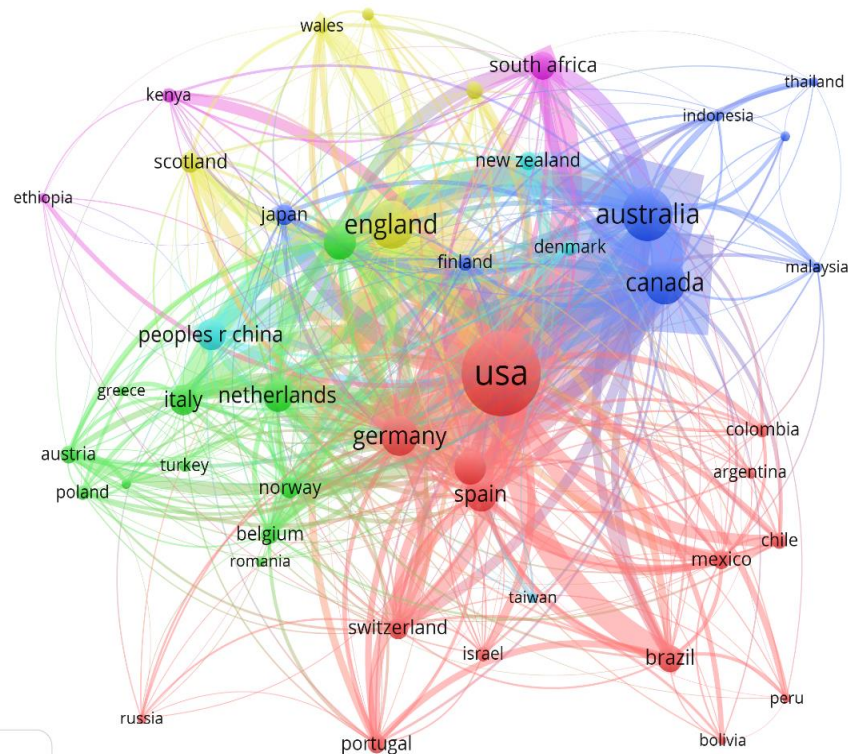
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Risk AND Resilience

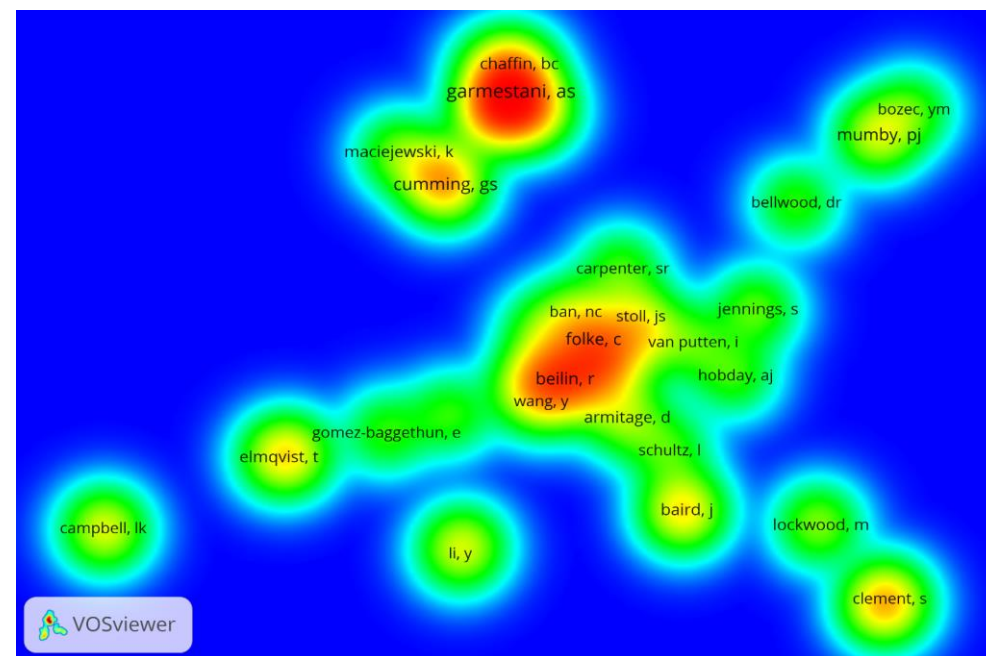
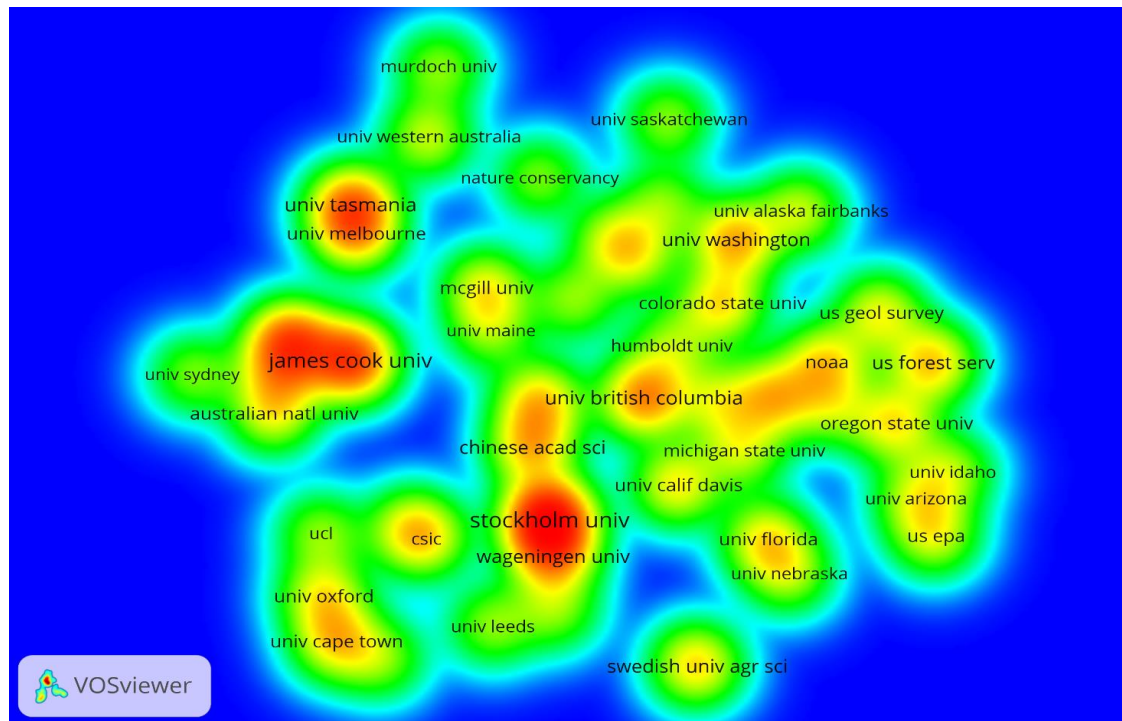


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Ecological resilience

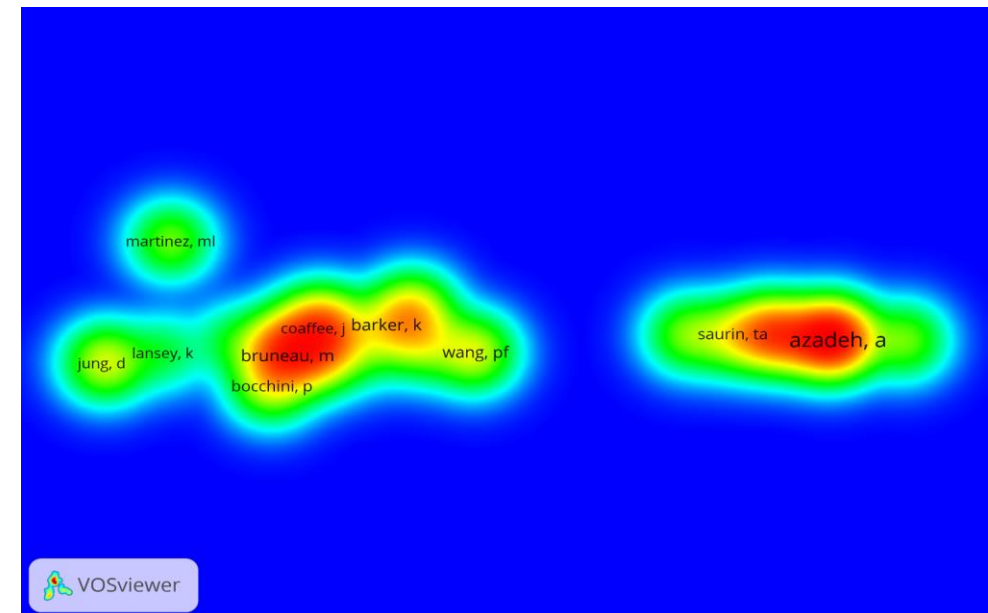
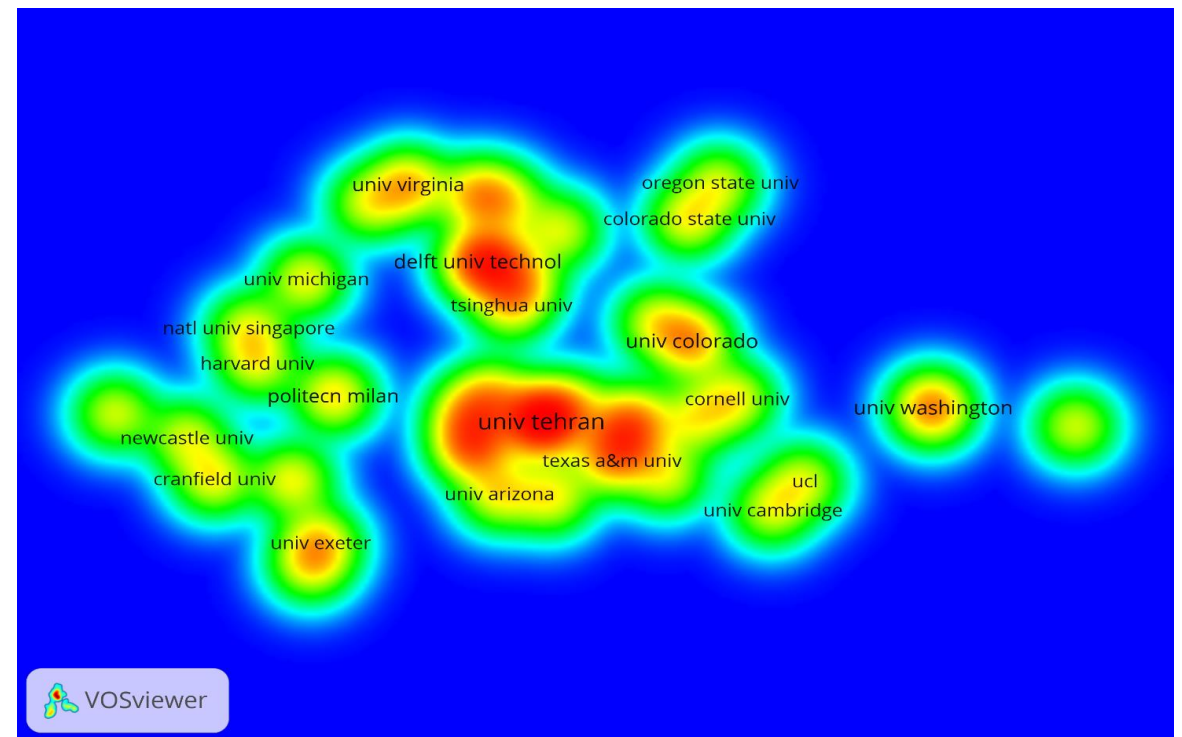
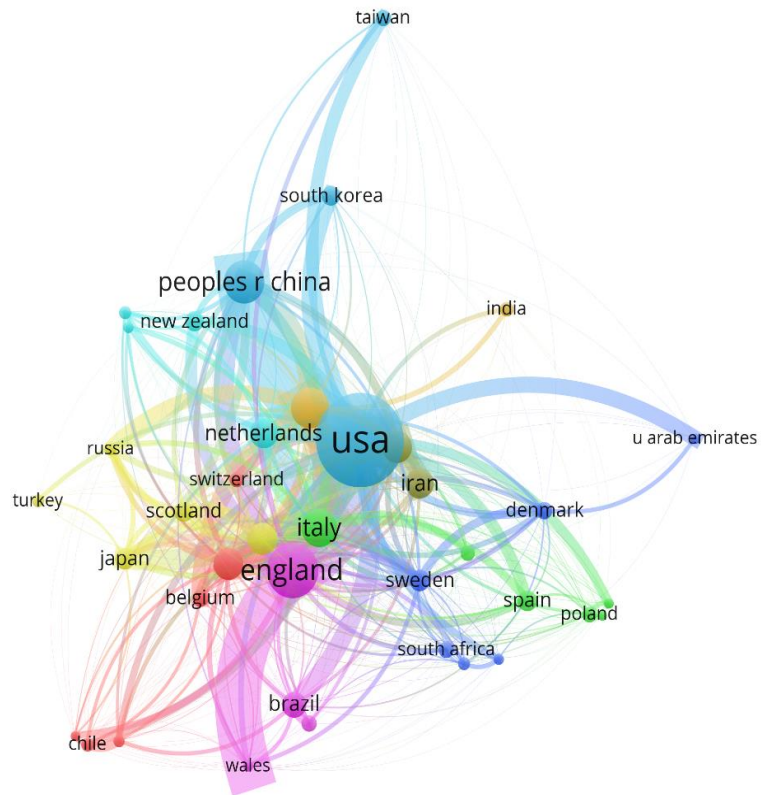


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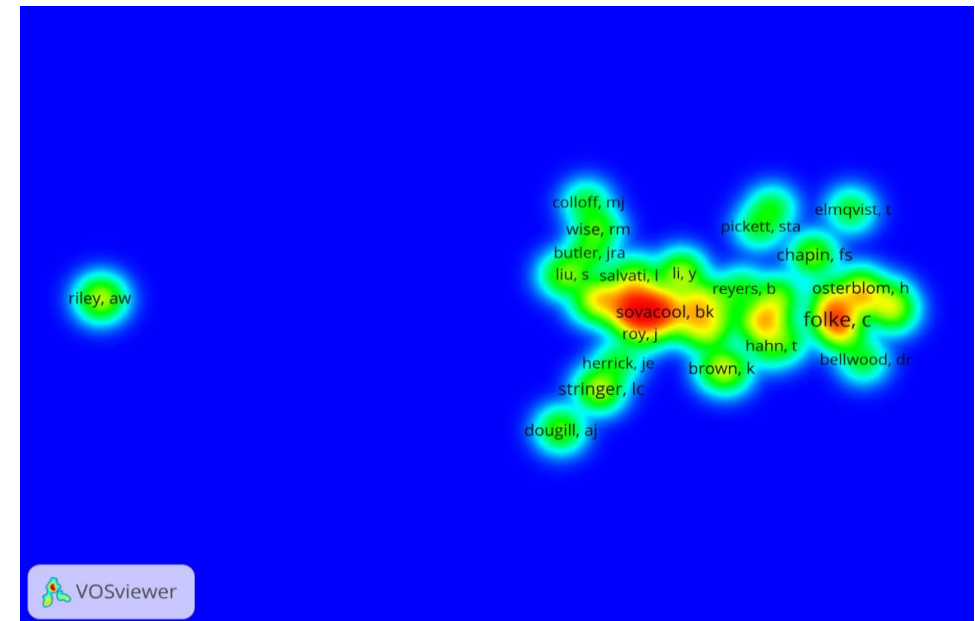
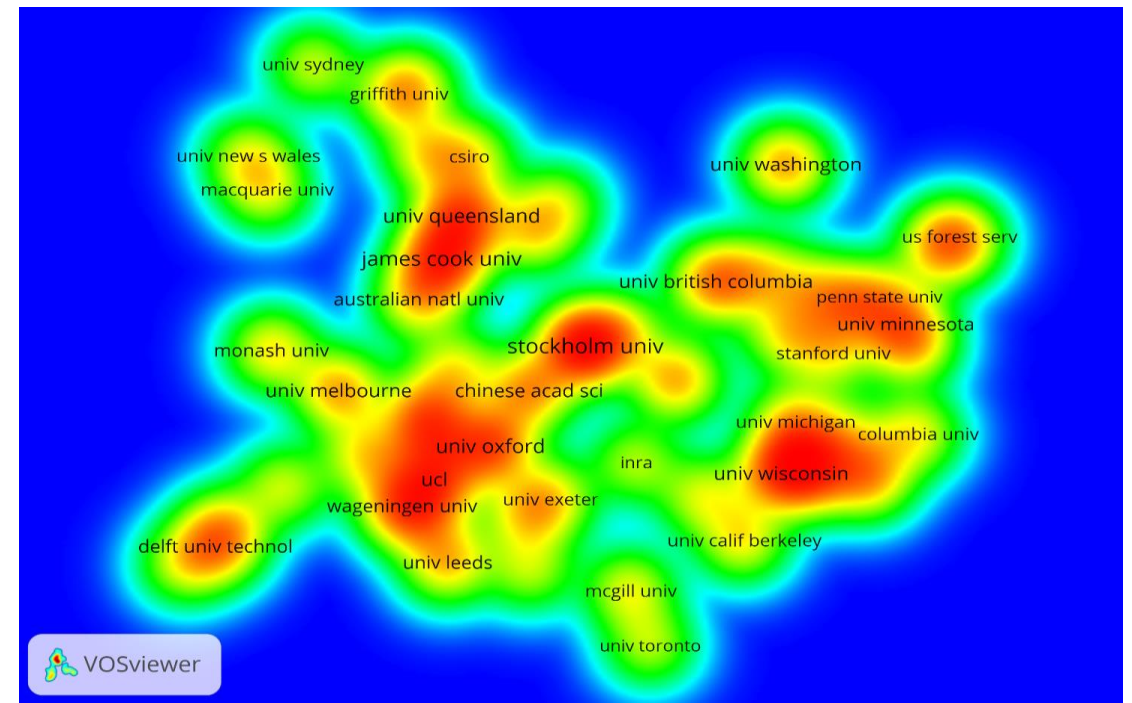
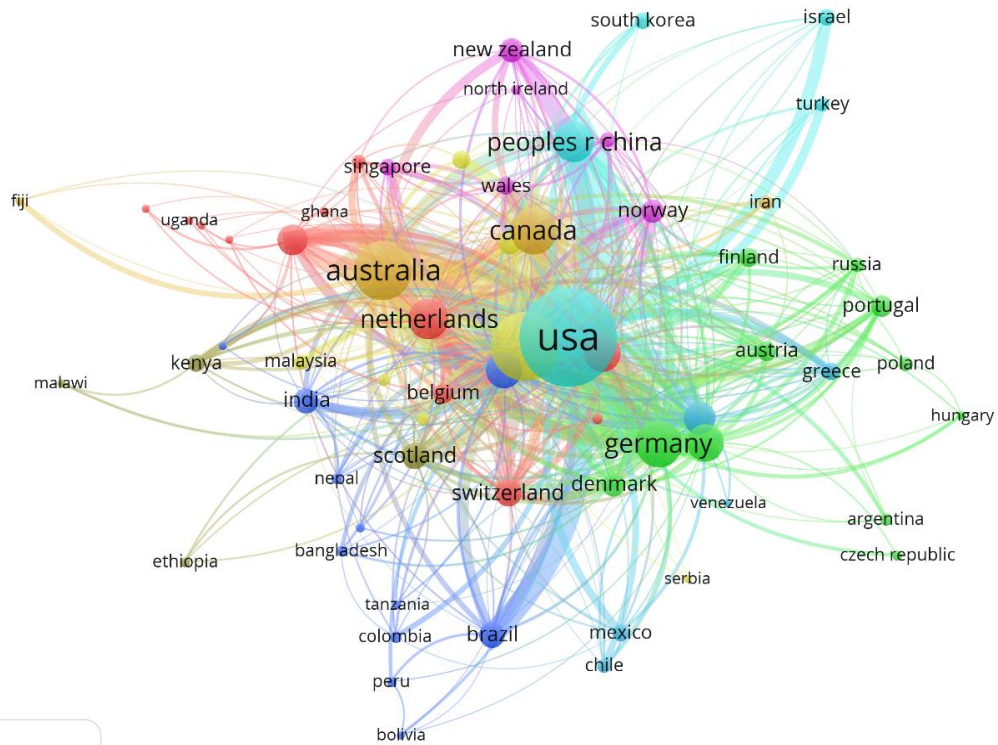
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Engineering resilience



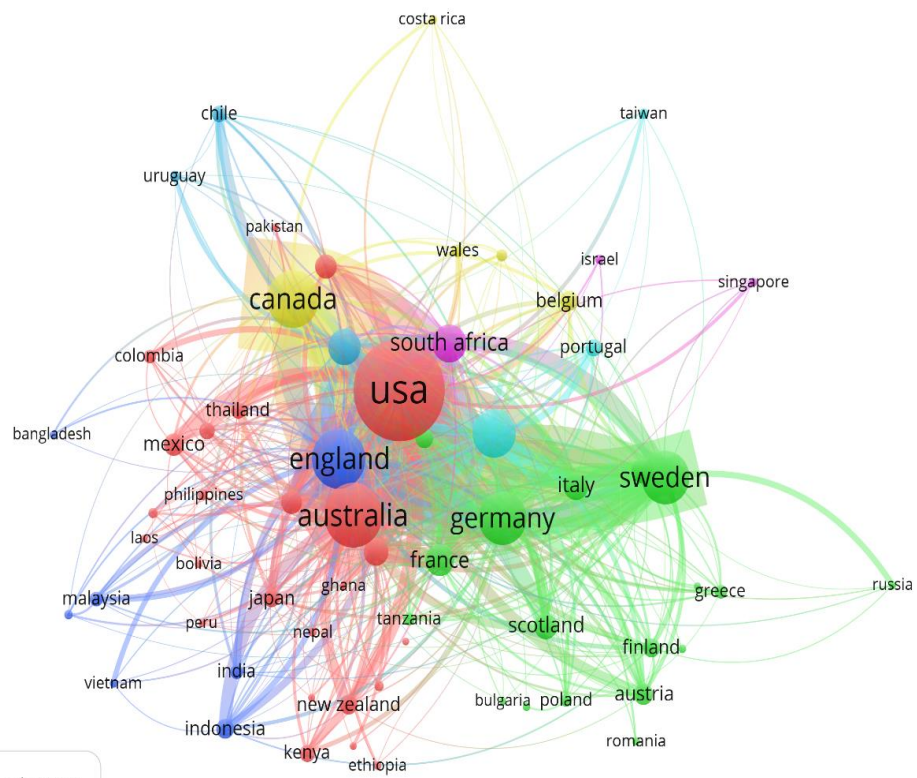
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(economic) Development resilience

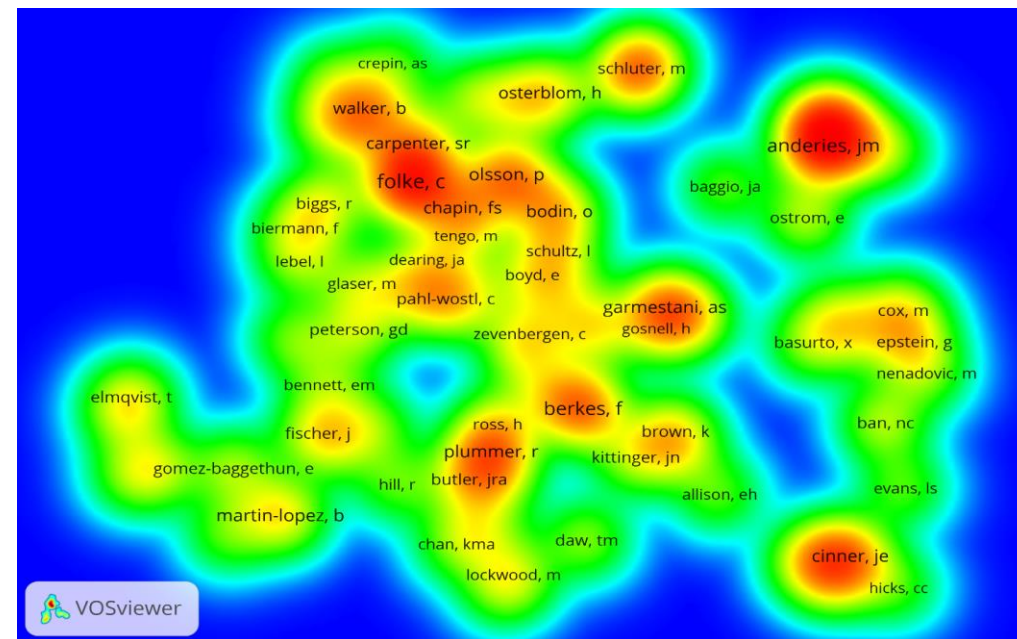
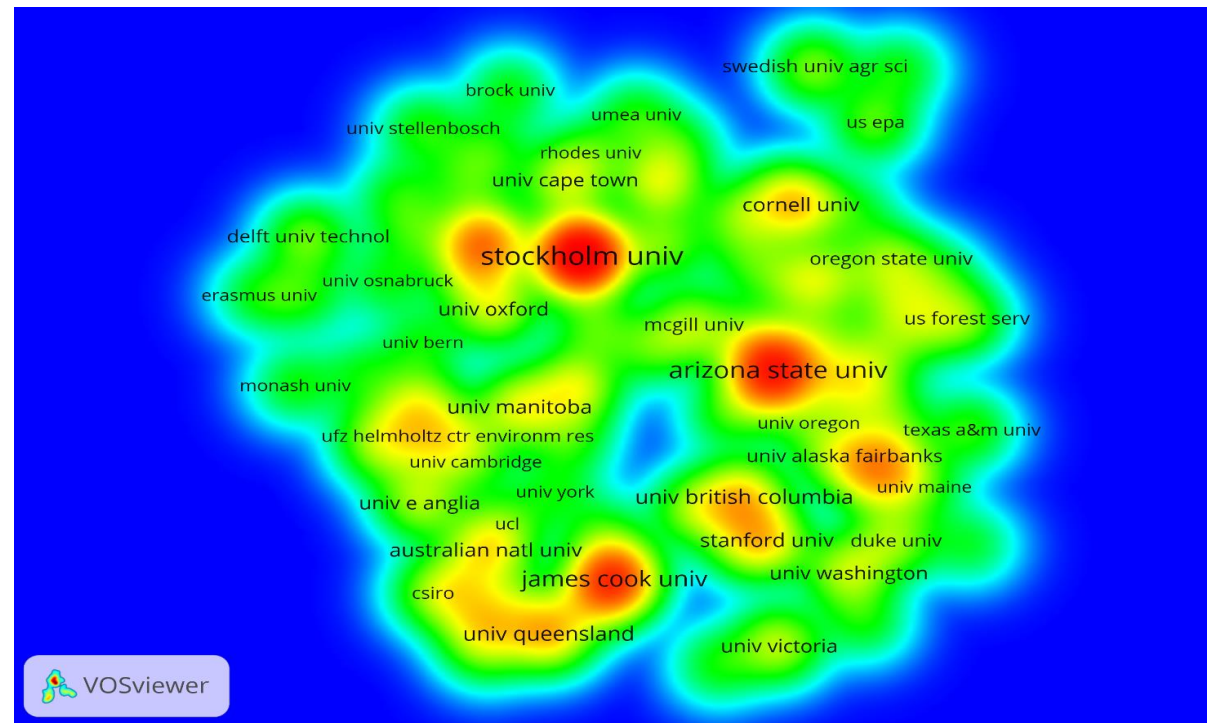


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Social-Ecological Systems

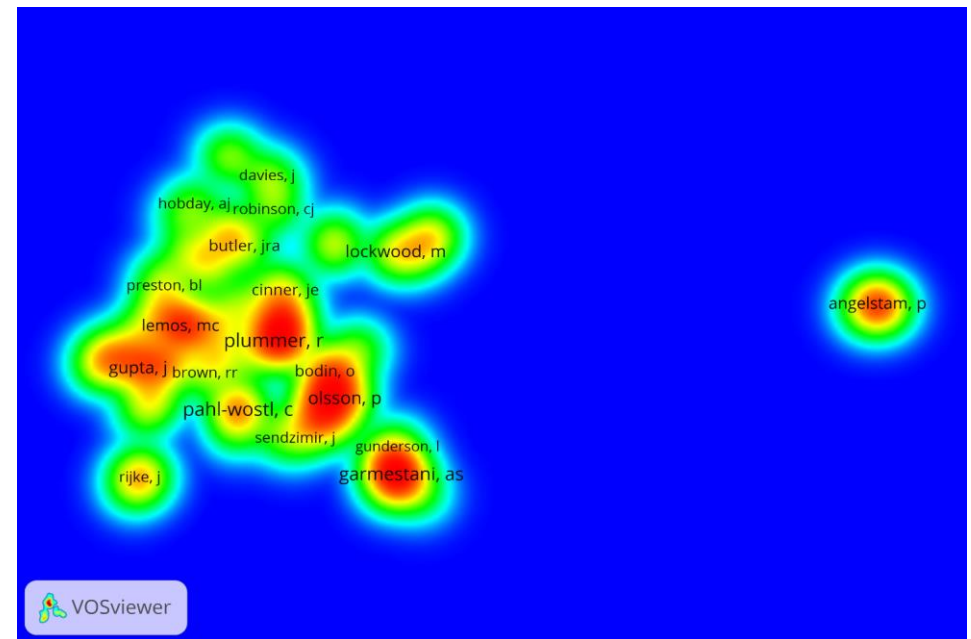
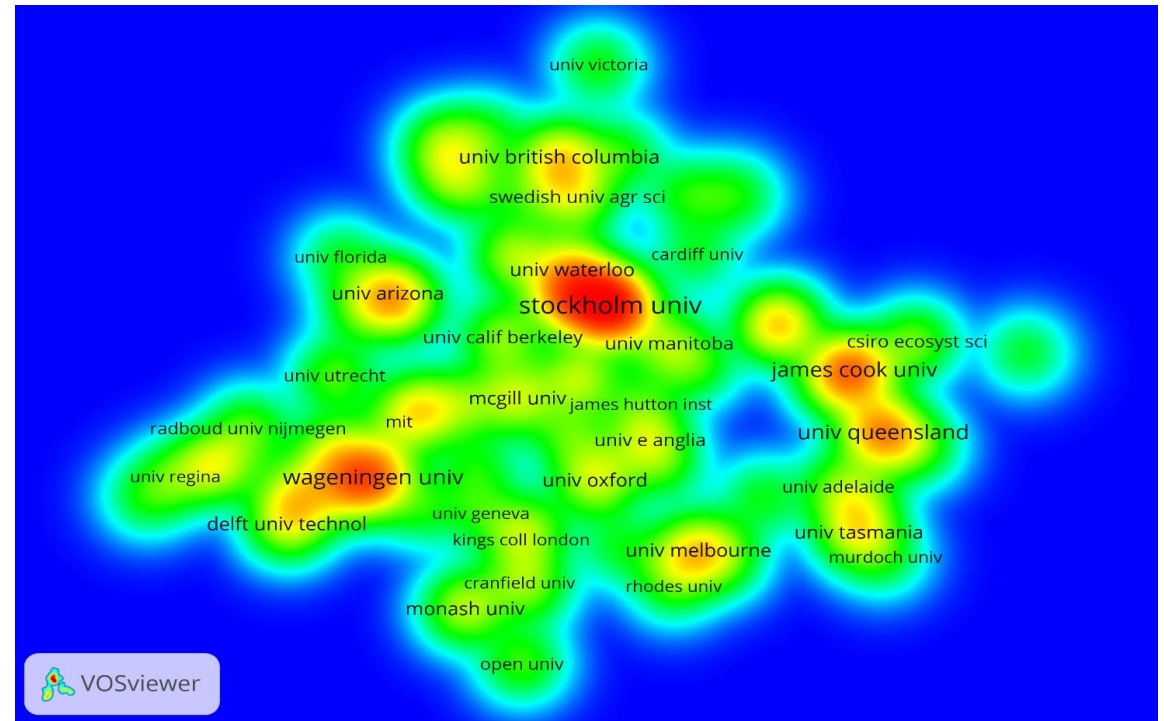
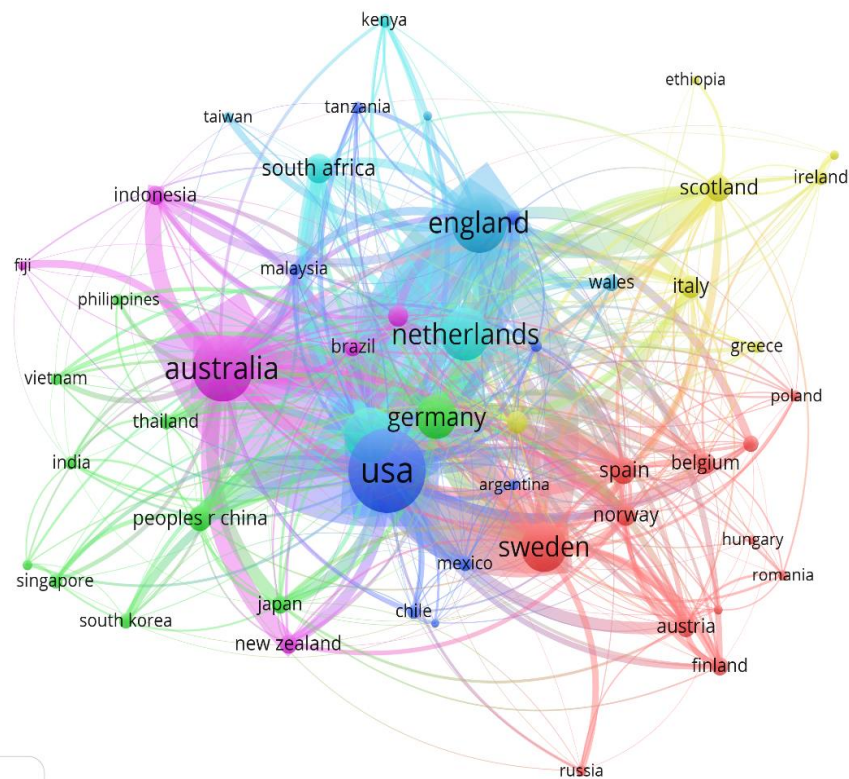


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Bibliographic Coupling

Adaptive Governance



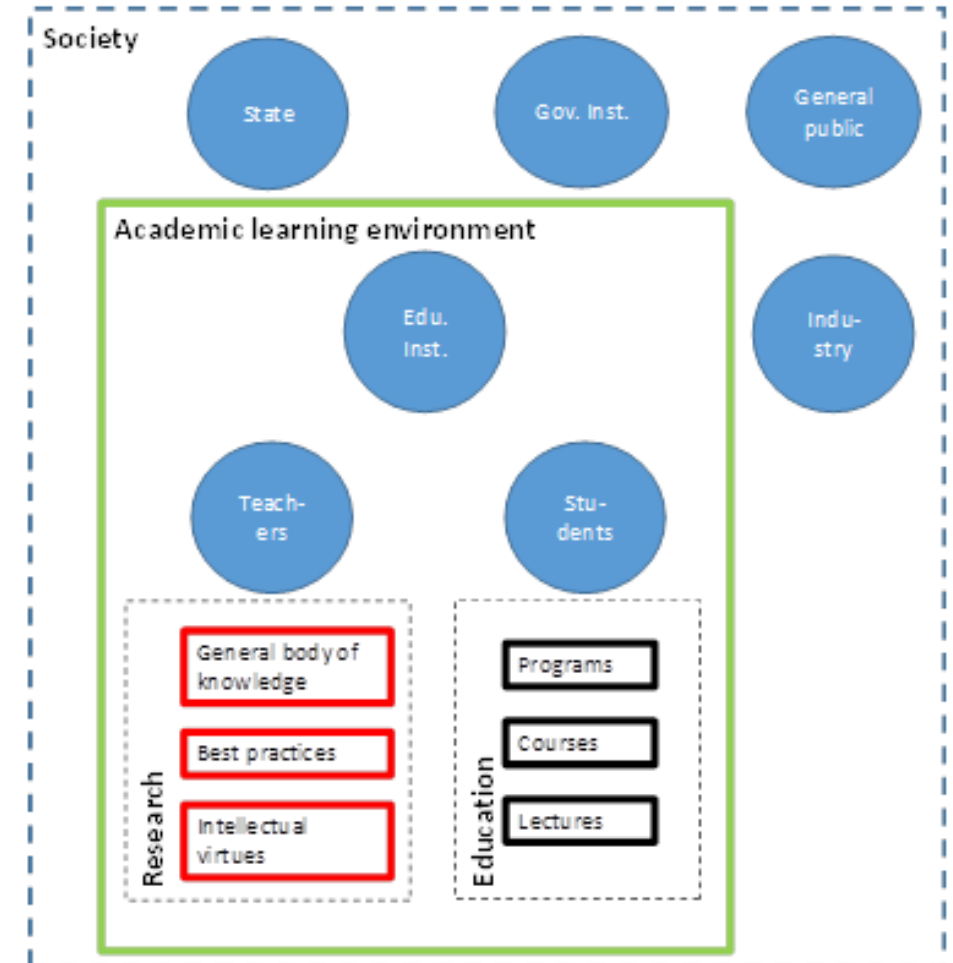
Summary of Conclusions

- All 3 domains – risk, sustainability and resilience show an upward trend in the production of research. Risk is the dominant field. There is some integration between risk and sustainability and between risk and resilience. Research combining all three is in its infancy.
- The top 3 contributing disciplines across risk, sustainability and resilience research are: Environmental sciences/Ecology, Engineering, and Economics representing respectively natural, engineered and social systems.
- Risk research over the last 30 years has undergone a transformation from a predominantly decision theoretical/civil engineering perspective toward an Env/Ecological one. Traditional Engineering area of OHS has been strongly marginalized. New areas of research have gained importance: Climate Change, Natural Hazards, Food Safety.
- Research in risk, sustainability and resilience is dominated by the highly developed "Western" countries (USA, UK, Canada, Australia, Sweden). China is a major contributor to Sustainability and Circular Economy research.
- Despite lower output in comparison with Env/Ecology, the centrality of Engineering in the network representations could be seen as a potentially unifying role – a meeting place for both social and ecological systems. The success criteria would be the integration of risk, resilience and sustainability into joint strategic, operational and tactical frameworks for assessment, management and education.

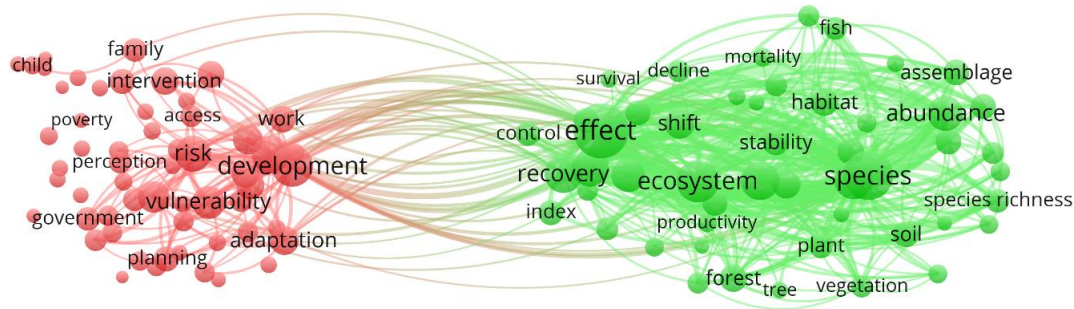
Implications for Risk Education

Blueprint for Learning Design of Risk, Sustainability and Resilience Science

- Survey of 125 + master level programs currently offered in various aspects of Risk
- Findings presented here on the evolution, trends and composition of research in risk, sustainability and resilience
- A joint framework for the assessment of risk, resilience and sustainability (Faber 2018)
- Thorough critical review of the theories and methods available for the joint assessment of human, technical and natural systems
- An operational systems framework for the management of such education
- Learning philosophy based on Threshold Concepts and Transformational Learning



The Two Cultures



Network visualization of Community resilience



Thank you!



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Contact Information

- ▶ Linda Nielsen, ln@civil.aau.dk
- ▶ Michael H. Faber, mfn@civil.aau.dk