# R&I Common Science Agenda and European Universities

Prof. Albert Diaz-Guilera (UB) – WP4 Leader
March 2nd, 2022 – Annual Open Forum

# WP4 Common Science Agenda

# Deliverables in WP4

| Deliverable Number[14] | Deliverable Title | Lead beneficiary | Type[15] | Dissemination level[16] | Due Date (in months)[17] |
|---|---|---|---|---|---|
| D4.1 | Strengths and complementarity report | 1 - UB | Report | Confidential, only for members of the consortium (including the Commission Services) | 4 |
| D4.2 | Common Science Agenda challenge list | 1 - UB | Report | Public | 8 |
| D4.3 | Implementation analysis report | 1 - UB | Report | Confidential, only for members of the consortium (including the Commission Services) | 15 |

# D4.2 Common Science Agenda Challenge List

# D4.2 'Common Science Agenda Challenge List'

| Work package number [9] | WP4 | Lead beneficiary [10] | | 1 - UB |
|---|---|---|---|---|
| Work package title | Common Science Agenda | | | |
| Start month | 1 | End month | | |

## Objectives

The overall main objective of this WP is to develop the list of challenges the CHARM-EU alliance will face in each thematic area, from institutions strengths and complementarity, taking into consideration the state-ofthe-art, the financing mechanisms, barriers and common infrastructure needed to implement them. To this purpose, we have identified the following operational objectives:

O4.1 Analyse the research strengths and complementarity in each institution.

O4.2 List the challenges to face given the diversity and complementarity of our research strengths. Focus on inter- and transdisciplinary cooperation, combining curiosity-driven and utility-driven research, with a clear view on its impact, with particular importance to societal challenges and the needs of the community.

O4.3 Study financing instruments, barriers and infrastructure to implement the common science agenda.

## Description of work and role of par

**WP4 - Common Science Agenda** [Months: 1-15]

**UB**, TCD, UU, ELTE, UM

WP4 will be conducted with the participation of each University.

Task 4.1 Institutions strengths and complementarity analysis for each thematic area - (M1-M4) - Lead UB – Participate: all. This task will analyse and identify the strengths of each institution, with special focus on complementarity, in each thematic area. Desk-based research will be used to conduct this analysis. A report will be developed summarizing the strengths of each institution and the complementarity between partners.

Task 4.2 Transdisciplinarity common challenge agenda and state of the art - (M5-M8) - Lead UB – Participate: all. This task will use the analysis from T4.1 as a baseline to list the different societal challenges CHARM-EU wants to face in each thematic area. The list of challenges will take into consideration the expertise of each institution, its complementarity and the critical research mass the collaboration will reach that could not be reached by each institution by itself. A state-of-the-art study and a proposal of a Knowledge Creation Team60 (KCT), with the inclusion of non-academic actors and cooperation with other sectors, will be added to each challenge. A report will be developed with the list of societal challenges, the justification of the selection and a proposal of KCT for each challenge.

Task 4.3 Implementing the Common Science Agenda, an analysis on financing mechanisms, barriers and common

# D4.2 - Methodology

**1**

**DATA COLLECTION**

**INSTITUTIONAL ANALYSIS**

**CHALLENGE PRODUCTION**

**Research Areas Questionnaire**

· Researchers

· Fields of Science

· Thematic Lines

· SDGs

· Research Keywords

**Partners Results Breakdown**

· Input: Form Results + Institutional Research Plans

· Outcome: 3 Priority SDGs + List of Potential Researchers

**SDG-Expert Focus Groups**

· Preparation: Challenge Proposal Form (Researchers)

· 3 SDG-Focus Groups

· Outcome: Challenges (at least one per SDG)

**2**

**BIBLIOMETRICS**

· 2 approaches: co-authorship + shared references in publications

**D4.2 REPORT**

METHODS

· Questionnaire + Focus Groups

· Bibliometrics

RESULTS

· Challenges + KCTs (According to SDGs)

· State of the art (Partners Strengths & Complementarities)

DEADLINE

January 2022*

# D4.2 – Participatory Process

**Researchers invited to participate:**

- **Each institution followed tis own approach: 50 – 1860**

- **Response: 6.6% - 74%**

- **Number of researchers: 33 - 123**

# D4.2 – Institutional analysis

**Each partner examines results:**

- **Institution Research Strategic Plan**

- **Priority Research Areas & SDG at each institution**

- **Compared to choices by the researchers according to TORCH Thematic areas**


- **Final decision taken by WP4: 3 SDG's in a broad sense**

# D4.2 – Participatory Process

| TORCH Thematic Lines | UN SDGs |
|---|---|
| 1. Food, Water, Life & Health | SDG2 - Zero Hunger |
| | SDG3 - Good health & Well-Being |
| | SDG6 - Clean Water & Sanitation |
| 2. Biodiversity, Environment, Climate Change | SDG13 - Climate Action |
| | SDG14 - Life Below Water |
| | SDG15 - Life on Land |
| 3. Inequality, Economic Growth, Governance, Migration | SDG1 - No Poverty |
| | SDG5 - Gender Equality |
| | SDG8 - Decent Work & Economic Growth |
| | SDG10 - Reduced Inequalities |
| | SDG16 - Peace, Justice & Strong Institutions |
| (4. Big Data, Artificial Intelligence) | Transversal |

**3 SDGs selected after institutional analysis :**

· 3. Good Health & Well-Being

· 10. Reduced Inequalities

· 13. Climate Action
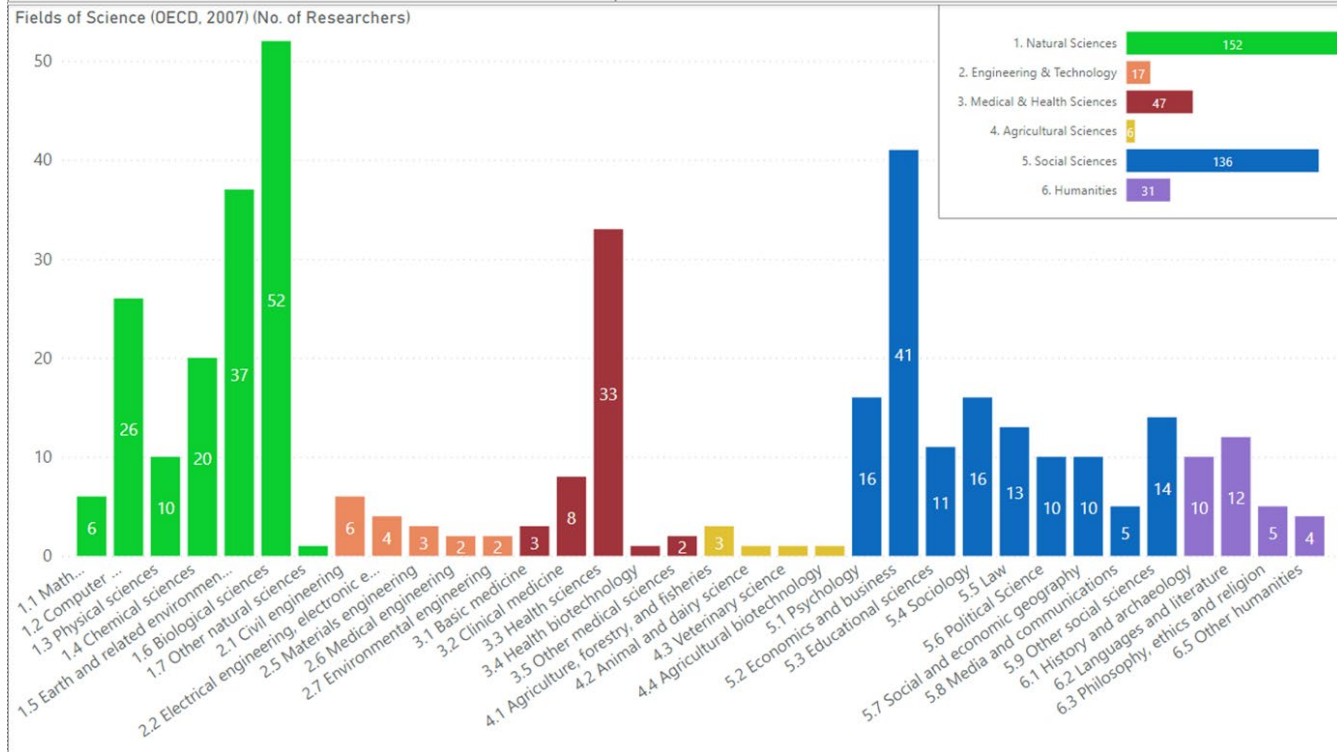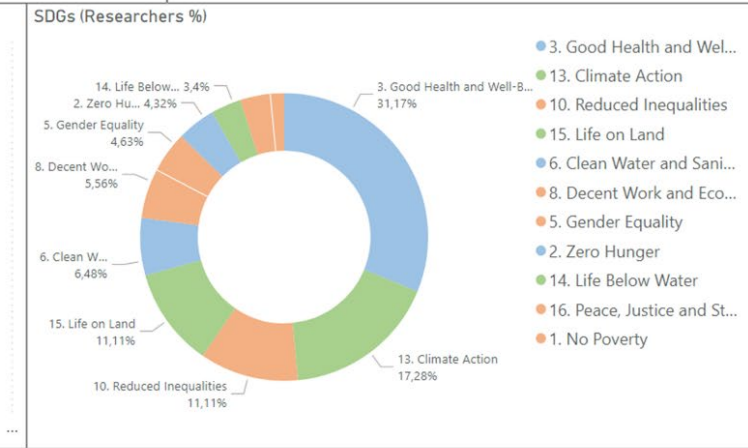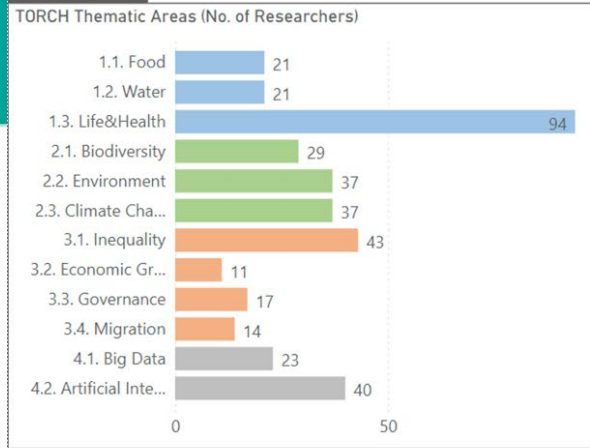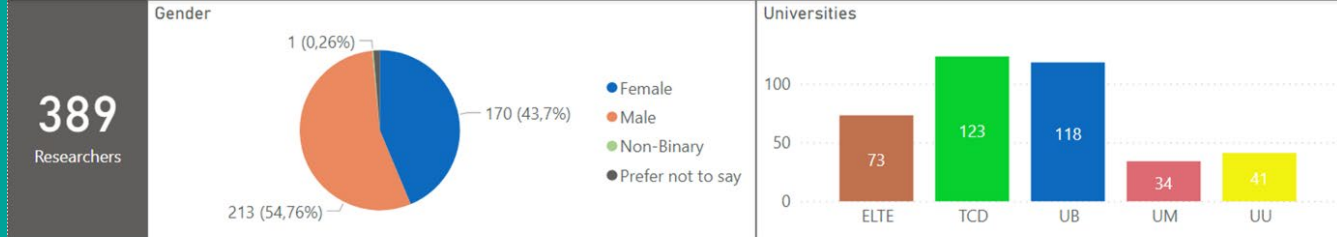
# D4.2 – Challenges Formulation

**Researchers are invited to fill a questionaire:**

- **Outline a research challenge -> SDG**

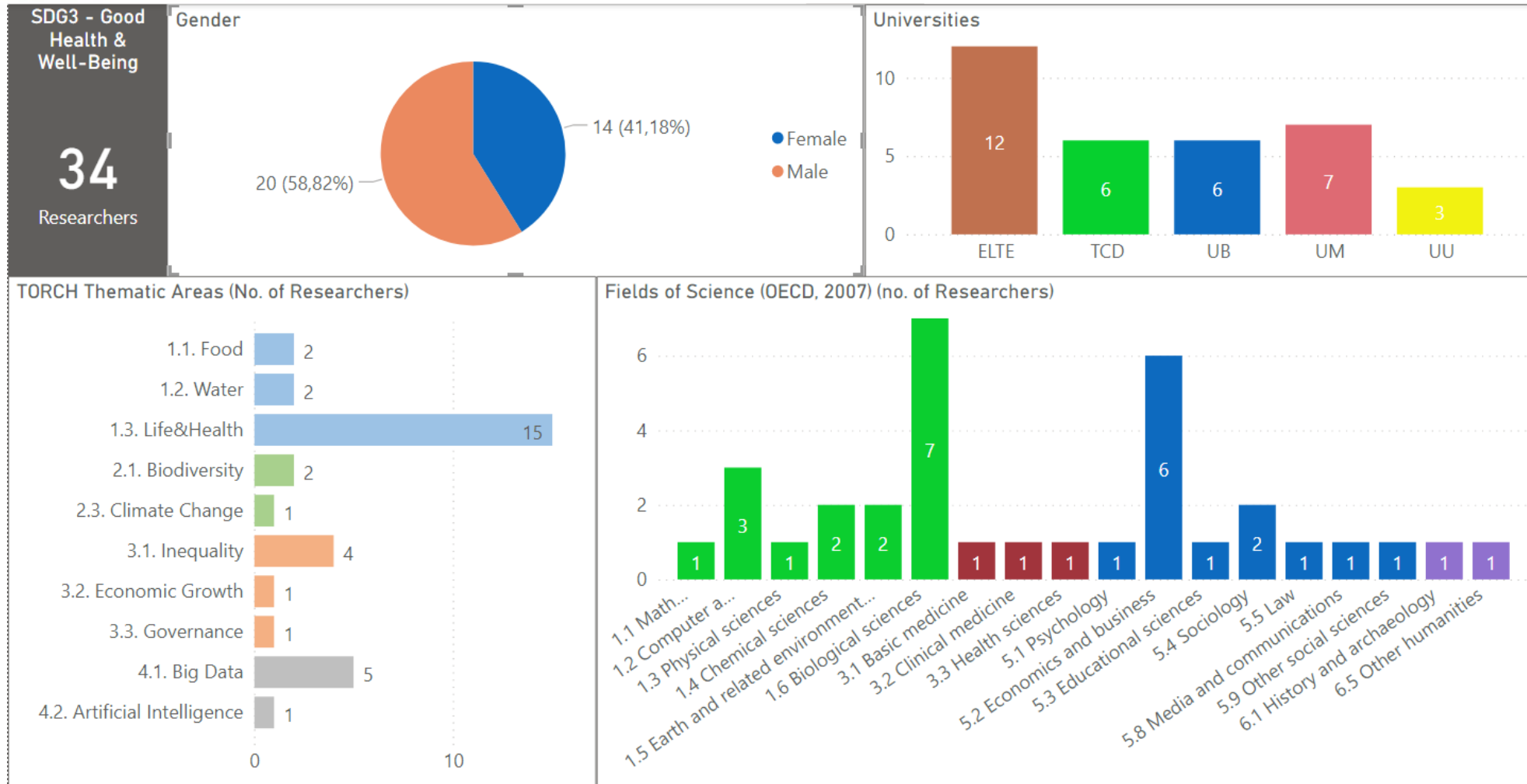- **Assign researchers to SDG**

- **Creation of the Focus Groups**

# D4.2 – Challenges Formulation

**Focus Group on SDG3 – Good Health & Well-Being**

**Proposals:**

**SDG3-C1**: ACTIVE: Adult Child and Teenage participation In physical actiVity across Europe.

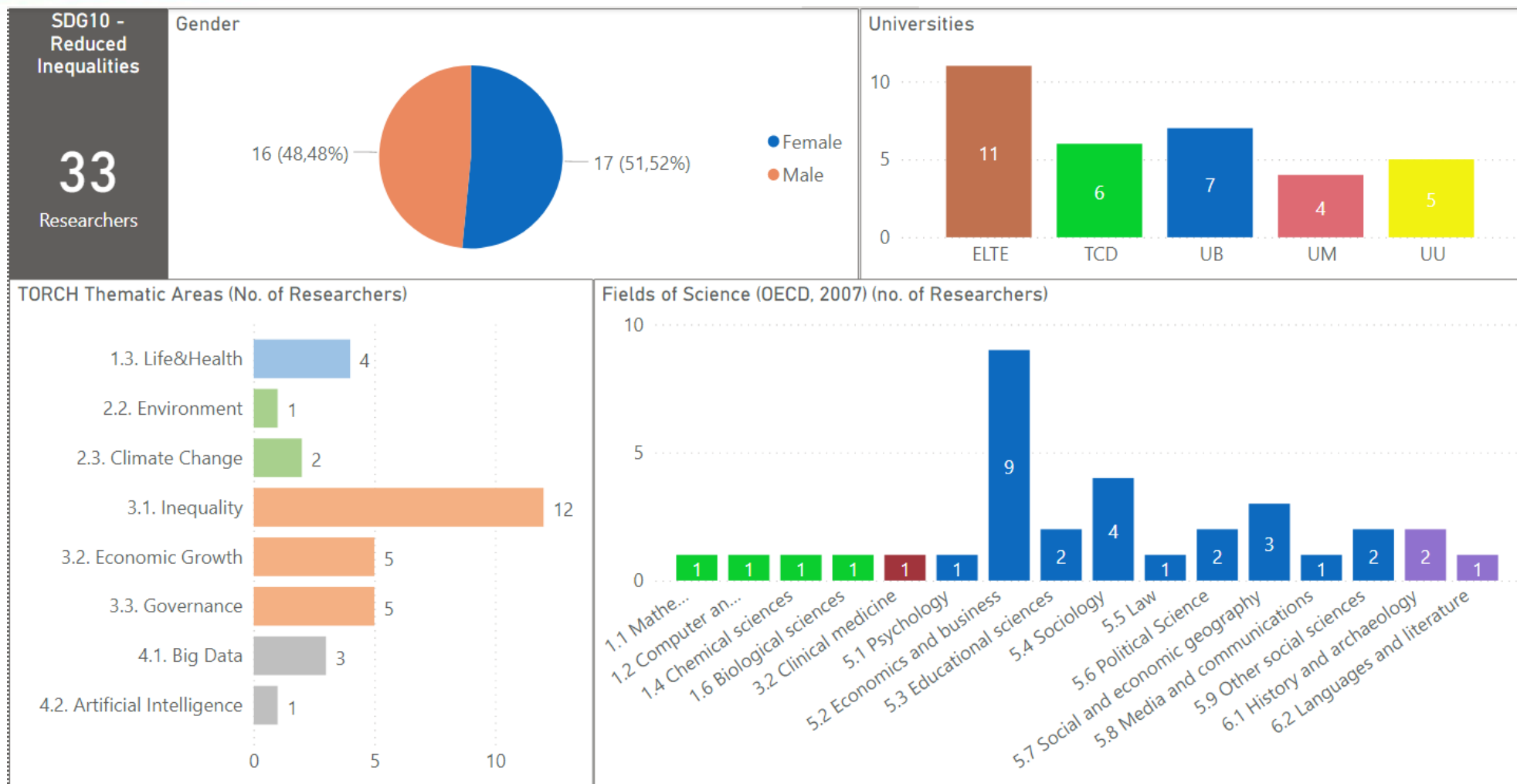**SDG3-C2**: Prevention and preparedness of negative effects of climate change on vector-borne infectious diseases.

# D4.2 – Challenges Formulation

**Focus Group on SDG10 - Reduced Inequalities**

**Proposals:**

**SDG10-C1**: Coping with digitalization and the transformation of the world of work as a new source of inequalities.

**SDG10-C2**: Designing better universities to fight against inequalities.

## SDG10 - Reduced Inequalities

**33** Researchers

### Gender

- 16 (48,48%) Male
- 17 (51,52%) Female

### Universities

| University | Value |
|------------|-------|
| ELTE | 11 |
| TCD | 6 |
| UB | 7 |
| UM | 4 |
| UU | 5 |

### TORCH Thematic Areas (No. of Researchers)

| Thematic Area | No. |
|---------------|-----|
| 1.3. Life&Health | 4 |
| 2.2. Environment | 1 |
| 2.3. Climate Change | 2 |
| 3.1. Inequality | 12 |
| 3.2. Economic Growth | 5 |
| 3.3. Governance | 5 |
| 4.1. Big Data | 3 |
| 4.2. Artificial Intelligence | 1 |

### Fields of Science (OECD, 2007) (no. of Researchers)

| Field | No. |
|-------|-----|
| 1.1 Mathe... | 1 |
| 1.2 Computer an... | 1 |
| 1.4 Chemical sciences | 1 |
| 1.6 Biological sciences | 1 |
| 3.2 Clinical medicine | 1 |
| 5.1 Psychology | 1 |
| 5.2 Economics and business | 9 |
| 5.3 Educational sciences | 2 |
| 5.4 Sociology | 4 |
| 5.5 Law | 1 |
| 5.6 Political Science | 2 |
| 5.7 Social and economic geography | 3 |
| 5.8 Media and communications | 1 |
| 5.9 Other social sciences | 2 |
| 6.1 History and archaeology | 2 |
| 6.2 Languages and literature | 1 |

# D4.2 – Challenges Formulation

**Focus Group on SDG13 - Climate Action**

**Proposals:**

**SDG13-C1**: Preventive Water Sustainable Management of Freshwater resources within the Global Change.

**SDG13-C2**: Mapping Risks, Joining Funds, Taking Actions – Fostering Nature-based Solutions to Mitigate Climate-related Hazards.
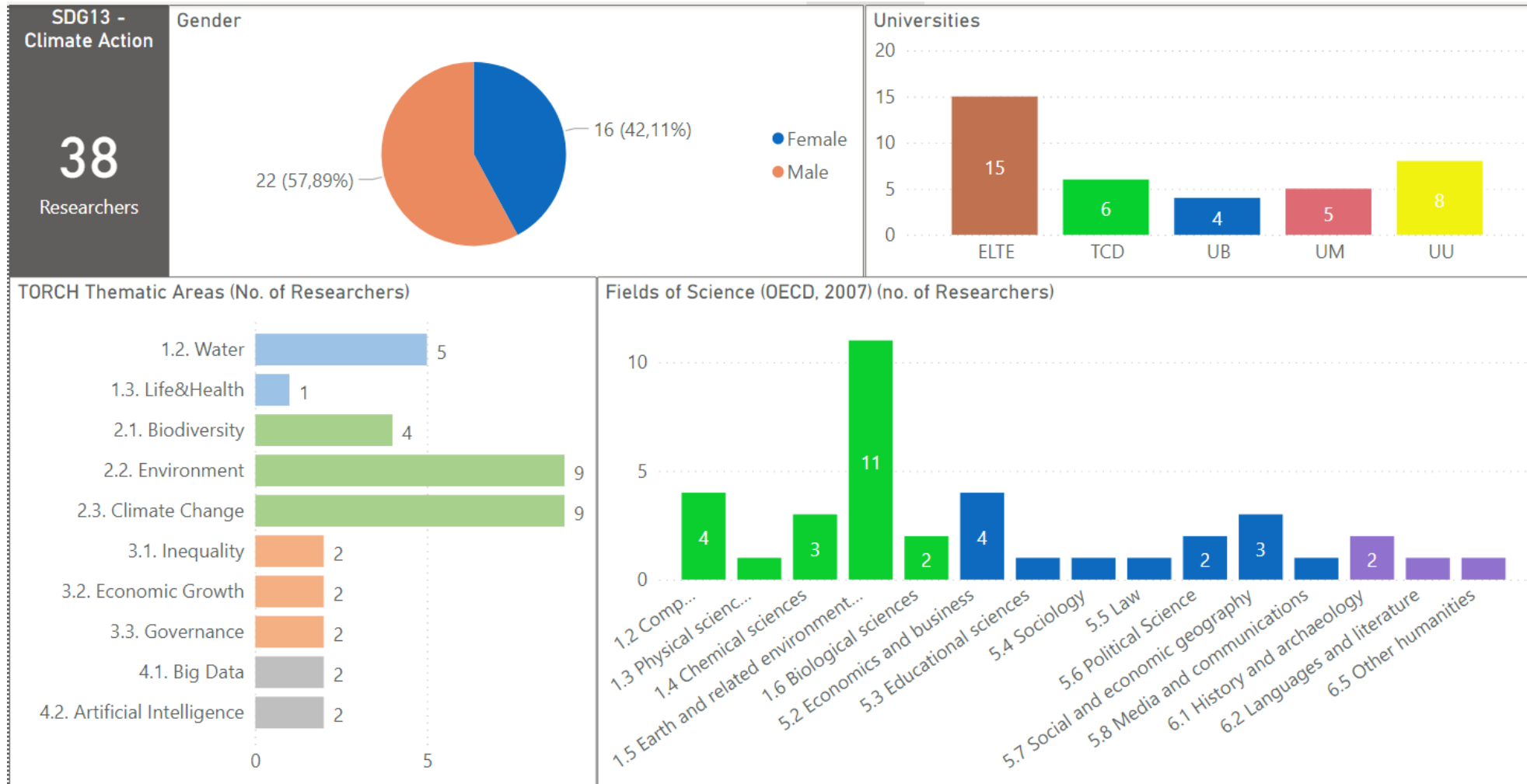
# Available Bibliometrics (SDG3)
# (Albert Diaz, UB)

# Bibliometric analysis (SDG3)

- authors identified with SDG3 + TL1, from questionnaire

- Searched in Scopus YEARPUB AFT 2017

- BIB file with complete information

  - Authors (filtered AU-ID), title, affiliations

  - Citations, references, keywords, abstracts

- STATIC

- DYNAMIC

# STATIC: Bibliometrix -> Biblioshiny

- Sources
- Papers
- Authors
- Institutions
- Countries

- Keywords
- Titles
- Abstracts
- References

# Coupling Map

Apply!

**CM Parameters:**

**Unit of Analysis**

Authors ▼

**Coupling measured by**

References ▼

**Impact measure**

Local Citation Score ▼

**Cluster labeling by**

Keyword Plus ▼

**Number of Units**
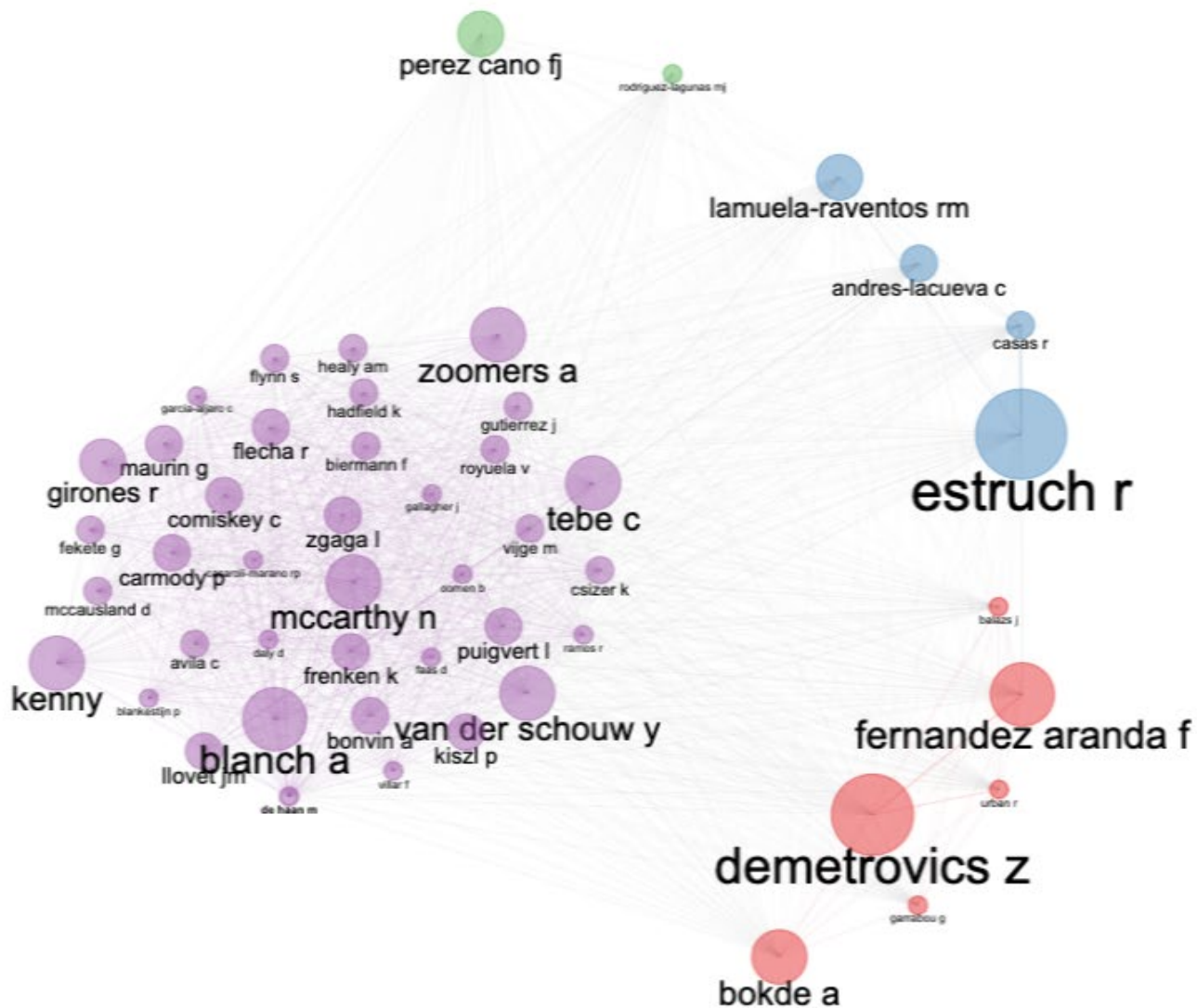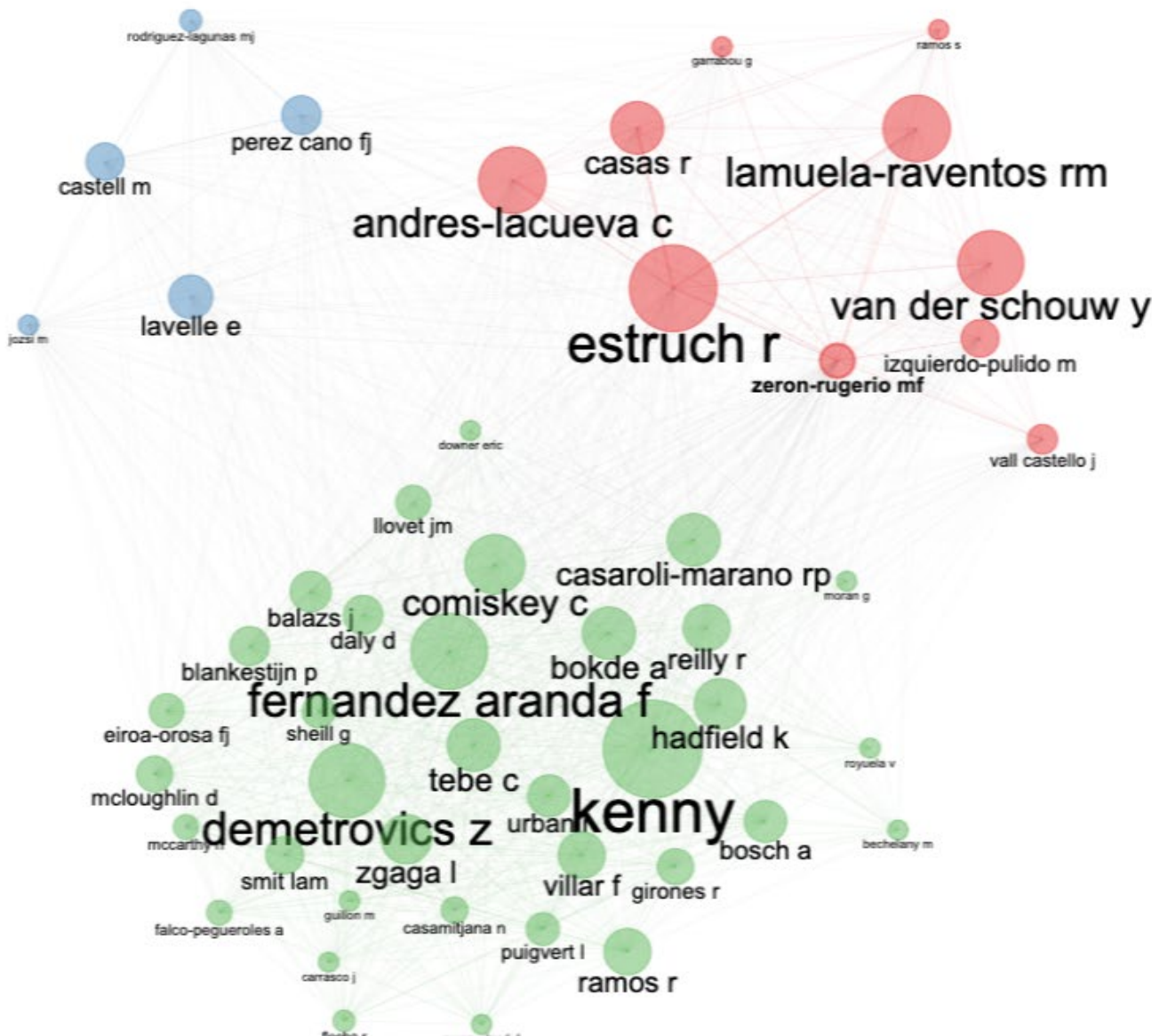
50

**Min Cluster Freq. (‰)**

5

**Labels per cluster**

3

**Label size**

0,3

*Export plot*

Clustering by Coupling

Edit

perez cano fj    rodriguez-lagunas mj

lamuela-raventos rm

andres-lacueva c

casas r

flynn s    healy am    zoomers a
garcia-lajaro c    hadfield k    gutierrez j
flecha r    biermann f    royuela v
maurin g    girones r
comiskey c    gallagher j    tebe c
fekete g    zgaga l    vijge m
carmody p    garcia-marano rp    oomen b    csizer k
mccausland d    mccarthy n
avila c    daly d
kenny    frenken k    fadi d    puigvert l    ramos r
blankestijn p    van der schouw y
bonvin a    kiszl p
blanch a
llovet jm    vilar f
de haan m

estruch r

balazs j

fernandez aranda f

urban r

demetrovics z

pantziou g

bokde a

# Coupling Map

**CM Parameters:**

**Unit of Analysis**

Authors

**Coupling measured by**

Author's Keywords

**Impact measure**

Local Citation Score

**Cluster labeling by**

Keyword Plus

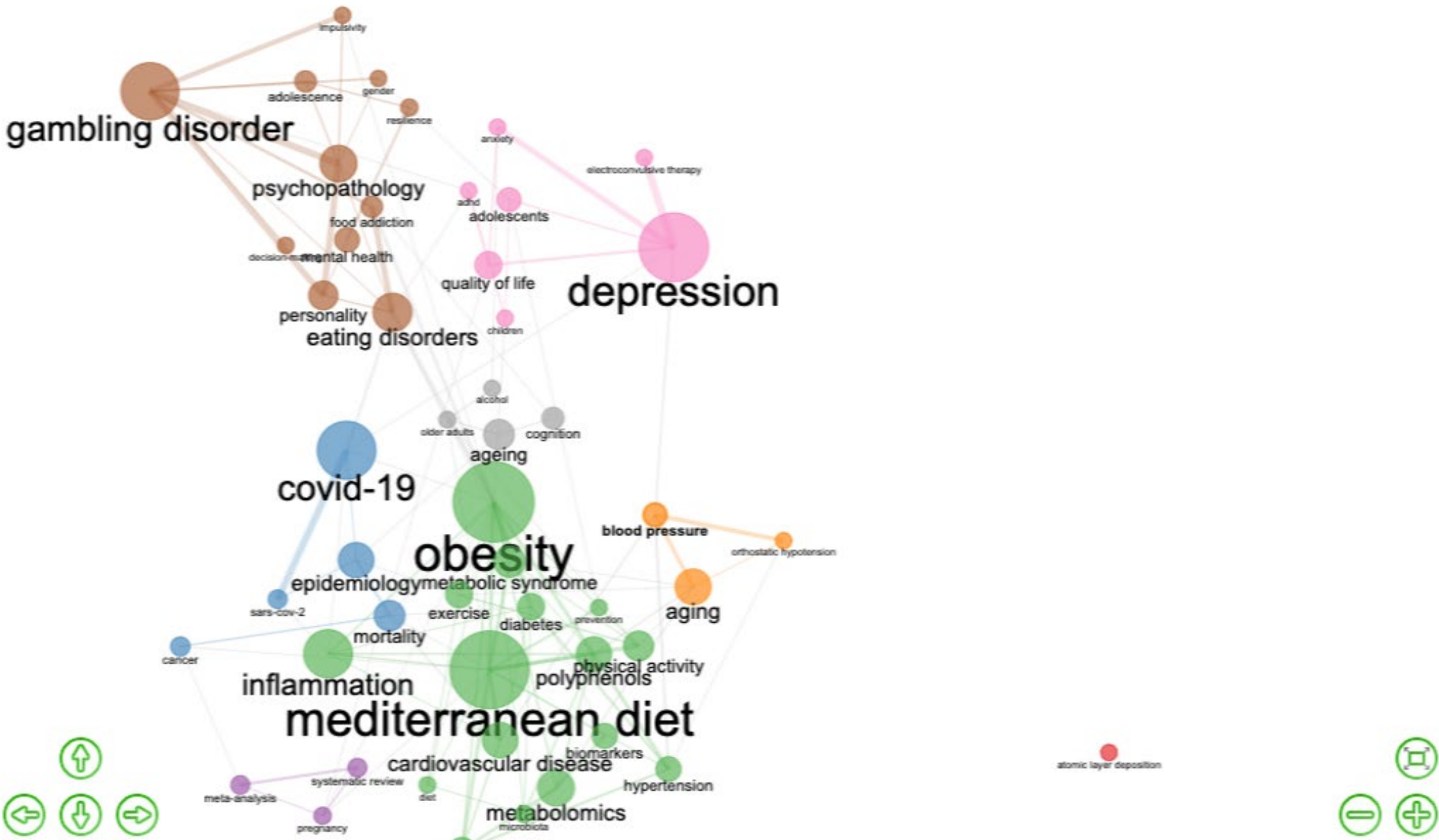| Number of Units | Min Cluster Freq. (‰) |
|---|---|
| 50 | 5 |

| Labels per cluster | Label size |
|---|---|
| 3 | 0,3 |

*Export plot*

Clustering by Coupling

Edit



rodriguez-lagunas mj
garrabou g
ramos s
castell m
perez cano fj
casas r
lamuela-raventos rm
jozsi m
andres-lacueva c
lavelle e
van der schouw y
estruch r
izquierdo-pulido m
zeron-rugerio mf
vall castello j
downer eric
llovet jm
casaroli-marano rp
moran g
comiskey c
balazs j
daly d
bokde a reilly r
blankestijn p
fernandez aranda f
eiroa-orosa fj
sheill g
hadfield k
royuela v
mcloughlin d
tebe c
demetrovics z
urban kenny
bosch a
bechelany m
mccarthy n
zgaga l
smit lam
villar f girones r
falco-pegueroles a
guillon m
casamitjana n
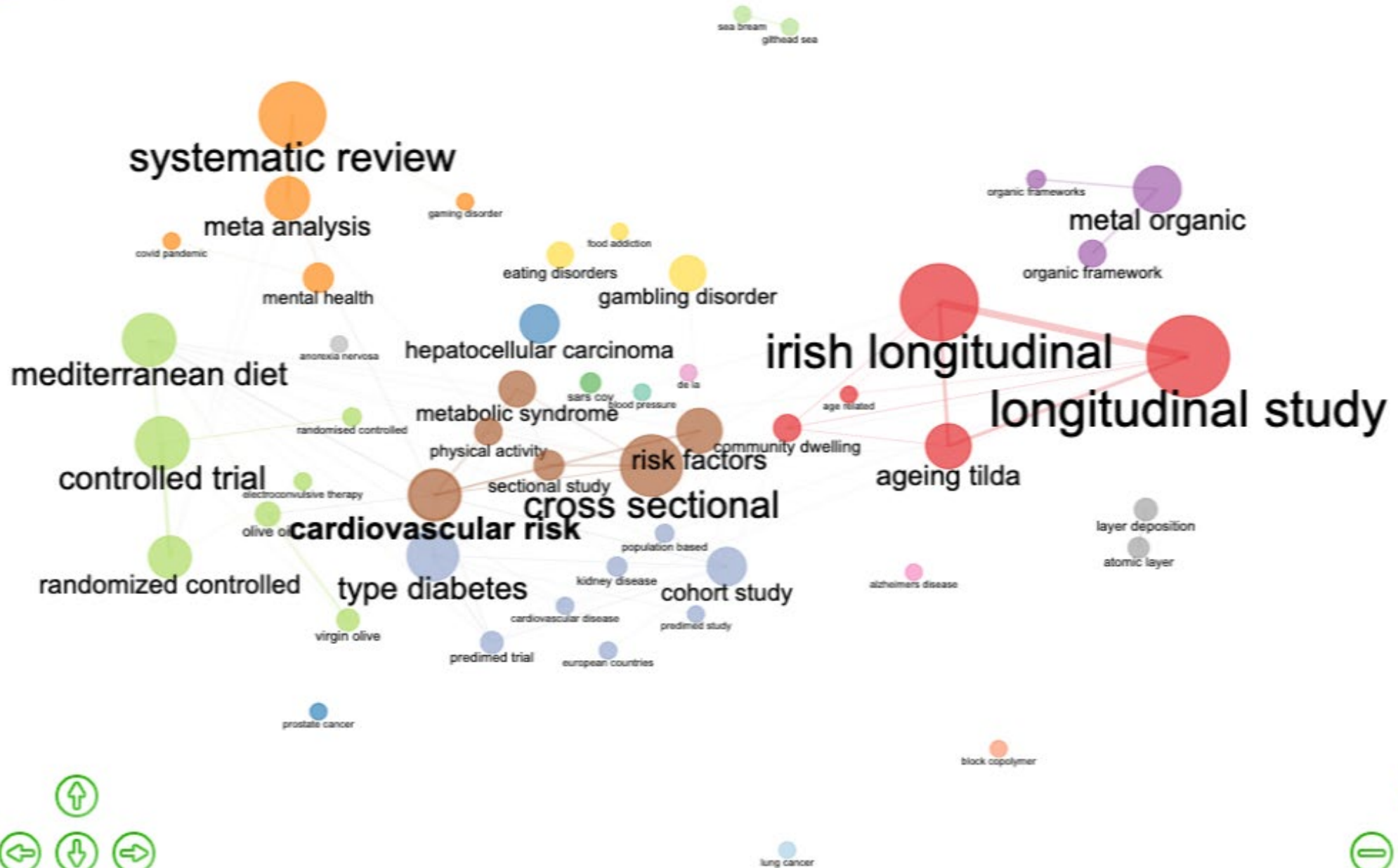puigvert l
carrasco j
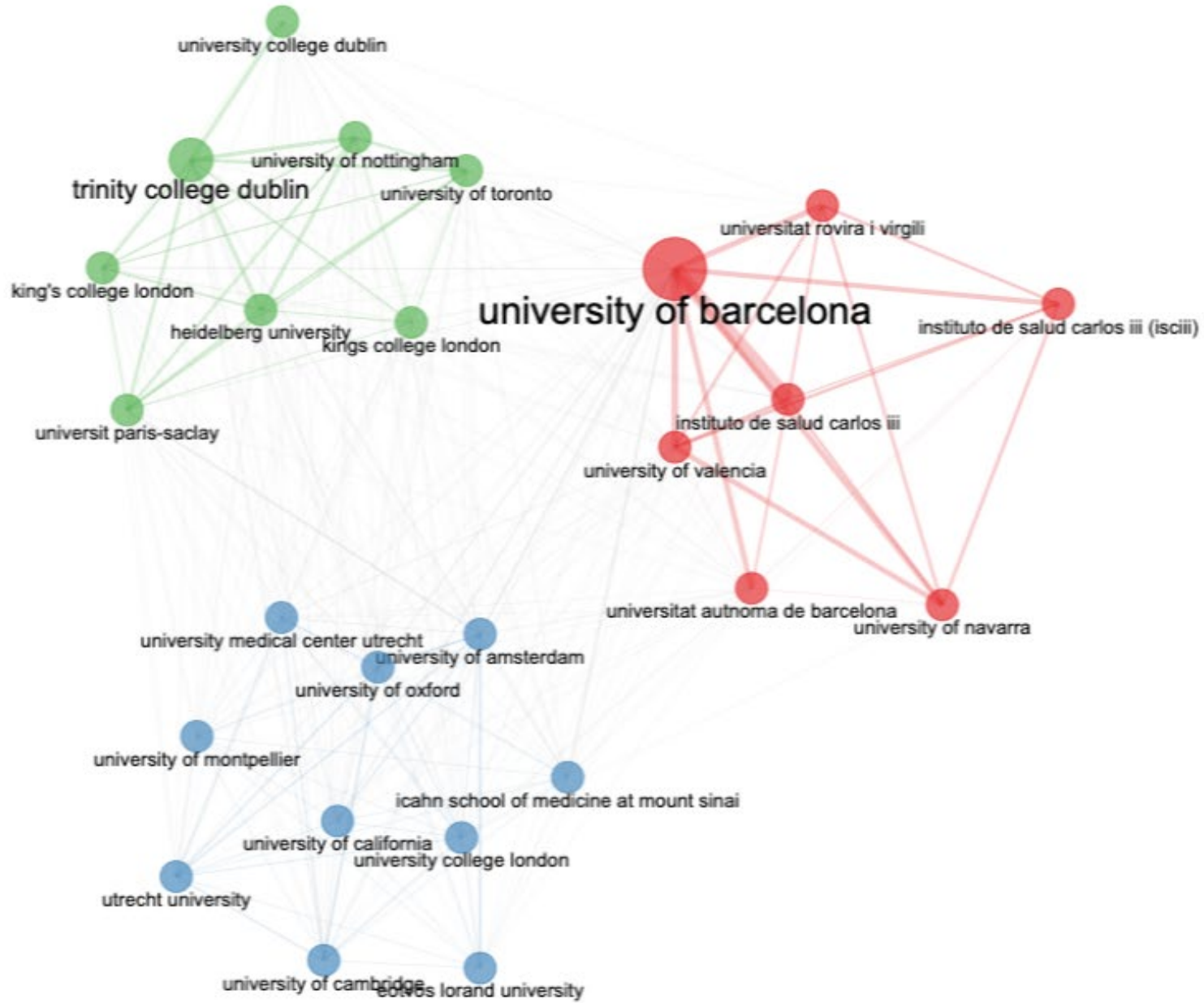ramos r

Co-occurrence network of authors keywords
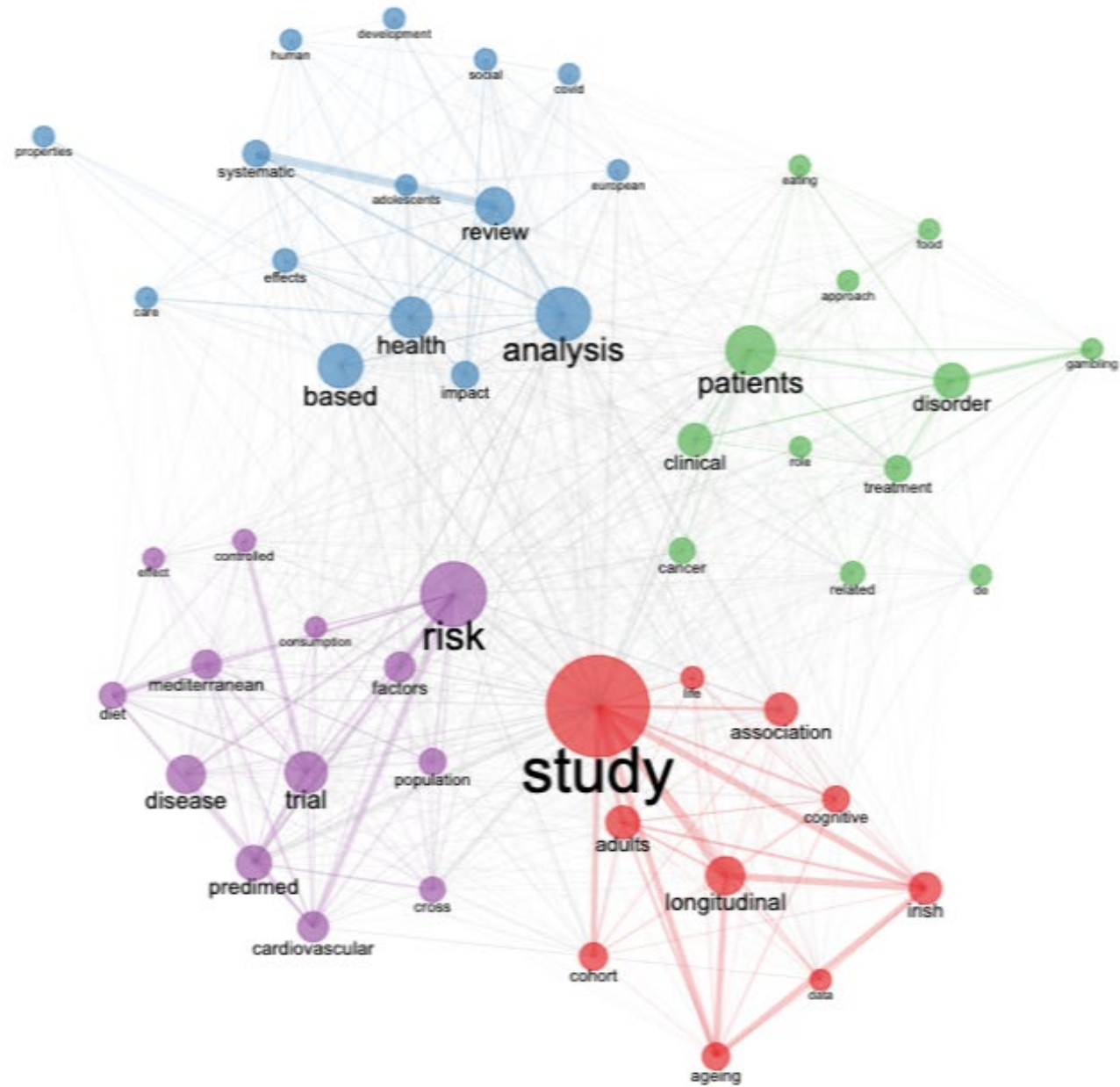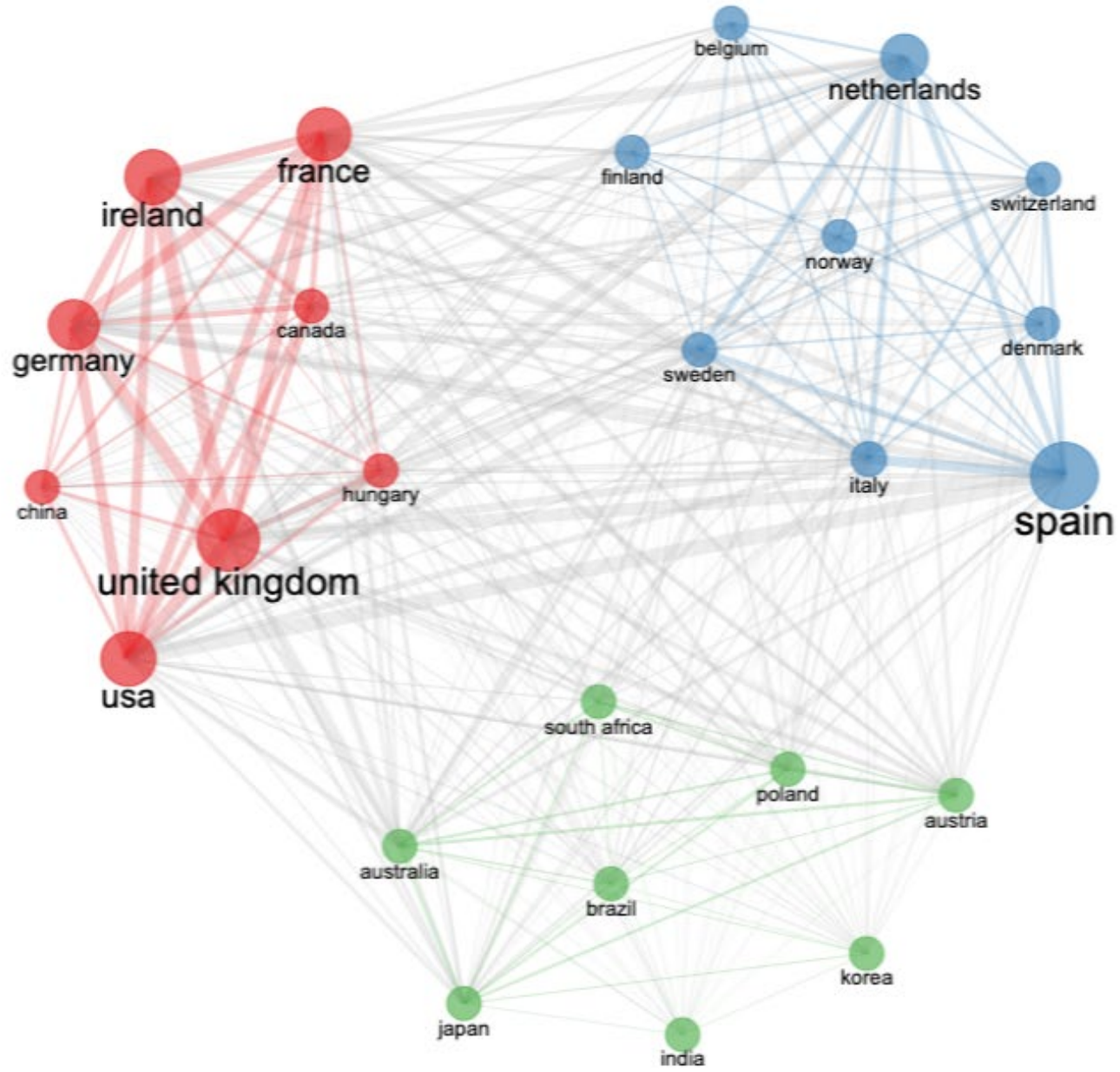
Co-occurrence network of titles

Co-occurrence network of titles (bigrams)

Collaboration network of institutions

# DYNAMIC:
# Bibliometrix -> Our own tools

- Interactive application.

- Access: https://www.charm-eu.eu/torchlibrary/

- Nodes are always authors from the collection

- Node shapes indicate the different universities

- Nodes of the same color belong to the same community (they are similar)

# DYNAMIC: Bibliometrix -> Our own tools

In the top menu you can choose among 3 types of networks:

- **Collaboration**: links correspond to collaborations (authors not in the list have been removed)

- **Coupling by references**: links are weighted according to the number of references shared among authors

- **Coupling by keywords**: links are weighted according to the number of keywords shared among authors

# DYNAMIC: Bibliometrix -> Our own tools

- Nodes can be dragged and dropped anywhere
- Clicking in one node opens a small window with information about the author (name, university, department, keywords, and publications)
- Clicking on any of the publications opens a window directly on the published paper
- To close all windows, double-click on any area outside the window

# Challenges -> WP8 & WP9

· Published in D4.2 (public report).
· Shared with the Alliance's academic community.

**Annual Forum**
· Presented and discussed in TORCH Annual Forum (Budapest, March 2022), in order to incorporate the non-academic actors insight.

**2nd Half of the Project**
· Submitted to CHARM-EU Vice-Rectors Committee and Rectors Assembly. Which of them will be developed further during 2022-2023 as pilots (TORCH WP9 'Action Plans and Pilots').
· Encouraged to apply for international and national funding opportunities that will allow implementing them as research projects from 2023 onwards.
· Ethics Committees review.

# Tasks related to Deliverable D4.3

Task 4.3 **Implementing the Common Science Agenda,** an analysis on financing mechanisms, barriers and common infrastructures *(M9-M15) - Lead UB – Participate: all.* R&I funding agencies have different mechanisms to fund different societal challenges. In this task we will study the different funding instruments we have at a national and European level to fund the R&I common science agenda. We will consider funding instruments available beyond the academic ones, taking into consideration the different actors and institutions that will be part of the knowledge creation teams doing research for the specific challenges.

The study of financing mechanisms will raise, as we are experiencing in the CHARM-EU Erasmus+ project, the barriers at legal, ethical and financing level to implement the common science agenda. The working groups will be in contact with the legal services of each institution and possible other actors of the KCT to discuss the legal framework. The working group will also deliver the agenda to ethics committees to study possible ethical aspects to consider. This task will also study the necessities on infrastructures each challenge will present to do R&I. We will study the legal framework and funding possibilities to access those infrastructures that already belong to one of the actors of the KCT. An implementation analysis report considering financing instruments, barriers and common infrastructures will be developed and delivered to WP8 and the commission.