European Observatory on researchers' careers

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Objectives of the Researchers' Career Observatory

- The Commission intends to establish a **Researchers' Career Observatory** to provide evidence on effectiveness of measures aiming at balanced brain circulation and strengthening research careers through permanent career tracking of research and innovation talents and monitoring talent circulation.

- It is part of the **Knowledge Ecosystems study** that aims to prepare the ground and pilot measures towards the implementation of the ERA Communication.

Introduction ‘Knowledge ecosystems in the new ERA’

- **Thematic scope of the KE-ERA project**
  - A comprehensive analysis of the state of play, the design of monitoring mechanisms, and creation of a toolbox of support measures

Ecosystem level

Mapping and analysis of knowledge ecosystems and their actors	Designing the ERA Hubs concept	Design of an observatory

Ecosystem actors level

Transformation agenda towards the future of HE in Europe	Observatory on the institutional transformation agenda

Individual R&I talent level

Mapping career models and social security	Mapping brain drain and intersectoral mobility

Legal level	Financial level
Toolbox of legal measures supporting careers and facilitating cooperation	Development of an investment agenda

- **Timing**: January 2021 – March 2022

Council conclusions on "Deepening the European Research Area: Providing researchers with attractive and sustainable careers and working conditions and making brain circulation a reality"

28 May 2021

- CONSIDERS the development of an **observatory for monitoring of research careers trajectories**, doctoral and post-doctoral holders flows of talent, including geographical and sectoral mobility and working conditions to allow for the assessment of **sustainability and attractiveness of research careers**, and of the level of change in inequalities;
- AGREES that a **European approach on research profession is key** to develop statistical data on mobility and talent circulation and identification of trends, patterns, skills and gender gaps and labour market dynamics;
- and INVITES the Commission, in cooperation with Member States, to set a **permanent, comprehensive and transparent monitoring system** that takes into account the needs of various stakeholders to allow the evaluation of EU actions.

Methodology

1. **Scoping analysis:** Desk research on the definition of researchers, research careers and identification of the list of topics to be included in the observatory (*building blocks*); definition of the value proposition of the observatory
2. **Data screening:** identification of the relevant data that is currently available (scope, coverage and data quality)=> *Long list of indicators*
3. **Establishment of the criteria for the selection of relevant indicators**
4. **Development of recommendations for the future Observatory of Research Careers**
   - This includes:
     - The list of indicators that are currently available (*Short list of indicators*)
     - Recommendations on indicators that could be incorporated in the future should the data would become available with certain quality criteria in the future (e.g. creation of new indicators, addition of new filtering categories to identify researchers, etc.)

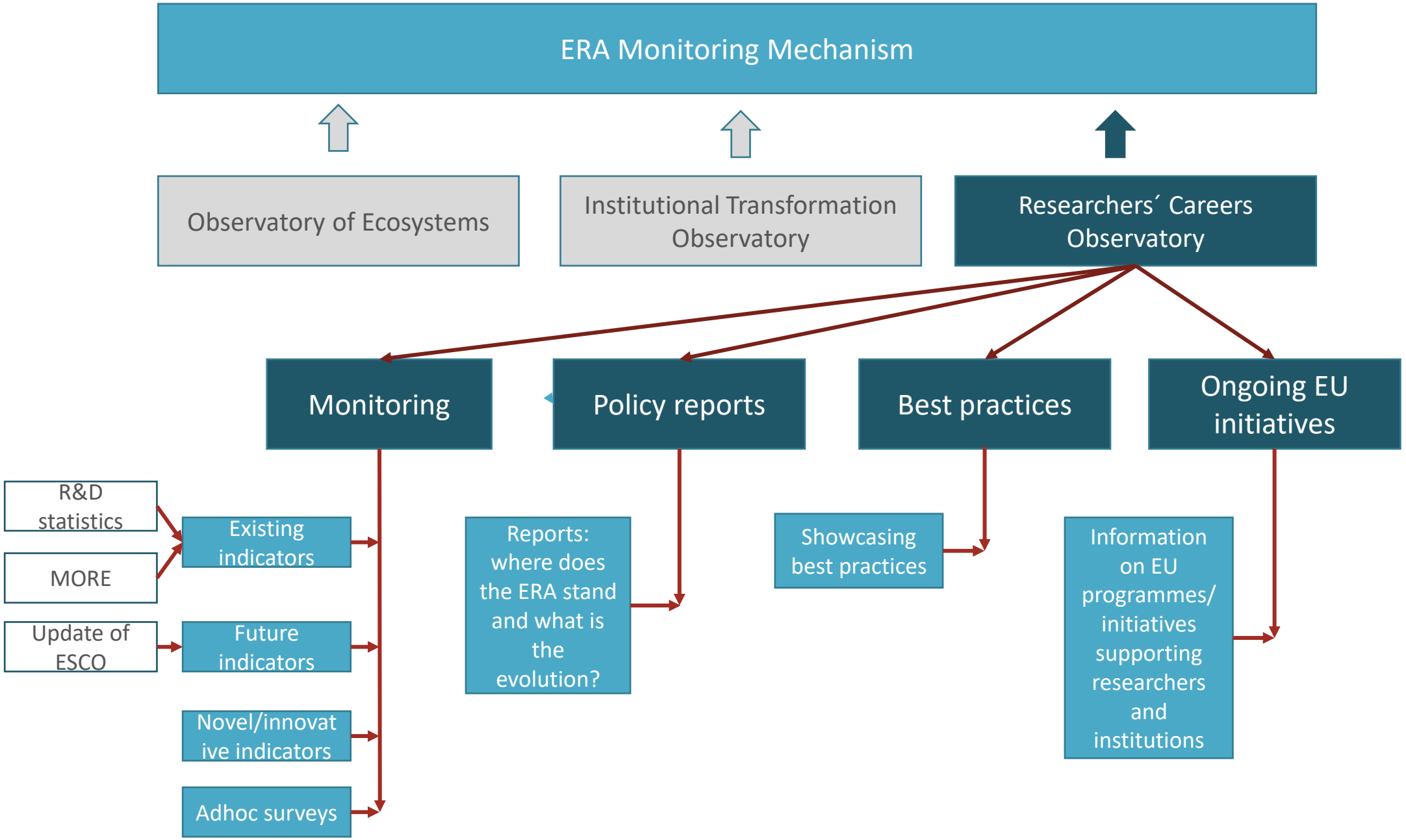
1. Scoping

Value proposition of the future observatory

The future observatory aims to be

- A unique central repository of data related to researchers, their careers and contextual factors having an impact on them
- Based on a clear definition of “researchers” based on the tasks and duties of individuals on the job (vs definitions based on field of activity or educational attainment)
- User oriented

The observatory will be oriented towards showing evolution over time (vs one-time data points)


ERA Monitoring Mechanism
Observatory of Ecosystems
Institutional Transformation Observatory
Researchers´ Careers Observatory
Monitoring
Policy reports
Best practices
Ongoing EU initiatives
R&D statistics
MORE
Existing indicators
Update of ESCO
Future indicators
Novel/innovative indicators
Adhoc surveys
Reports: where does the ERA stand and what is the evolution?
Showcasing best practices
Information on EU programmes/ initiatives supporting researchers and institutions

Researchers

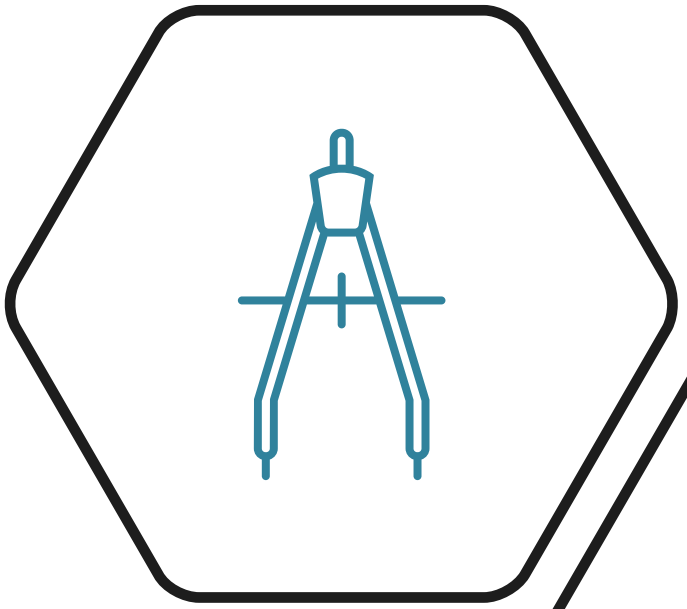
Researchers are defined according to the tasks and duties undertaken in the job

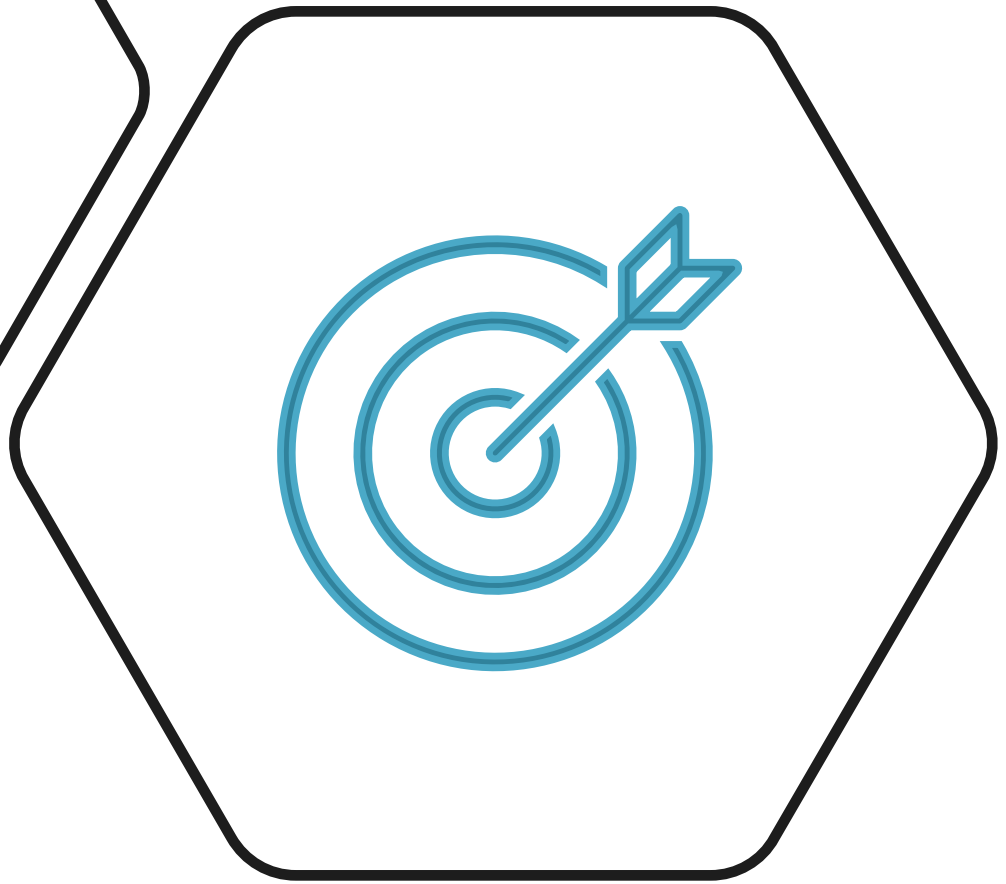
- Individuals employed in research activities across all sectors and fields of science
- Researchers are considered to be **"professionals engaged in:**
  - **the conception or creation of new knowledge,**
  - **conducting research and**
  - **improving or developing concepts, theories, models, techniques instrumentation, software or operational methods"**

(Frascati Manual)

- Research support staff (administrative duties, lab technicians, project management) would not be the primary focus of the Observatory
- Typically associated to individuals having a PhD (or working towards obtaining one)

Multiple definitions of researchers





- Risk of leading to erroneous conclusions when putting all together in the same observatory
- Conservative approach: opting for a clear but narrow definition vs a broader and diffuse definition
- Advantages in terms of policy design, monitoring, and evaluation.

Observatory for research careers and talent circulation: conceptual framework

Building Block A:
Skills & training

A-1: Competences – Institutional level

A-2: Competences – Individual level

A-3: Careers & Training

Building Block B:
Research jobs

B-1: Supply

B-2: Demand

B-3: Type of contract

B-4: Renumeration

B-5: Social & Organisational

Building Block C:
Mobility & exchange

C-1: Talent exchange

C-2: Talent circulation

C-3: Brain drain

C-4: Intersectoral mobility

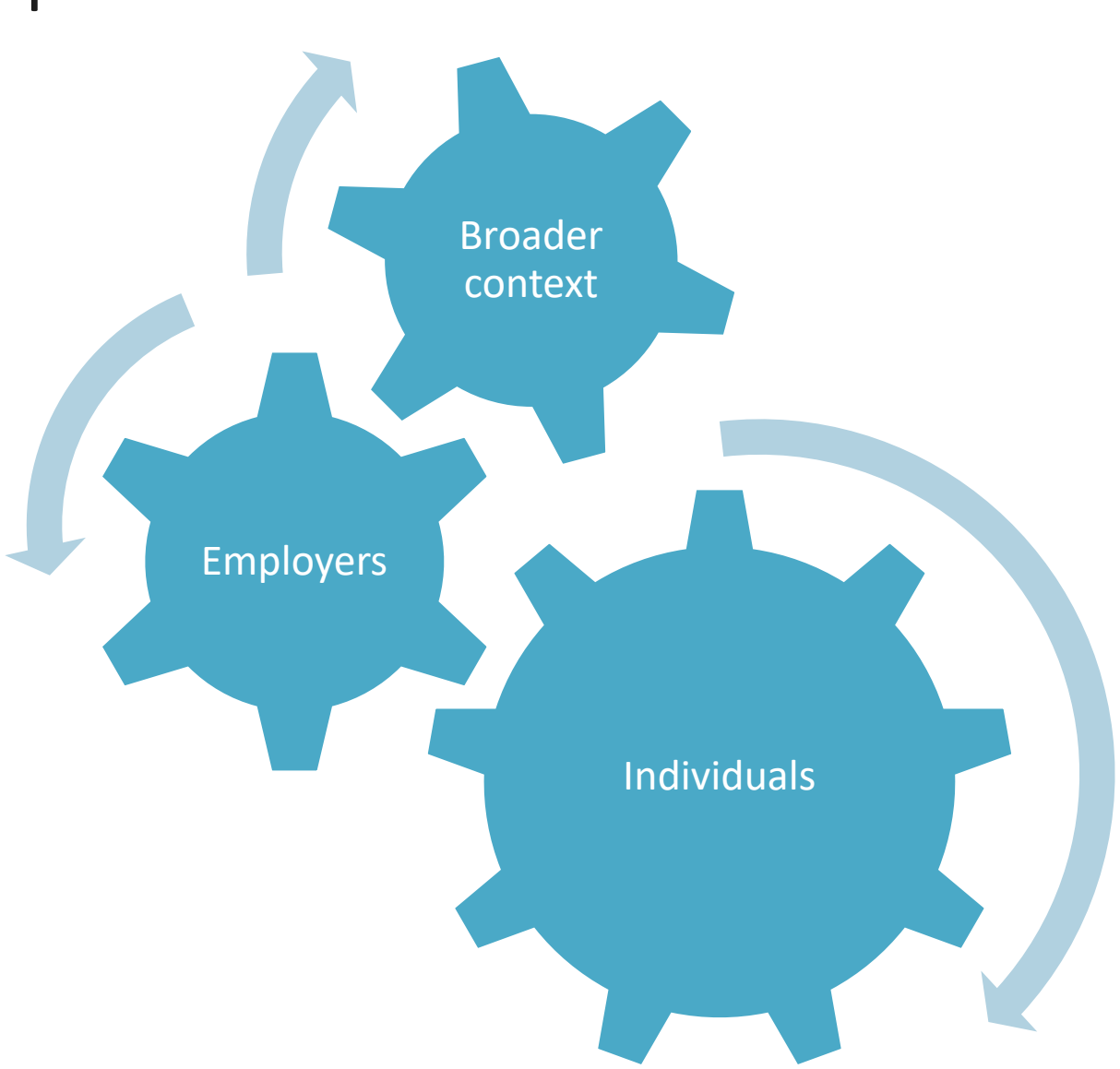
Which competences do researchers have/need?

Under which conditions do researchers work?

To what extent do researchers move abroad/across sectors?

2. Data screening

Types of data



Research
Careers
Observatory

Data screening

Data collection method

Registration data/surveys embedded in public national statistics planning

Ad hoc surveys: narrower target & more flexible approach

Data collection target

Organisations

(Companies, public organisations, universities and higher education centers and private non-profit organisations)

Sectoral coverage

Research and development (R&D) statistics

(All sectors)

UIS Unesco, Eurostat rd_p

Structure of Earnings Survey

UOE Data (UNESCO/ OECD/Eurostat)

(Education)

Sectoral coverage

Observatory to measure institutional transformation (HEIs)
(Knowledge Ecosystems in the New ERA)

(Higher Education Institutions)

Individuals

(Researchers)

Labour Force Survey

(All sectors)

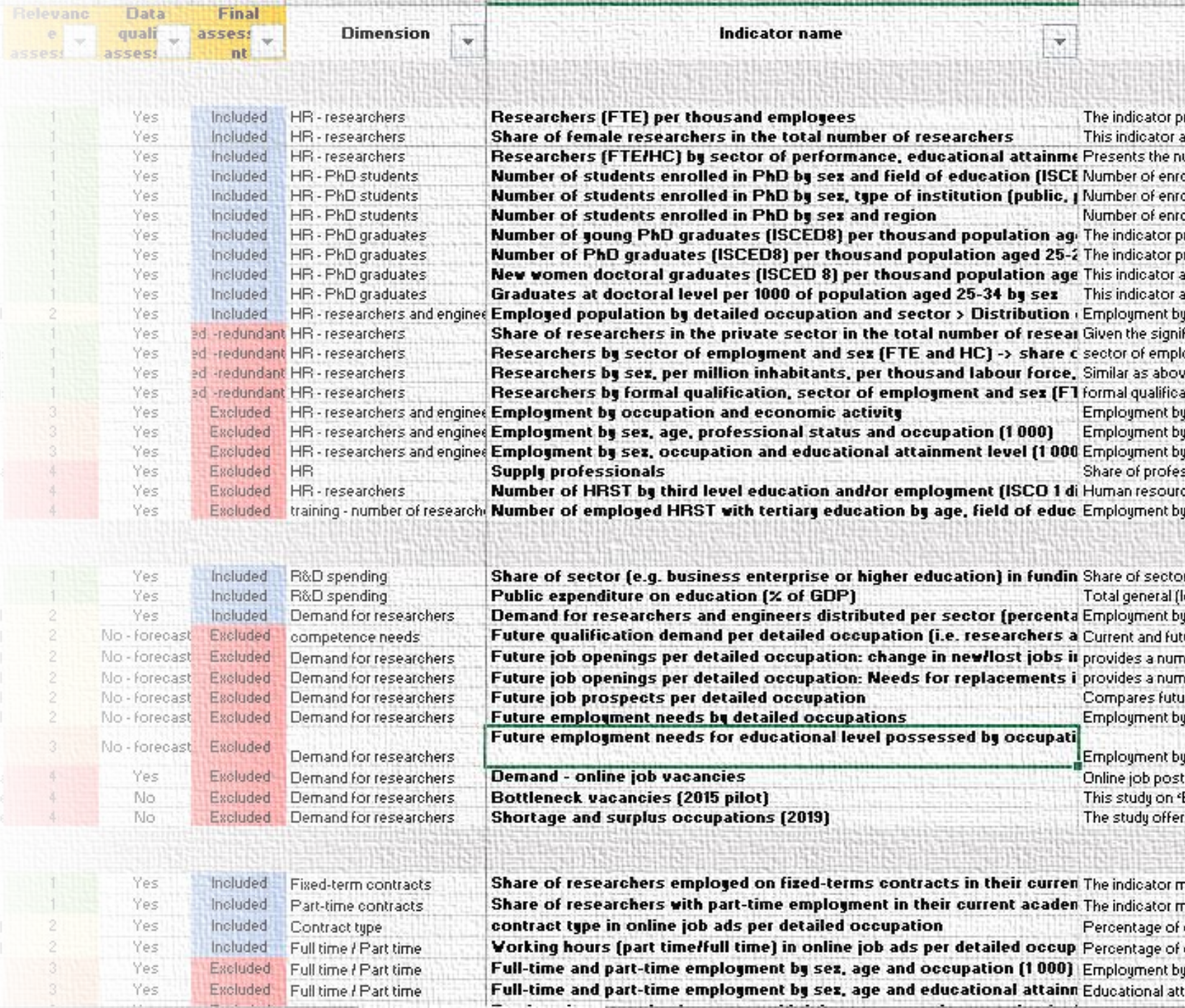
Skills panorama (CEDEFOP)

OECD´s Skills for Jobs indicators

MORE

(Higher Education Institutions)

>120 Indicators screened & assessed



Relevance assessment	Data quality assessment	Final assessment	Dimension	Indicator name	
1	Yes	Included	HR - researchers	**Researchers (FTE) per thousand employees**	The indicator p
1	Yes	Included	HR - researchers	**Share of female researchers in the total number of researchers**	This indicator a
1	Yes	Included	HR - researchers	**Researchers (FTE/HC) by sector of performance, educational attainme**	Presents the nu
1	Yes	Included	HR - PhD students	**Number of students enrolled in PhD by sex and field of education (ISCE**	Number of enro
1	Yes	Included	HR - PhD students	**Number of students enrolled in PhD by sex, type of institution (public,**	Number of enro
1	Yes	Included	HR - PhD students	**Number of students enrolled in PhD by sex and region**	Number of enro
1	Yes	Included	HR - PhD graduates	**Number of young PhD graduates (ISCED8) per thousand population ag**	The indicator p
1	Yes	Included	HR - PhD graduates	**Number of PhD graduates (ISCED8) per thousand population aged 25-2**	The indicator p
1	Yes	Included	HR - PhD graduates	**New women doctoral graduates (ISCED 8) per thousand population age**	This indicator a
1	Yes	Included	HR - PhD graduates	**Graduates at doctoral level per 1000 of population aged 25-34 by sex**	This indicator a
2	Yes	Included	HR - researchers and enginee	**Employed population by detailed occupation and sector > Distribution**	Employment by
1	Yes	ed -redundant	HR - researchers	**Share of researchers in the private sector in the total number of resear**	Given the signif
1	Yes	ed -redundant	HR - researchers	**Researchers by sector of employment and sex (FTE and HC) -> share c**	sector of emplo
1	Yes	ed -redundant	HR - researchers	**Researchers by sex, per million inhabitants, per thousand labour force,**	Similar as abov
1	Yes	ed -redundant	HR - researchers	**Researchers by formal qualification, sector of employment and sex (F1**	formal qualifica
3	Yes	Excluded	HR - researchers and enginee	**Employment by occupation and economic activity**	Employment by
3	Yes	Excluded	HR - researchers and enginee	**Employment by sex, age, professional status and occupation (1 000)**	Employment by
3	Yes	Excluded	HR - researchers and enginee	**Employment by sex, occupation and educational attainment level (1 000**	Employment by
4	Yes	Excluded	HR	**Supply professionals**	Share of profes
4	Yes	Excluded	HR - researchers	**Number of HRST by third level education and/or employment (ISCO 1 di**	Human resourc
4	Yes	Excluded	training - number of researche	**Number of employed HRST with tertiary education by age, field of educ**	Employment by
1	Yes	Included	R&D spending	**Share of sector (e.g. business enterprise or higher education) in fundin**	Share of sector
1	Yes	Included	R&D spending	**Public expenditure on education (% of GDP)**	Total general (I
2	Yes	Included	Demand for researchers	**Demand for researchers and engineers distributed per sector (percenta**	Employment by
2	No - forecast	Excluded	competence needs	**Future qualification demand per detailed occupation (i.e. researchers a**	Current and futu
2	No - forecast	Excluded	Demand for researchers	**Future job openings per detailed occupation: change in new/lost jobs i**	provides a num
2	No - forecast	Excluded	Demand for researchers	**Future job openings per detailed occupation: Needs for replacements i**	provides a num
2	No - forecast	Excluded	Demand for researchers	**Future job prospects per detailed occupation**	Compares futu
2	No - forecast	Excluded	Demand for researchers	**Future employment needs by detailed occupations**	Employment by
3	No - forecast	Excluded	Demand for researchers	**Future employment needs for educational level possessed by occupati**	Employment by
4	Yes	Excluded	Demand for researchers	**Demand - online job vacancies**	Online job post
4	No	Excluded	Demand for researchers	**Bottleneck vacancies (2015 pilot)**	This study on "B
4	No	Excluded	Demand for researchers	**Shortage and surplus occupations (2019)**	The study offer
1	Yes	Included	Fixed-term contracts	**Share of researchers employed on fixed-terms contracts in their curren**	The indicator m
1	Yes	Included	Part-time contracts	**Share of researchers with part-time employment in their current acaden**	The indicator m
2	Yes	Included	Contract type	**contract type in online job ads per detailed occupation**	Percentage of
2	Yes	Included	Full time / Part time	**Working hours (part time/full time) in online job ads per detailed occup**	Percentage of
3	Yes	Excluded	Full time / Part time	**Full-time and part-time employment by sex, age and occupation (1 000)**	Employment by
3	Yes	Excluded	Full time / Part time	**Full-time and part-time employment by sex, age and educational attainn**	Educational att

3. Criteria for the selection of indicators

Criteria for the selection of indicators

Availability entails that the data for the indicator is readily available or that it can be calculated on the basis of existing data

- **Relevance assessment:**
  - 1) Available and relevant:
    - Indicators based on the Frascati manual definition of researchers (e.g. official R&D statistics)
  - 2) Available and only partially in line with the observatory
    - Indicators based on ISCO 2 Digit category (Science and Engineering professionals)
  - 3) Available and not fully in line with the observatory
    - Indicators based on ISCO 1 Digit category (Professionals)
  - 4) Linked to the topic but data not (yet) available, do not meet data quality criteria, or definition is not fully in line with the defined scope
- **Data quality assessment:**
  - Coverage: Data is available for all EU27 countries
  - Evolution: Time series are or will be available
  - Granularity: Data available at least at country level

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4. Development of recommendations for the future Researchers' Career Observatory

Observatory for research careers and talent circulation: conceptual framework

Building Block A:
Skills & training

A-1: Competences – Institutional level

A-2: Competences – Individual level

A-3: Careers & Training

Building Block B:
Research jobs

B-1: Supply

B-2: Demand

B-3: Type of contract

B-4: Renumeration

B-5: Social & Organisational

Building Block C:
Mobility & exchange

C-1: Talent exchange

C-2: Talent circulation

C-3: Brain drain

C-4: Intersectoral mobility

Which competences do researchers have/need?

Under which conditions do researchers work?

To what extent do researchers move abroad/across sectors?

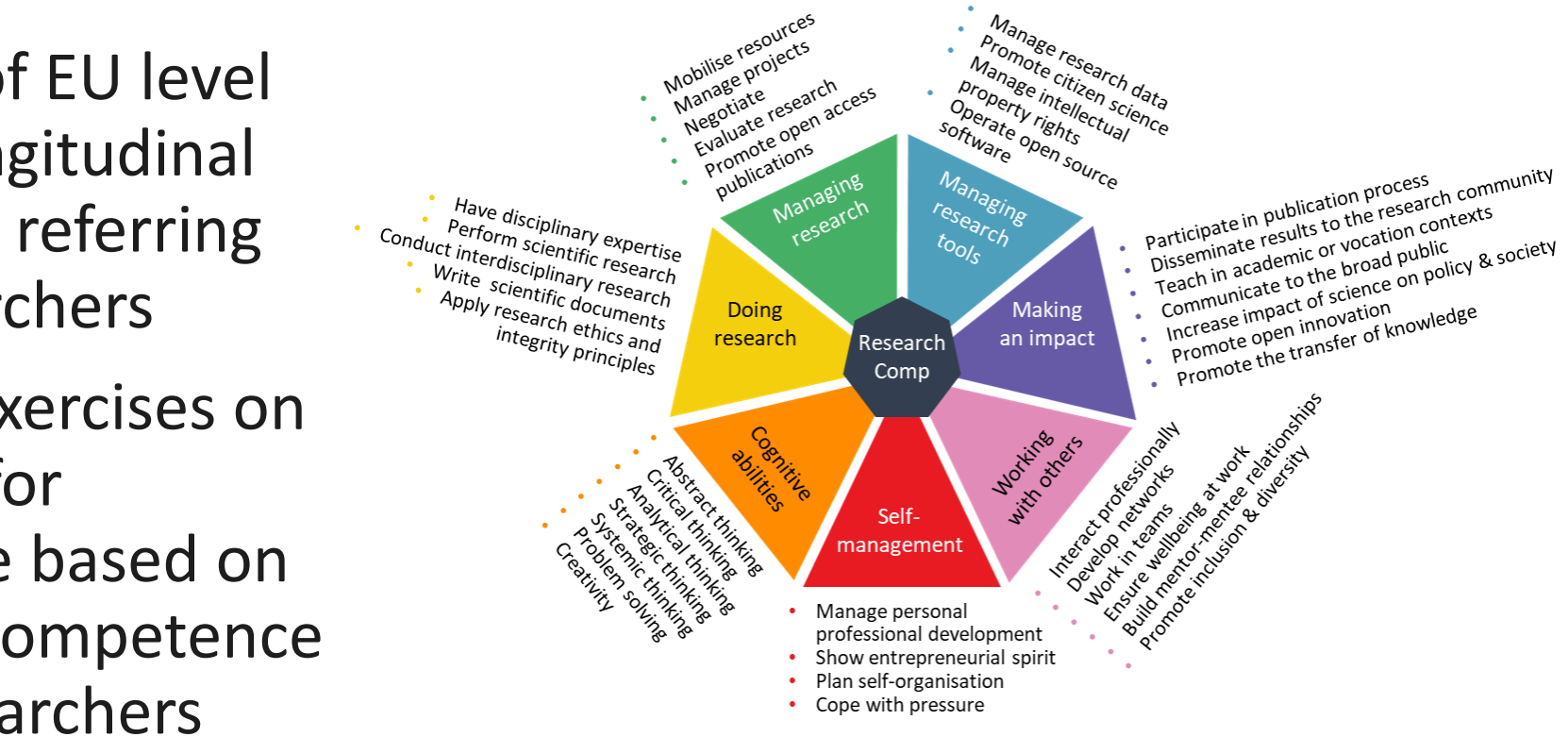
Building Block A:
Skills & Training

A-1 Competences - institutional level
A-2 Competences - individual level
A-3 Career & Training

General remarks

Building Block A:
Skills & Training

- Limited availability of EU level comparative and longitudinal data on these topics referring specifically to researchers
- Future monitoring exercises on skills/competences for researchers could be based on the new European Competence Framework for Researchers



Indicators

Building Block A:
Skills & Training

Data currently available:

Dimension	Indicator name
Training	**PhDs candidates trained in transferable skills**
Career	**Appreciation of transferable skills**
Institutional support	**PhD graduates being trained in a doctoral school**
Skills	**Skills by occupation**

Recommendations for future indicators

At the level of individual researchers:

- More information on access to career support services, wellbeing, feedback & appraisal
- More information on skills and training under the new category for researchers that will be included in ESCO (including skills demand, skills needs, skills by occupation, etc.)

Building Block B:
Research Jobs

B-1 Supply
B-2 Demand
B-3 Type of contract
B- 4 Renumeration
B-5 Social & organisational

General remarks

Building Block B:
Research Jobs

- Many indicators available, but not all of them capturing the same target group
- Many of them are based on cross sectional or forecasted data
- New indicators to be constructed in the future with the new category for researchers in ESCO => more precise information on remuneration, working conditions, career progression

~ Indicates that a similar indicator is already being/has been computed by the indicated organisation

Indicators

Building Block B:
Research Jobs

Dimension	Indicator name
B-1: Supply	
HR - researchers	**Researchers**
HR - PhD candidates	**PhD candidates**
HR - PhD graduates	**PhD graduates**
HR - researchers and engineers	**Researchers & engineers (ISCO)**
Expenditure	**Public expenditure on education**
B-2: Demand	
Expenditure	**R&D expenditure**
Demand for researchers	**Demand for researchers and engineers**
B-3: Type of contract	
Fixed-term contracts	**Fixed term contracts**
Part-time contracts	**Part-time contracts**
Contract type	**Contract type in job advertisements**
Full time / Part time	**Working hours in job advertisements**
B-4: Remuneration	
Remuneration	**Satisfaction with remuneration**
	Remuneration compared to private sector
	Relative monthly gross income
B-5: Social & Organisational	
Social security benefits & pensions	**Satisfaction with pension plan in academic position**
	Satisfaction with social security plan in academic position
Gender equality, diversity & equality for people with caring duties	**Women as Grade A academic staff**
	Children below 3 in formal childcare
Career path	**HRS4R acknowledged institutions**
	Satisfaction with current academic position
	Transparency and meritocracy in academic career progression
	Satisfaction with academic recruitment processes
Protection against discrimination and unacceptable social behaviour	**Perception of language as a barrier in academic recruitment processes**
	Representation of underrepresented groups in academic recruitment

Building Block C:
Mobility & Exchange

C-1 Talent exchange
C-2 Talent circulation
C-3 Brain drain
C-4 Intersectoral mobility

General remarks

Building Block C: Mobility & Exchange

- The MORE surveys offer the most complete and rich set of information of the patterns of mobility of EU researchers to date
- However, these studies have traditionally focused on the study of the attractiveness of the ERA (focus on the destination country/ country of current employment)
- Information gap on brain drain:
  - There is little information on the flows of migrant researchers: where do these researchers go to? To which occupations? Motivations to leave their country of origin versus reasons for moving to their destination country

Possible pathways to address this gap

Improve our knowledge on individual flows and motivations by incorporating the perspective of country of origin in the MORE studies

Improve our knowledge on international and intersectoral flows by improving the representation of researchers in ISCO/ESCO (e.g. Labour Force Survey)

Indicators

Building Block C: Mobility & Exchange

Dimension	Indicator name
C-1: Talent Exchange	
Total international mobility	**Foreign (mobile) PhD candidates**
	Foreign (mobile) PhD graduates
	Long-term mobile early-career stage researchers
	Long-term mobile post PhD researchers
	Short-term mobile post PhD researchers
	Virtual mobility as substitute for physical mobility
International co-publications	**International co-publications**
C-2: Talent Circulation	
International mobility with change of employer	**International mobility with change of employer**
	Foreign researchers based on citizenship
	Foreign researchers based on publication paths
	National researchers outside the country based on citizenship
	National researchers outside the country based on publication paths
C-3: Brain Drain	
Brain drain	**Brain drain based on citizenship**
	Brain drain based on publication paths
C-4: Intersectoral Mobility	
Intersectoral mobility	**PhD intersectoral mobility**
	Post-PhD intersectoral mobility
	Value of intersectoral experience in academic careers
	Interdisciplinary move during research career
Interdisciplinary mobility	**Value of interdisciplinary experience in academic careers**

Observatory for research careers and talent circulation: development of tools and activities

- **First workshop**: focus on obtaining insights in which data and information is specially needed with regard to mobility, skills, careers and working conditions, and how they can best be conveyed to the interested user of the Researchers' Career Observatory.

  → 16th of November 2021

- **Second workshop**: focus on the services to be developed for the future Researchers' Career observatory like type of data, type of reports, and positioning in the landscape. The workshop will allow to obtain insights in which data and information is needed, which services should be developed, and how can they best be conveyed to the user.

  → 9th of December 2021

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