Joint Research Centre

the European Commission's in-house science service

Serving society
Stimulating innovation
Supporting legislation

"*Universities between global challenges and regional development*"

6th ICA Rectors and Deans Forum 2016,
The Life Science University in the 21st Century
Global World, 26 and 27 October, Ghent

Miroslav Vesković

European Commission

Overview

European Commission

EC DG JRC -The European Commission's science and knowledge service

Challenge driven university

The challenge of connecting universities to regional growth: territorial and higher education perspectives

The global challenges of our time and the global trends

Evidence-informed policy-making

Instead of conclusions

Joint Research Centre

Directorate General Joint Research Centre

- DG JRC is the European Commission's science service
- Independent, evidence-based scientific and technical support
- Works in support of other Commission services, EU Institutions and Member States
- Independent of industrial and national interests

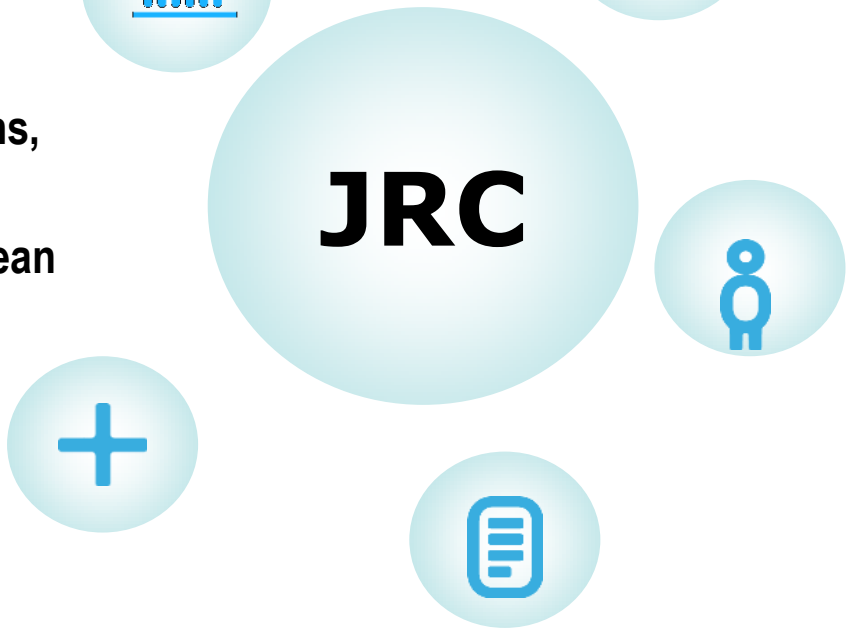
Directorate General Joint Research Centre

European Commission

Established in 1957

1000+
partners: Universities, public research organisations, industry groups, Member State governments, international organisations, academic umbrella organisations and European Parliament

Presence in 5 countries
Italy, Belgium, Germany, The Netherlands, Spain



~3000
permanent and temporary staff, 1500 core research staff, 83%of core research staff with PhDs

125
instances of support to the EU policy-maker annually

Over 1,400 scientific publications per year, 40-50% of JRC publications belong to the top 25% most cited publications

Joint Research Centre

DG JRC - Response to Global Challenges

European Commission

Economy, finance and markets

Civil Security

Energy and transport

Food, nutrition and health

Environment, resource scarcity, climate change and sustainability

People, governance in multicultural and networked societies

Data and digital transformations

Migration and territorial development

Education, skills and employment

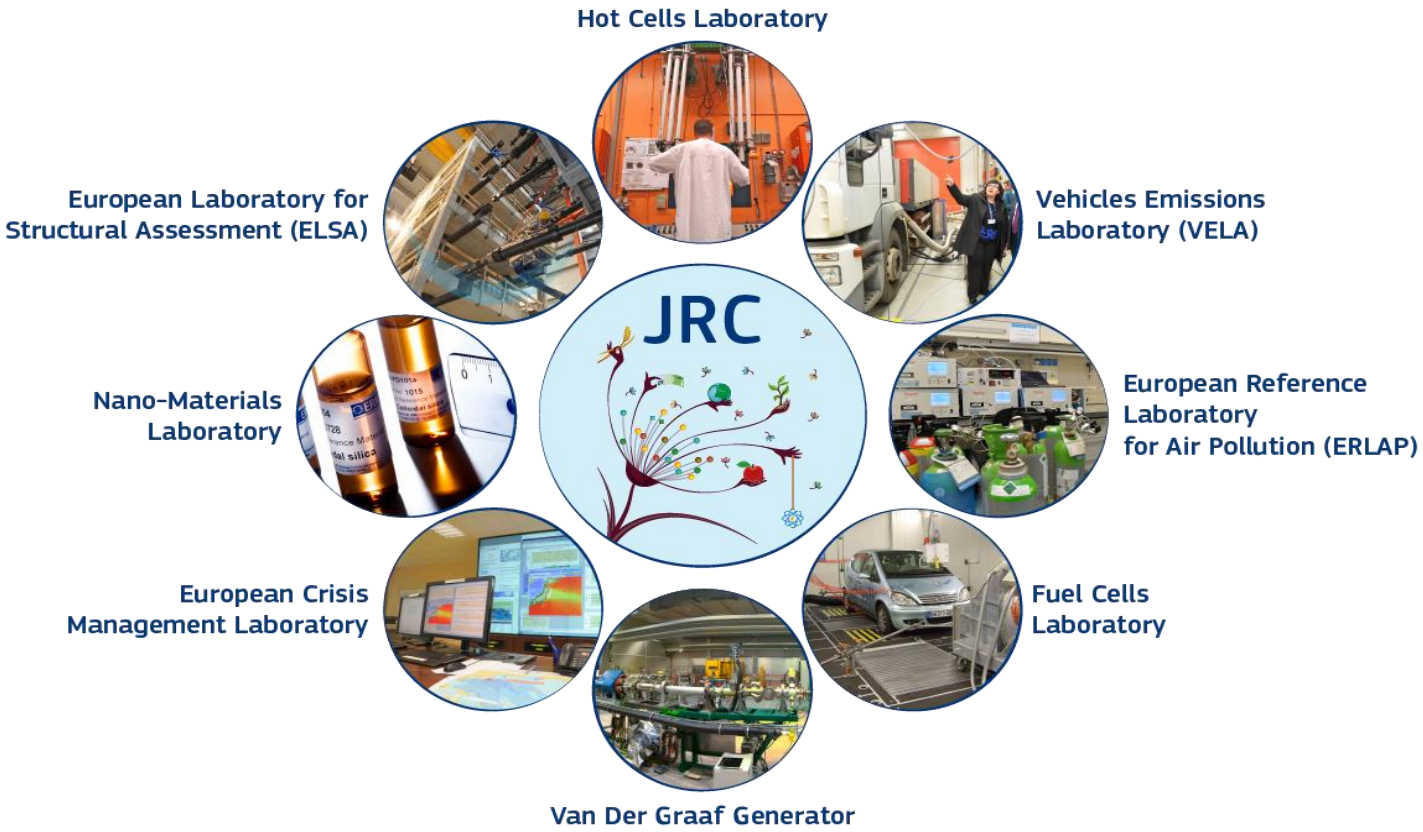
Innovation systems and processes

Joint Research Centre

JRC Scientific Facilities

European Commission

42 large scale research facilities, more than 110 online databases



Joint Research Centre

Bioeconomy Observatory - This website is managed by the European Commission's Joint Research Centre

European Commission

Your source of information on bioeconomy

Joint Research Centre

European Commission

The Problems of the World Are Complex

Source: ddp images/Marcus Brandt

http://www.sueddeutsche.de/politik/streit-beigelegt-einigung-ueber-foederalismusreform-1.413140

The challenge driven university

European Commission

The challenge-driven university: how real-life problems can fuel learning

Geoff Mulgan, Oscar Townsley, Adam Price

" There is a need for more systematic experimentation, assessment and the adoption of new ways of undertaking higher education in "the challenge driven university" which use/integrate real-life problems to fuel learning, and develop students by putting them up against problems and challenges for which there are no established answers.

"Students have to draw on many disciplines to solve them; they have to work in teams; and they have to collaborate with organisations outside higher education… and in the process students gain the fundamental skills required for success in the workplace: applied knowledge, critical thinking and communication"

Joint Research Centre

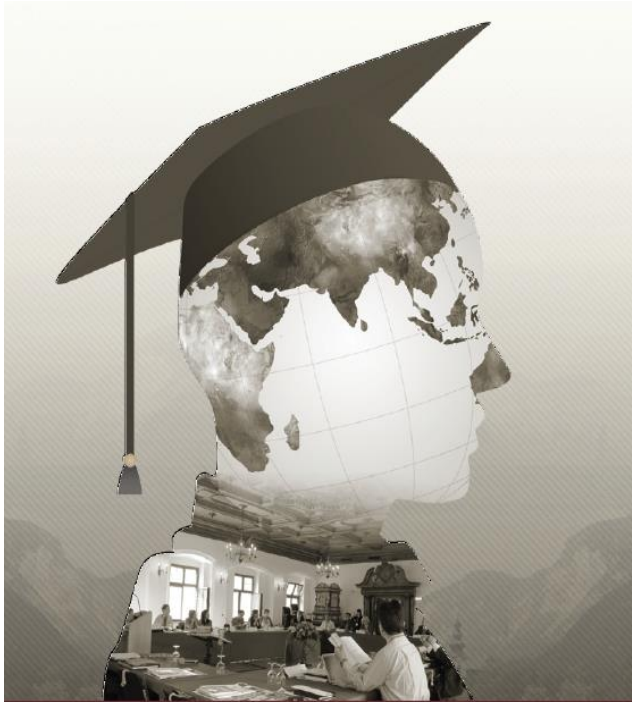
… the way of thinking **… the way of acting** **… the way of being**

The sum of all these shifts, of the way of thinking, acting and being, from EGO to ECO, characterised by transdisciplinary complex collaborative challenge-pull actions bottom-up co-created by T-shaped people bridging fragmented capacities, gives rise to a new type of university, the challenge-based university, in which students are considered education prosumers engaged with both local and global communities.

A way ahead:

New innovation models and institutional change in universities:

- **Societal challenges, social/open innovation, and the quadruple helix**
- **Responsible Research and Innovation**
- **The civic/engaged/challenge-driven university model**



Citizens

Science

The Knowledge Paradox

Infinitely far away, infinitesimally close

SCIENCE SOCIETY

The Knowledge Paradox

Infinitely far away, infinitesimally close

SCIENCE SOCIETY

The "quadruple helix" paradigm

"Open Innovation 2.0 (OI2) is a new paradigm based on a Quadruple Helix Model where government, industry, academia and civil participants work together to co-create the future and drive structural changes far beyond the scope of what any one organization or person could do alone.

Smart Specialisation

European Commission

Participatory process w/ Continuous Stakeholders' Engagement Quadruple Helix

Business

Manufacturing and services
Primary sectors
Financial sector
Creative industries
Enterprises (large and SMEs)
Clusters and organisations

Research and education

Public and private research bodies
Universities
Education and training
VET centres
Science and technology parks
Technology transfer offices

Public administration

Different government levels
Energy and innovation agencies
Regional development agencies
Business advice offices
Public procurement departments
Public incubators

Civil society/ Users

Non-Governmental Organisations
Citizens'initiatives
Societal challenges
Cooperative innovative solutions
Consumers associations
Talents

Entrepreneurial discovery.

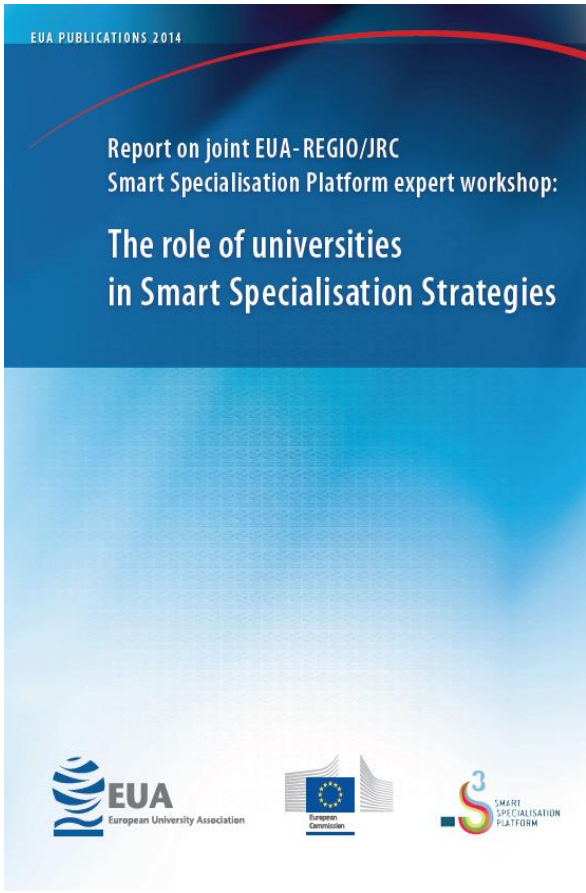
The process of systematically scanning for technological, political and regulatory, social, and demographic changes to discover opportunities to produce new good and services

Entrepreneurial in **composition** & **spirit:** risk-taking, broader view beyond boundaries …

Source: JRC – S3 Platform (Eye@RIS3)

- **Connecting Universities to Regional Growth: the contribution of universities to regional development, with a view to strengthening economic, social and territorial cohesion, in a sustainable way.**

- **Joint statement of the European Commission's S3 platform and the European University Association "MOBILISING UNIVERSITIES FOR SMART SPECIALISATION"**



European Commission

- **Expectations at the EC, national and regional level for universities to play an active role in the design and implementation of S3 and in creating synergies with the non-spatial research and innovation funds (Horizon 2020)**

- **The challenge for universities and for regions in meeting these expectations**

- **Link to debates about the role and purpose of higher education in contemporary society in response to the question: what are universities for?**

- **Two distinct research and policy communities (1)universities and HE systems with their own internal logic and (2)societal expectations of universities including their contribution to regional development**

- **S3 a learning journey for universities, regions and policy makers at the national and European level**


EUROPEAN COMMISSION

Perspectives for Research and Innovation Strategies for Smart Specialisation (RIS3) in the wider context of the Europe 2020 Growth Strategy

This report was written by the Expert Group established to assess the contribution of "Research and Innovation Strategies for Smart Specialisation" (RIS3) to the Europe 2020 Growth Strategy

2015 Directorate-General for Research and Innovation

Joint Research Centre

Higher Education for Smart Specialisation (HESS):

- A new project launched by the European Commission's S3 Platform, in cooperation with DG Education and Culture

- Broad aims in the context of smart specialisation:
  - Align human capital supply with S3 priorities (regional demand)
  - Strengthen the contribution of HEIs to regional innovation systems

HESS: Objectives

1. Understand and support HEIs to align their functions of human capital development with S3 priorities.
2. Analyse how the synergetic and strategic use of public funds can allow HEIs to better contribute to implementation of S3
3. Foster change within selected HEIs to allow them to take on a boundary spanning role in implementing S3
4. Facilitate external cooperation between the selected HEIs and other actors in the quadruple helix.
5. Co-produce knowledge within a Community of Practice and disseminate this knowledge to a large policy audience.

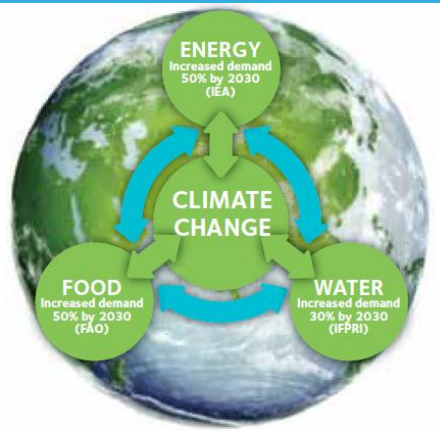
HESS: Who?

- **S3 Platform is an analytical, advisory and networking hub for EU Member States and regions in the design and implementation of Smart Specialisation Strategies (S3).**

- **Synergies with other JRC(IPTS) activities: Lagging regions, Stairway to Excellence, Thematic Platforms (Knowledge for Growth), OpenEdu, EntreComp (Information Society)**

- **Synergies with other DG EAC initiatives: UB Forum, Knowledge Alliances, HEInnovate…**

European Commission



Universities, curiosity driven research and tackling the global challenges of our time:

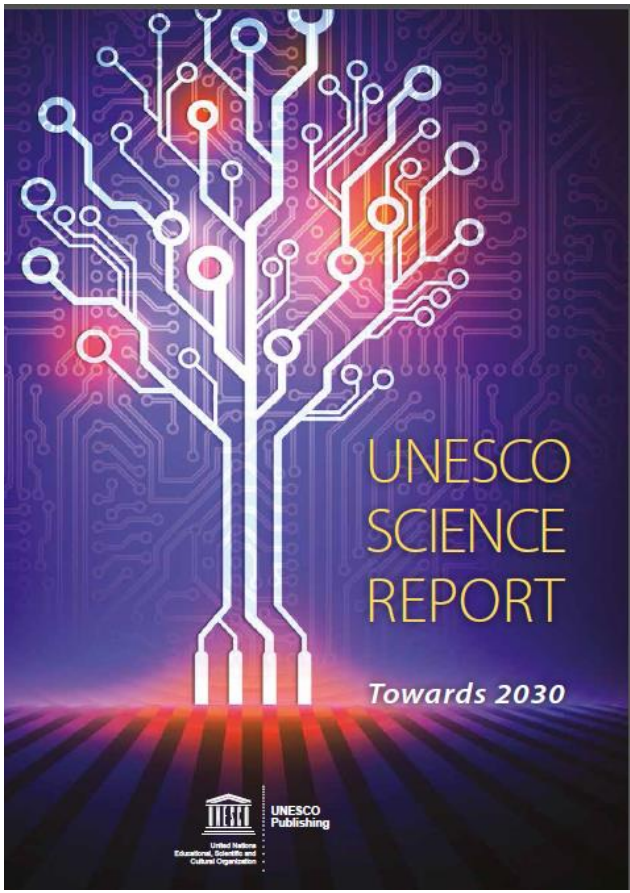
The role of universities (together with other institutions) in tackling the great challenges of our time in environment (climate change and environmental sustainability…), science (Science 2.0, the data revolution…), society (demography, migrations, inequality, communication, internet of everything…) and economy (employability, open innovations, circular economy…) through research and through evidence informed policy making

Providing scientific results is not enough – they must be communicated, to the society and to the policy makers;
Changing education in such a way to make students able to tackle those problems in the future

Joint Research Centre

UNESCO SCIENCE REPORT
Towards 2030 Universities: increasingly global players
Patrick Aebischer, President, Ecole polytechnique fédérale de Lausanne, Switzerland

Universities have become institutions of a global world, in addition to assuming their traditional local and national roles. The answers to global challenges (energy, water and food security, urbanization, climate change, etc.) are increasingly dependent on technological innovation and the sound scientific advice brokered to decision-makers.



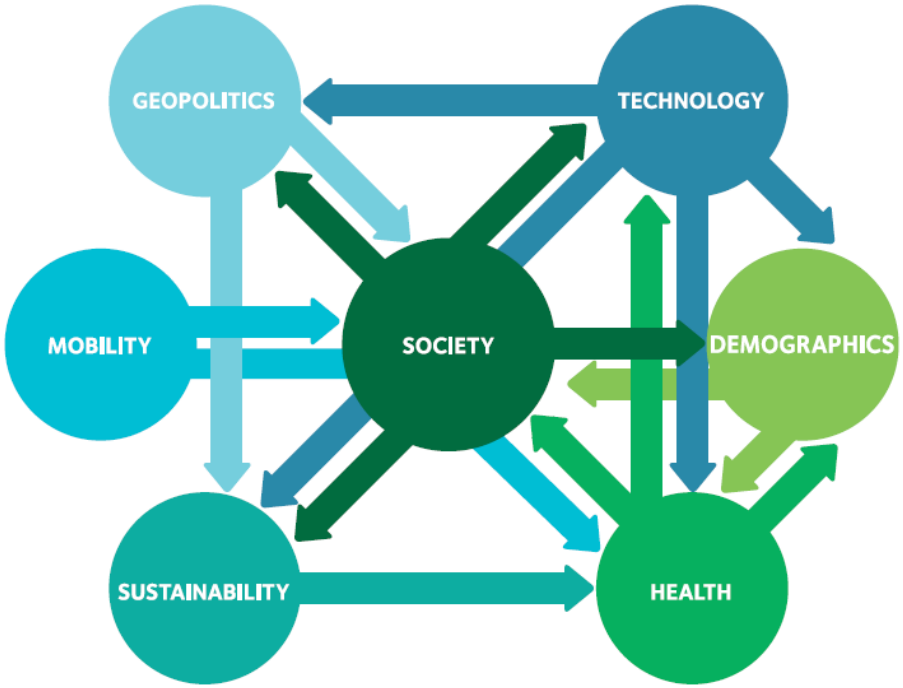
Robert Jan Smits, Director General for Research and Innovation:

"The key to universities becoming strategic institutions is to take a ***holistic view*** of their activities, rather than treating them in isolation. By integrating research, teaching and external engagement, the knowledge created can have a much greater impact"

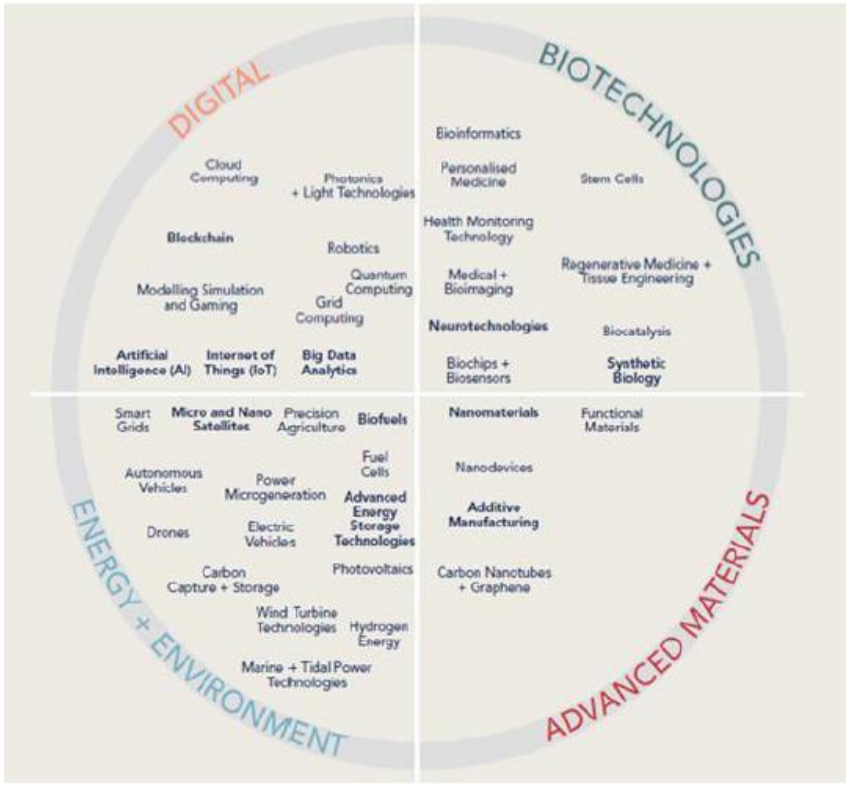
"University management as well as academic staff need to become pro-active and move beyond mono-disciplinary and mono functional actions. However, EU and national incentive structures also need to change because they are overly biased towards research output and can hinder universities in playing this strategic role"

FUTURE TRENDS

European Commission



Global megatrends in the 21st century
(Source: Oxford Martin Commission for Future Generations)



Forty key technologies for the future
(Source OECD)

Joint Research Centre

Global and European trends and uncertainties

European Commission

Global Trends to 2030: Can the EU meet the challenges ahead? The European Strategy and Policy Analysis System (ESPAS) project

- General
- Economy
- Technologies
- Society
- External relations

Joint Research Centre

THE FUTURE IS NOT PREDEFINED

IT VERY MUCH DEPENDS UPON THE POLICIES TAKEN

European Commission

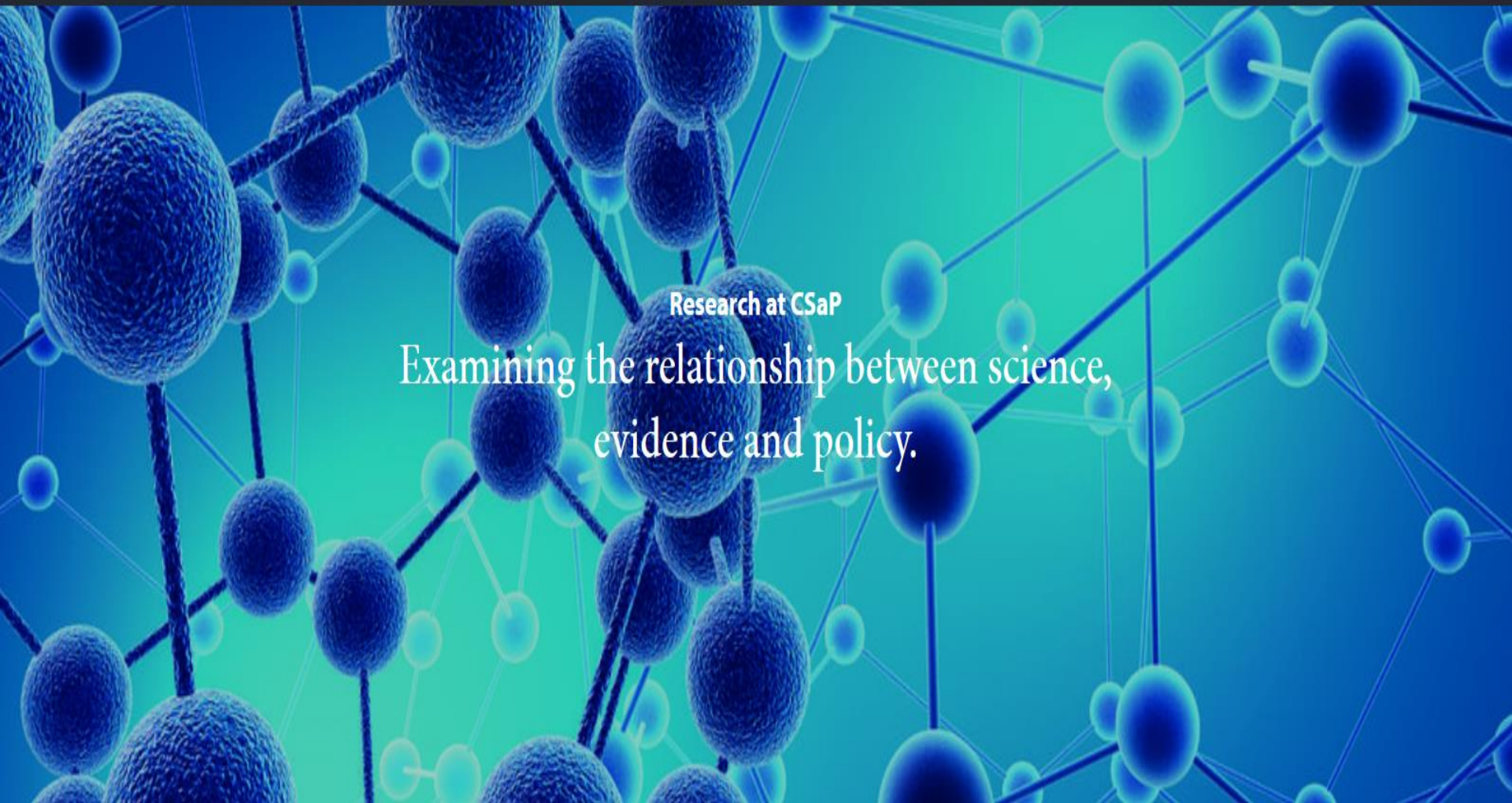
EVIDENCE-INFORMED POLICY-MAKING

Building Bridges Between Science and Policy

Decision-makers need their decisions to be informed by the best available science from across disciplines as these challenges no longer arrive in clean-cut discipline-shaped boxes.

The science-policy interface is a very specific field with its own framework requiring specific approaches.

Joint Research Centre



Research at CSaP

Examining the relationship between science, evidence and policy.

UNIVERSITY OF CAMBRIDGE

CSaP centre for science and policy

Pathways to Impact

Helping academics explore the policy implications of their research.

We help academics increase the policy impact of their work by facilitating meaningful connections through our workshops and Fellowships.

Projects & Publications

Translating research into practice.

Our projects and publications help translate complex scientific information into a language that policy makers can easily understand.

The CSaP Network

A unique community of academics and policy makers

CSaP's network spans all disciplines, connecting people from the physical, engineering and life sciences to the humanities, arts and social sciences.

Directorate General Joint Research Centre mission and role

European Commission

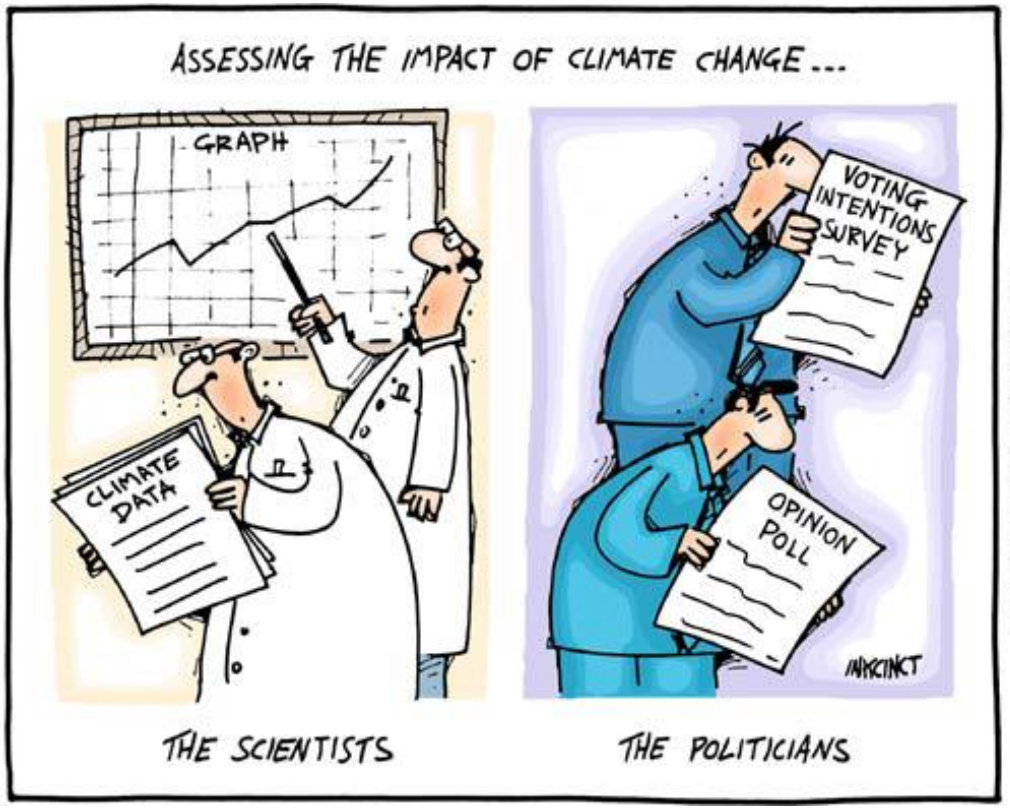
Vision:
"To play a central role in creating, managing and making sense of the collective scientific knowledge for better EU policy."

Mission:
"As the science and knowledge service of the Commission our mission is to support EU policies with independent evidence throughout the whole policy cycle."

Joint Research Centre

Science & Politics

European Commission



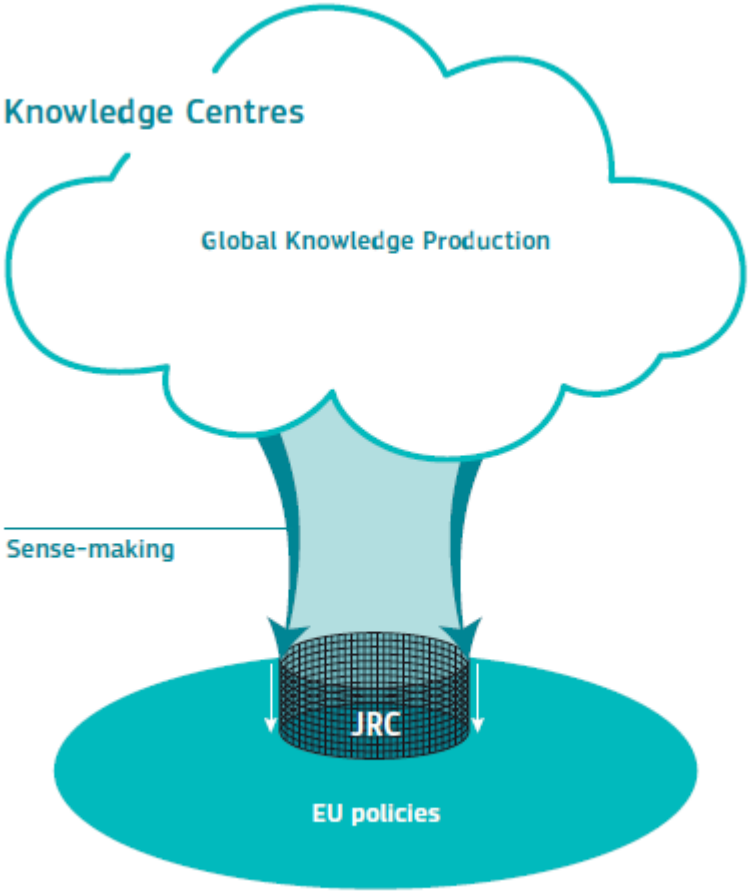
Joint Research Centre

EVIDENCE-INFORMED POLICY-MAKING

- Trust
- Timing
- Form
- Format

© Can Stock Photo

KNOWLEDGE…



- Knowledge production
- Knowledge management
- Sense making

Complementing knowledge competence with knowledge and management

European Commission

- **Competence Centre on Composite Indicators,**
- **Competence Centre on Microeconomic Evaluation**
- **Competence Centre on Modelling**
- **Marine Strategy Framework Directive - Competence Centre**

- **Knowledge Centre on Migration and Demography**

Disaster
Risk
Management
Knowledge
Centre

- **Disaster Risk Management Knowledge Centre**

- **Knowledge Centre for Territorial Policy**

Joint Research Centre

INSTEAD OF CONCLUSION:

European Commission

Joint Research Centre

E·O· Wilson:

"We are drowning in information, while starving for wisdom· The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely·"

Serving society
Stimulating innovation
Supporting legislation

Joint Research Centre (JRC)

www.jrc.ec.europa.eu

Contact: jrc-info@ec.europa.eu

Thank you

DG Joint Research Centre – JRC

Inter-institutional, International Relations and Outreach