Parallel Session (K.13)

Effectively Demonstrating & Amplifying the Impact of Research

Effectively Demonstrating & Amplifying the Impact of Research

Frank Zwetsloot

CEO of ScienceWorks, the Netherlands

AESIS

#SSHA22

ScienceWorks is an intermediary. We….

➢ Organize knowledge transfer (courses, conferences) on the professionalization of connecting science & society

➢ Develop our own methods & models for assessing impact of science.

➢ Provide advice on connecting science with external parties

➢ Developed international networks at the interface of science and society

➢ Focus recently on connecting evidence, data and policymaking (STEPPS)

ScienceWorks
Connecting Science & Society

Positioning of our mission and the international networks we have founded
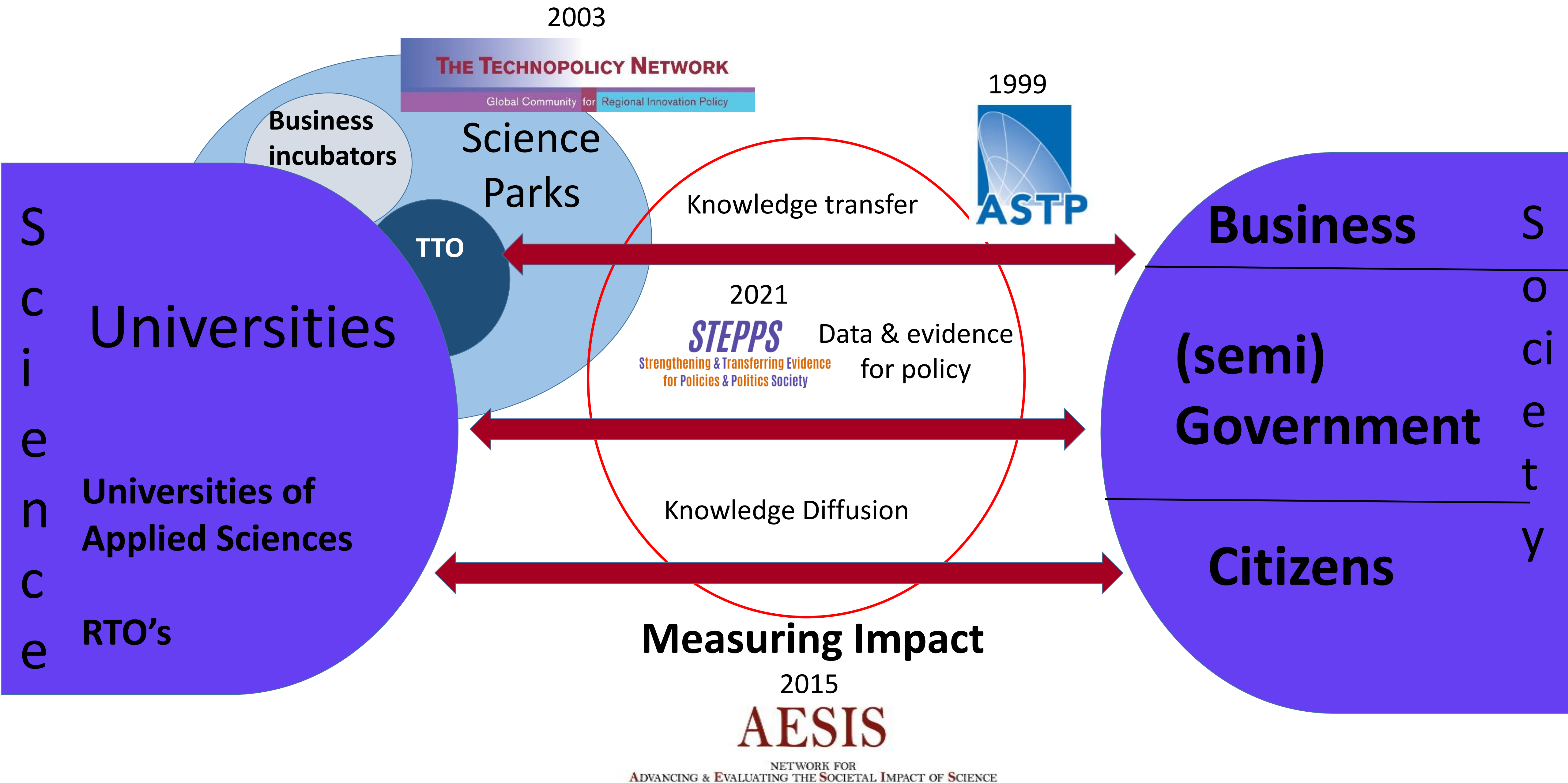
A short history of Impact

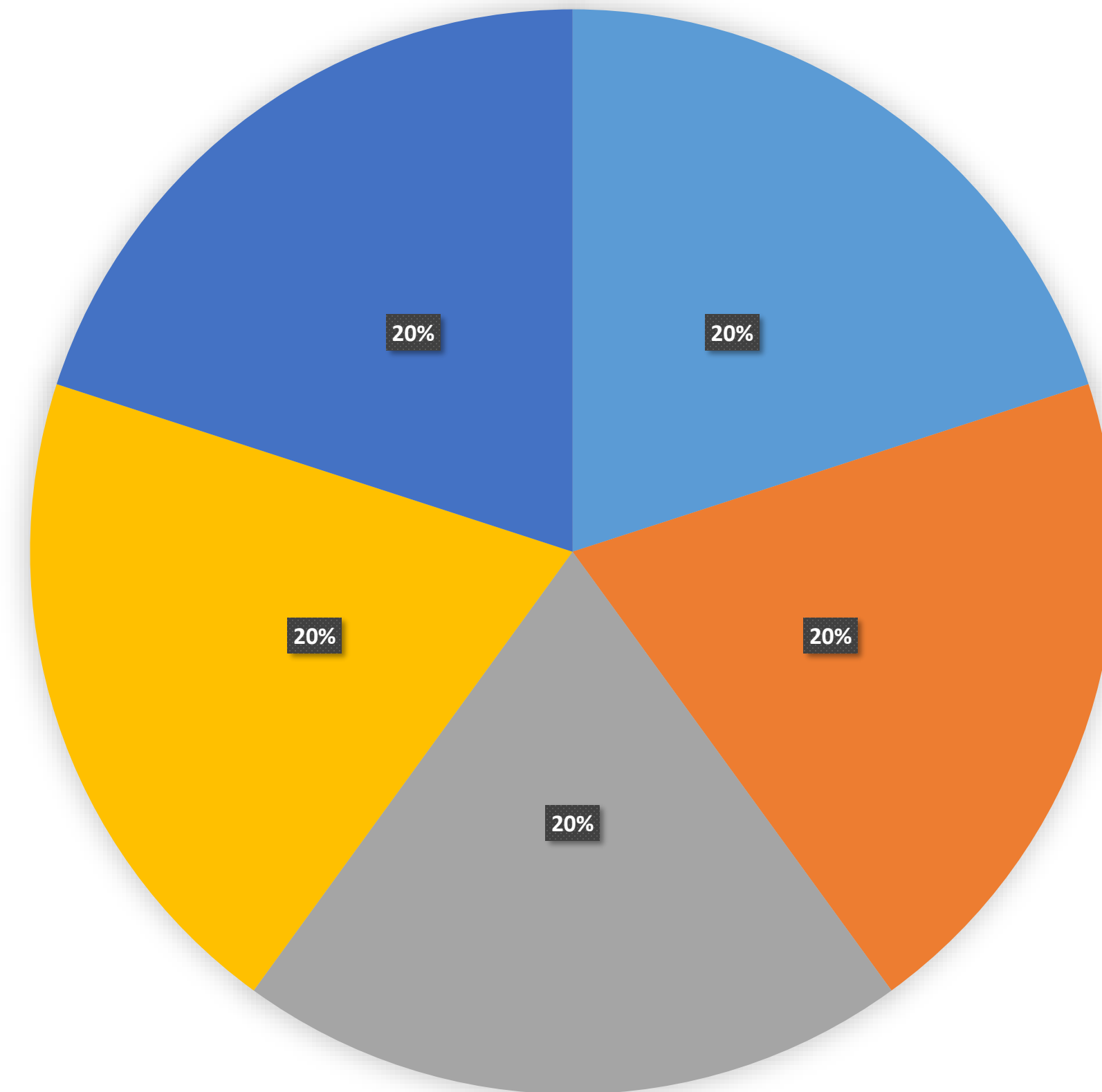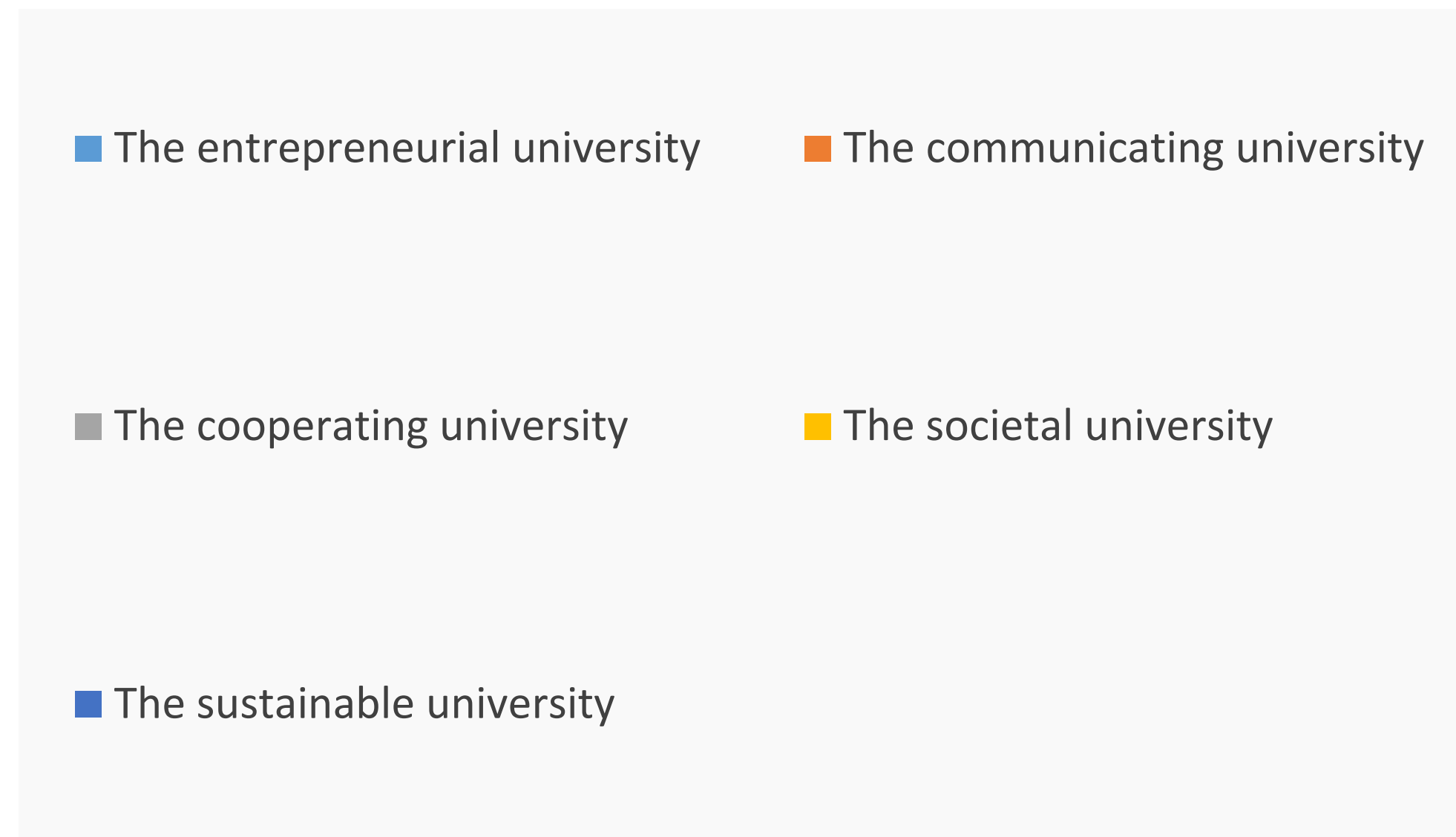|	80's	90's	00's	10's
Goals	Birth of the start-up culture	University Entrepreneurship	3rd mission	Impact
Instruments	TTO's	Holdings Incubators	Valorisation Strategies	National Policies & KEO's
Visibility	Start-ups	Scienceparks	Soc. Challenges Reg. ecosystems	Unicorns & SDG's
Involvement	Technology & Industry	Innovation clusters	University management	Including all stakeholders

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Can we measure impact?

➢ In the long term, the effect of science on society can be determined in broad sense

➢ … But it is nearly impossible to connect this to one research programme (Hill, Grant, REF analyse)

➢ Valorisatie – mapping the social value of science - can be measured; it describes the route towards Impact realization

➢ Impact can be part of a strategy or profile of a knowledge institution

ScienceWorks
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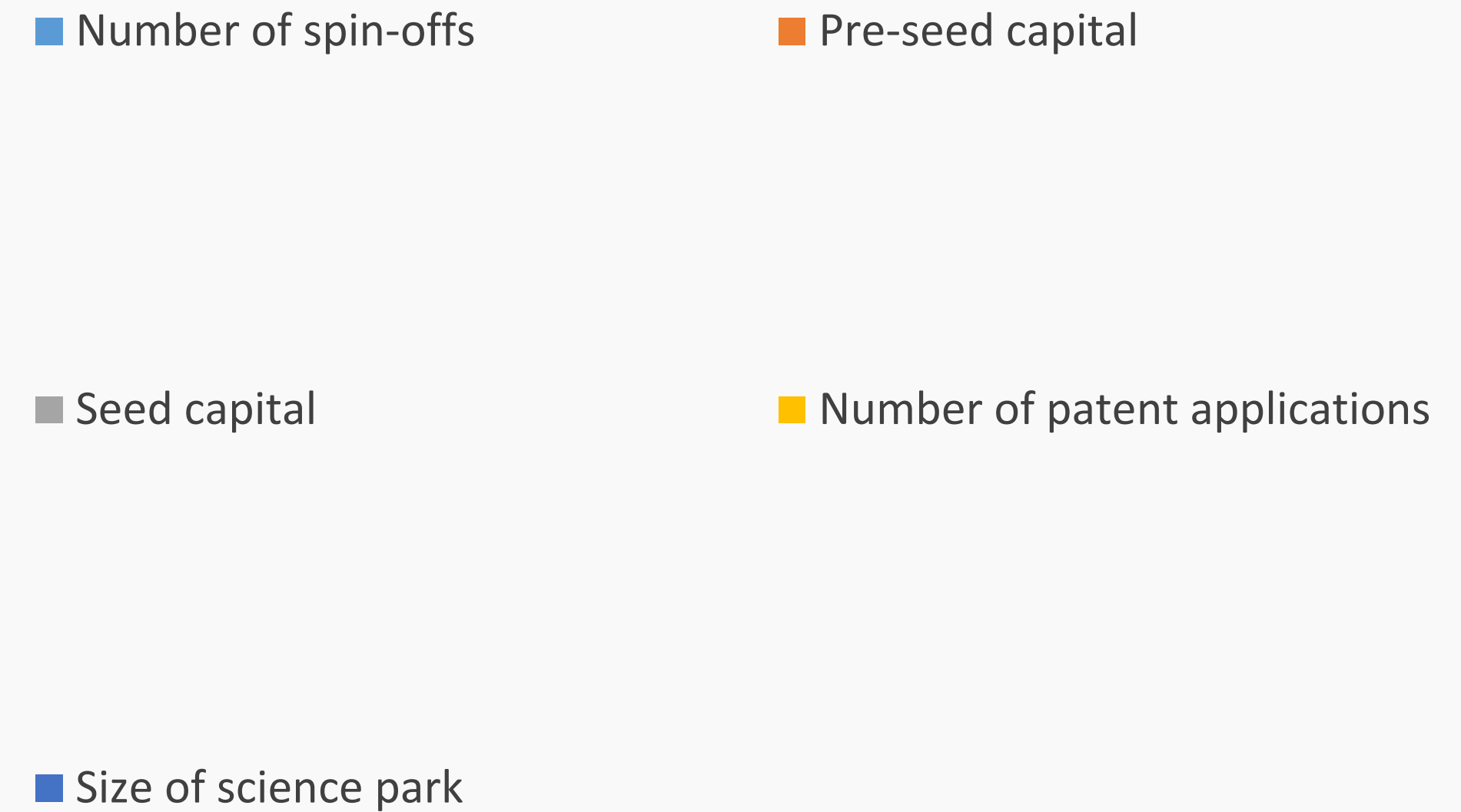# Measuring impact; The University Impact Ranking

➢ Since 2011, ScienceWorks is mapping the societal impact of Dutch universities through its bi-annual Impactranking

➢ Over time, five categories were created:
- The entrepreneurial university
- The cooperating university
- The communicating university
- The societal university
- The sustainable university

ScienceWorks
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Composition ranking

- The entrepreneurial university
- The communicating university
- The cooperating university
- The societal university
- The sustainable university

ScienceWorks
Connecting Science & Society

Composition 'the entrepreneurial university'

- Number of spin-offs
- Pre-seed capital
- Seed capital
- Number of patent applications
- Size of science park

40%
15%
15%
15%
15%

ScienceWorks
Connecting Science & Society
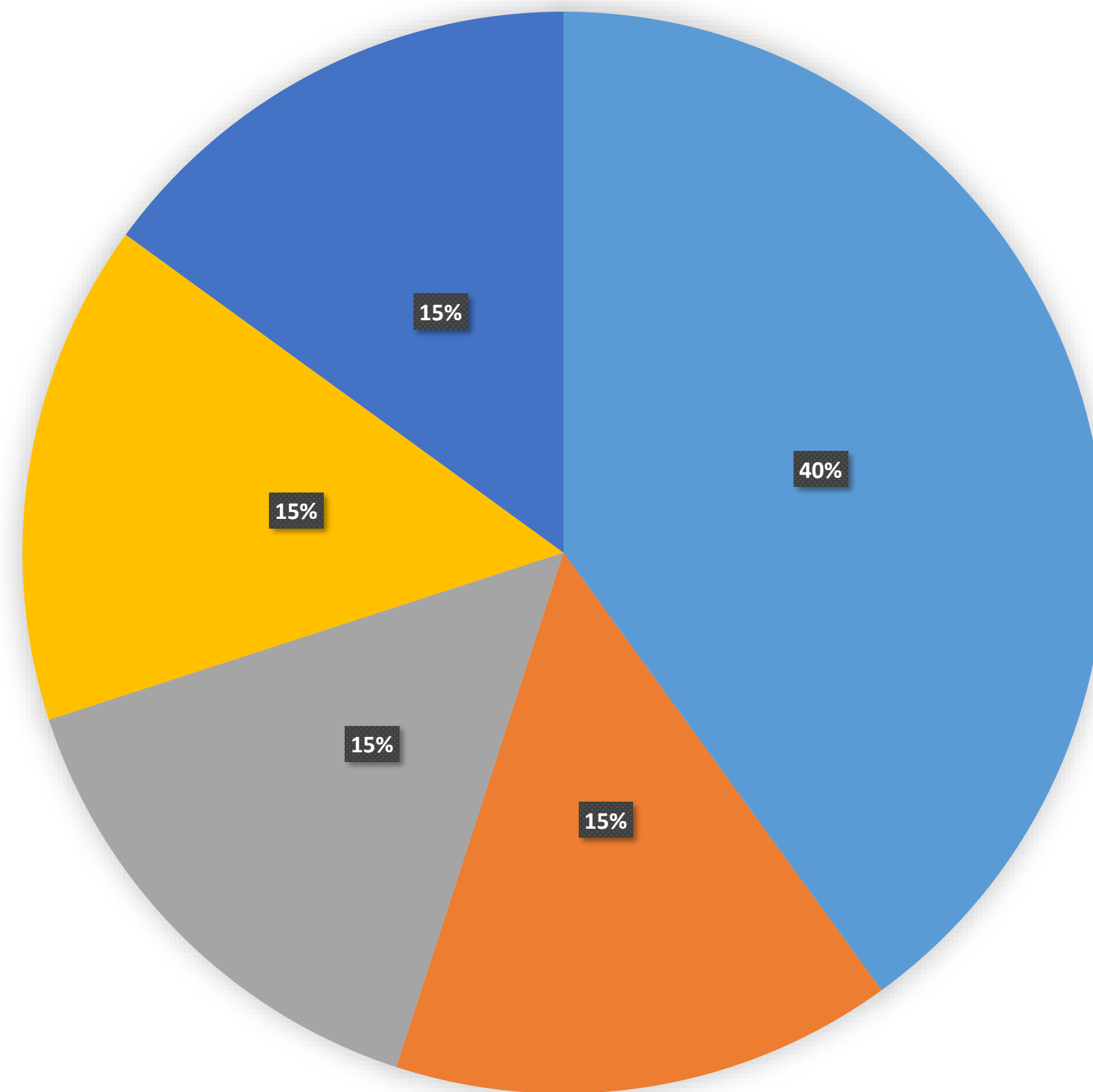
Composition 'the communicating university'

- 22.50% Mentions in national newspapers
- 22.50% Mentions on radio and TV
- 10% Mentions of 'impact' in the annual report
- 22.50% Mentions in international newspapers
- 22.50% Online reach
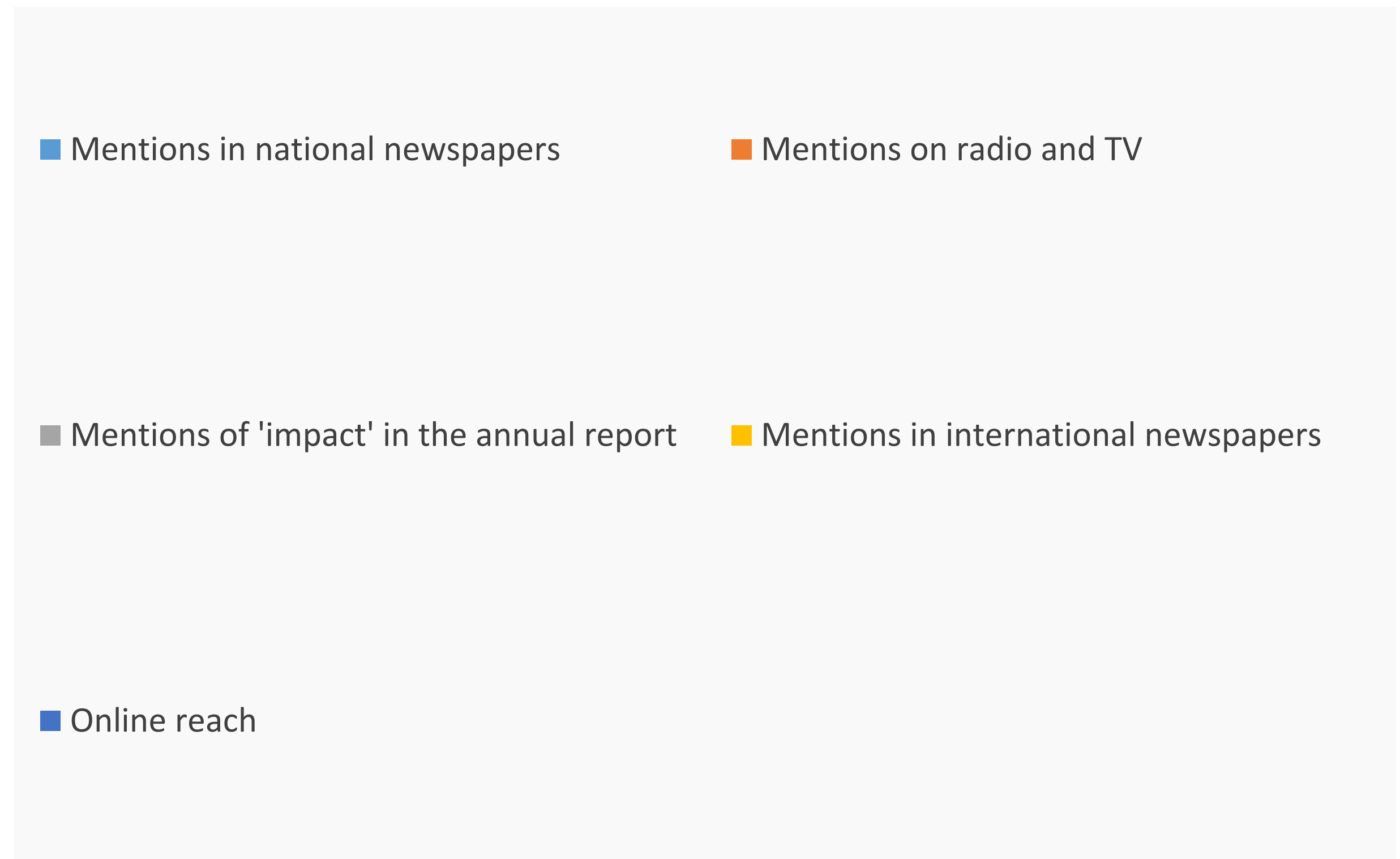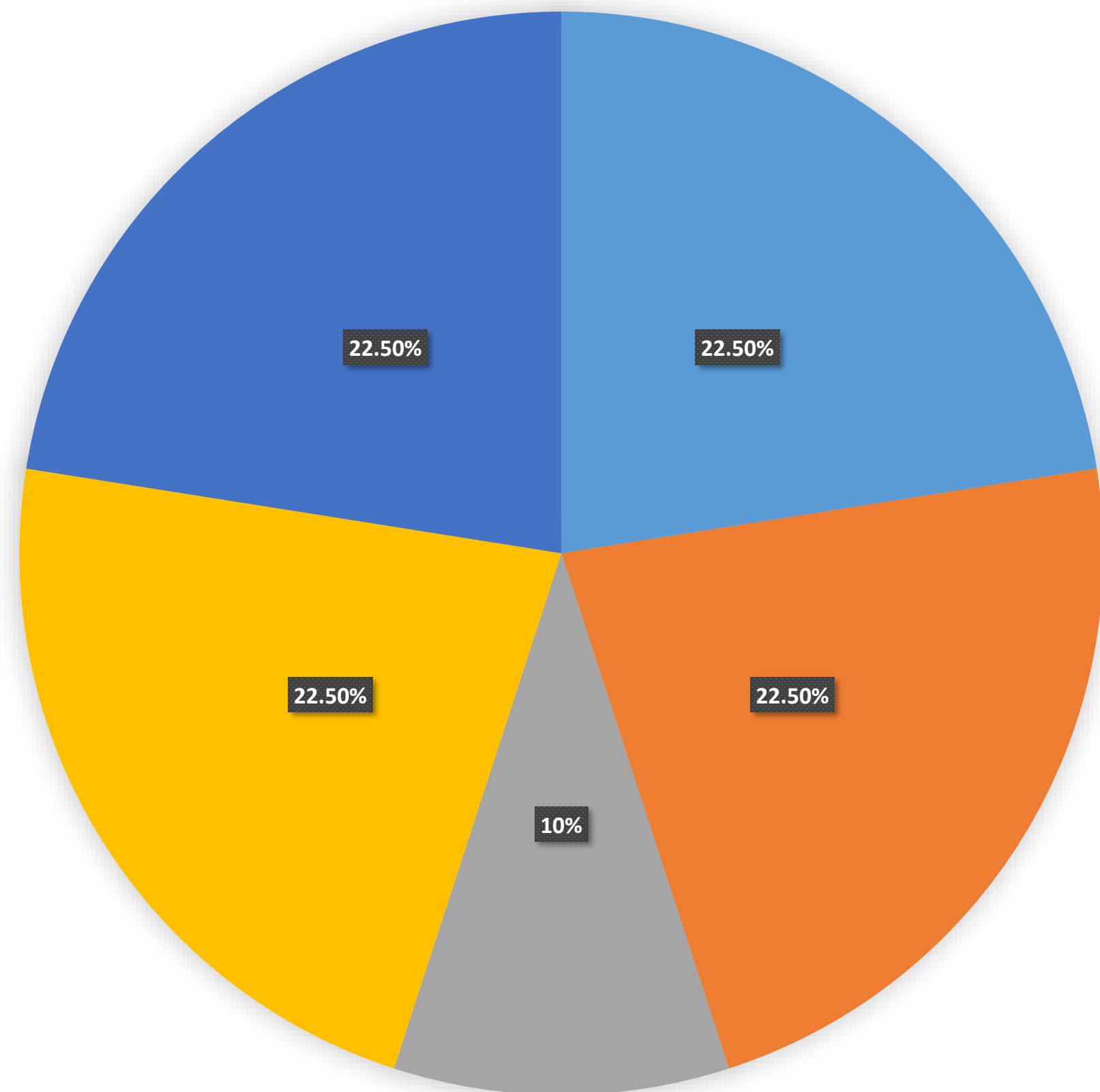
Composition 'the cooperating university'

- Co-publications with business
- TTW researches
- Participation in TKI's (Topsectors)
- Participation in NWA-consortia
- Third party income
- License income

ScienceWorks
Connecting Science & Society
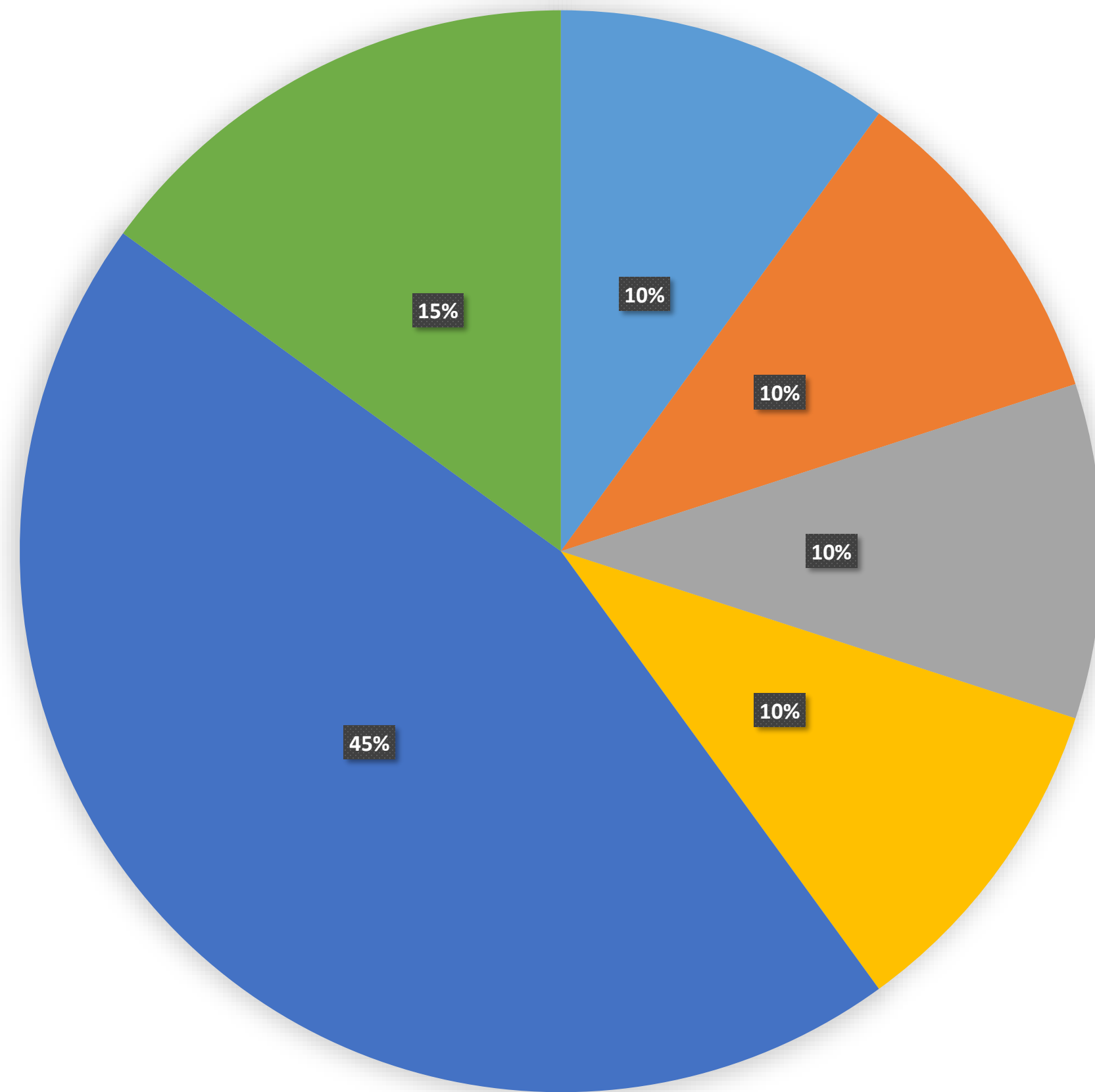
Composition 'the societal university'

➢ New category since 2017

Mentions in parliamentary papers

Mentions in municipal papers

Mentions in European Parliament

Membership advisory boards national government

25%   25%
25%   25%

ScienceWorks
Connecting Science & Society
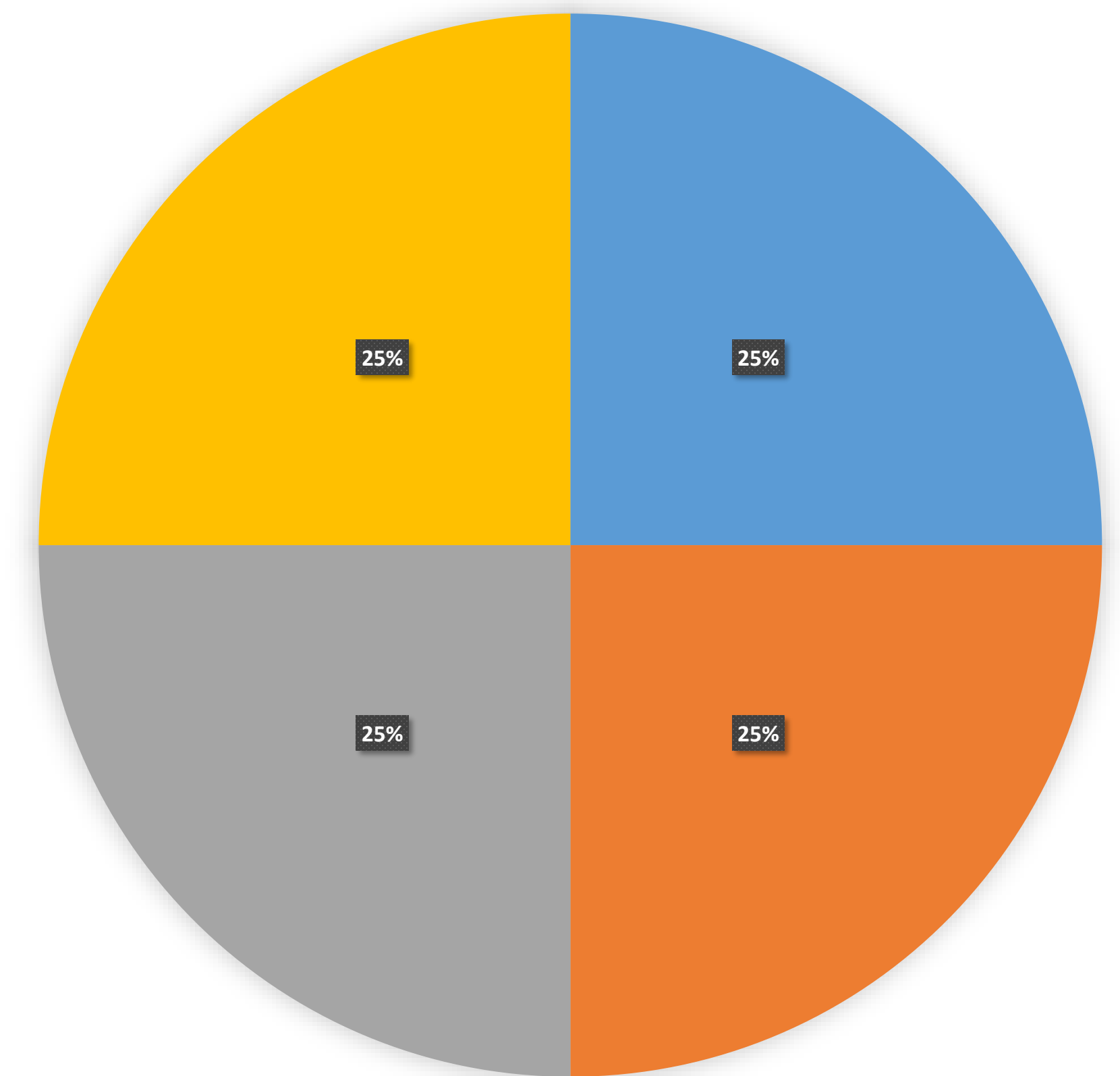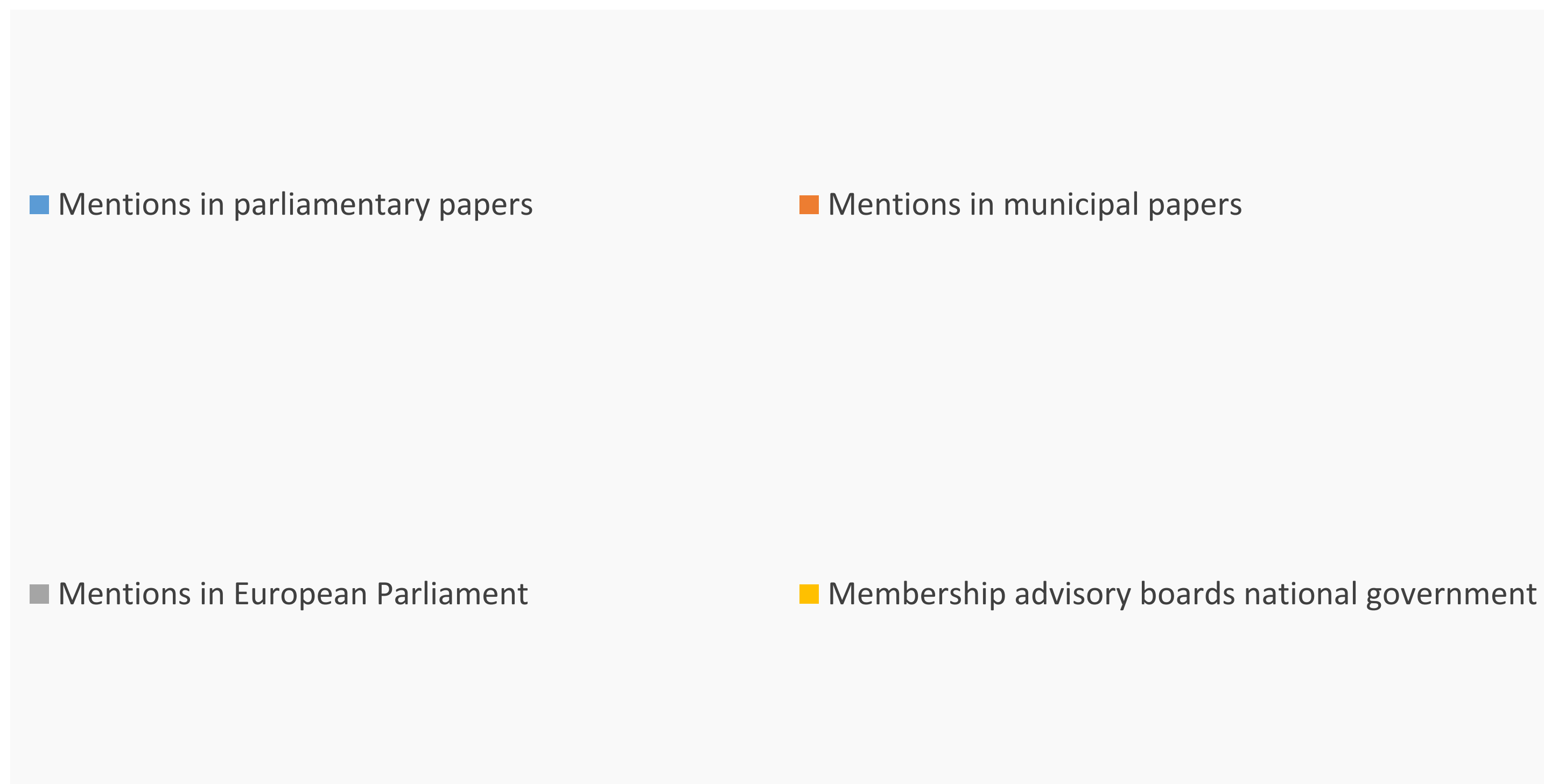
Composition 'the sustainable university'

➢ New category since 2019

■ Outreach　　■ Internal evaluation　　■ Research publications

33.30%　33.30%　33.30%

ScienceWorks
Connecting Science & Society
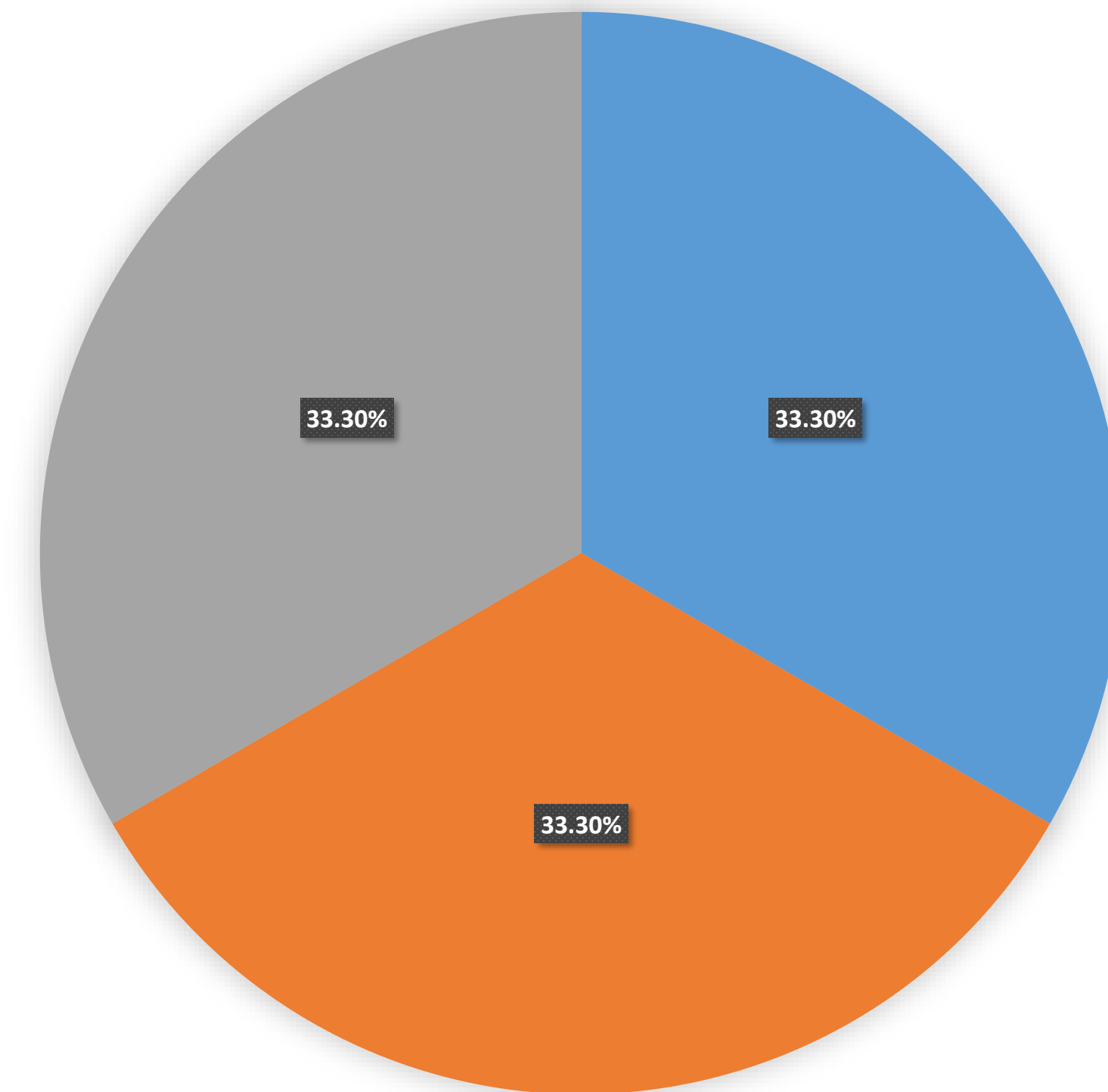
Business investments: hard science vs. SSH

Business investments per researcher

€ 15,633 | € 15,007 | € 14,335 | € 15,169 | € 17,175 | € 15,192 | € 12,300
€ 7,049 | € 6,400 | € 7,094 | € 5,979 | € 6,025 | € 4,892 | € 5,385

2011 2012 2013 2014 2015 2016 2017

4TU Other universities

ScienceWorks
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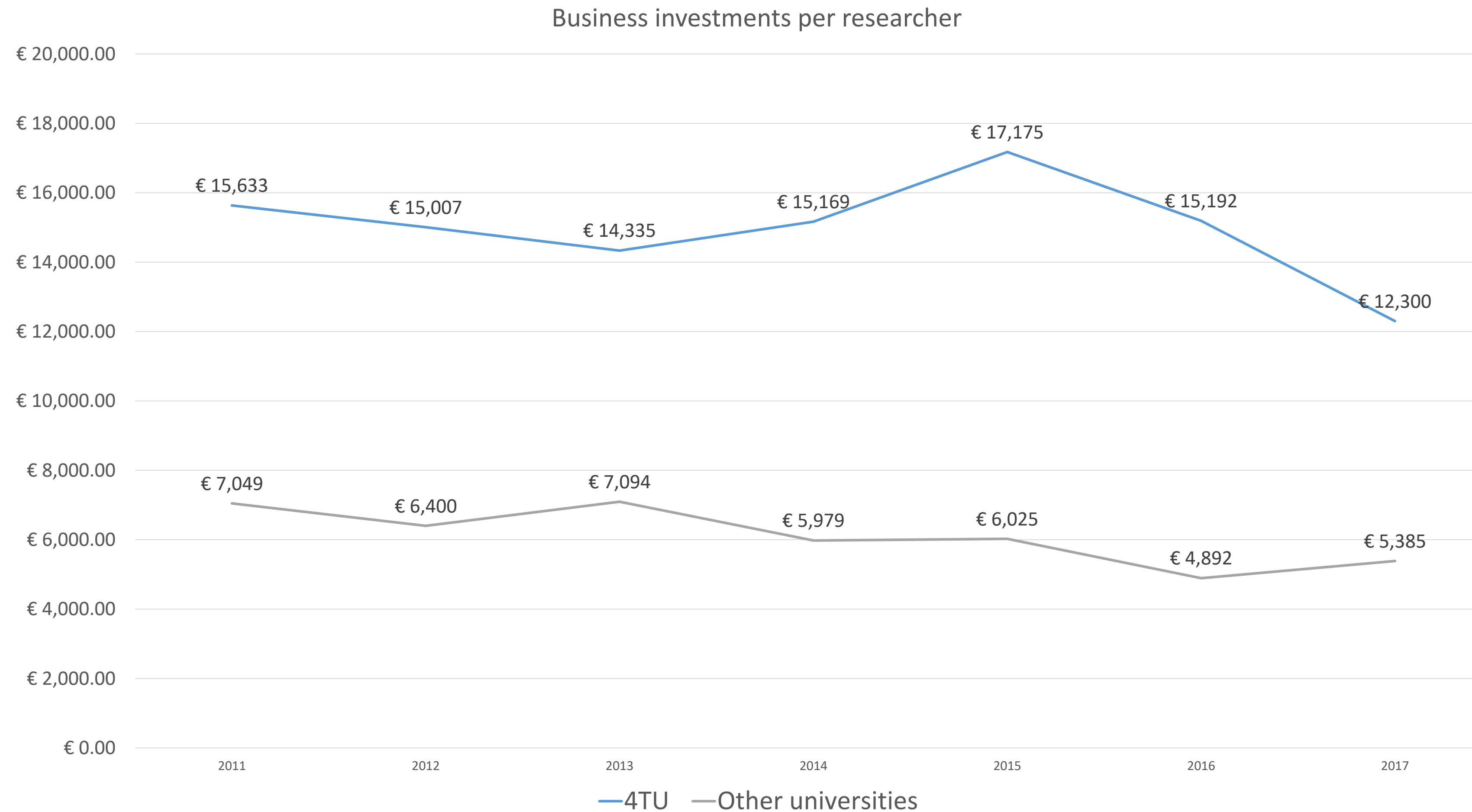
On some subjects SSH is not doing so well…..

Total score 'entrepreneurial university'

- 4TU: 0.586
- Other: 0.150

Total score 'cooperating university'

- 4TU: 0.685
- Other: 0.587

ScienceWorks
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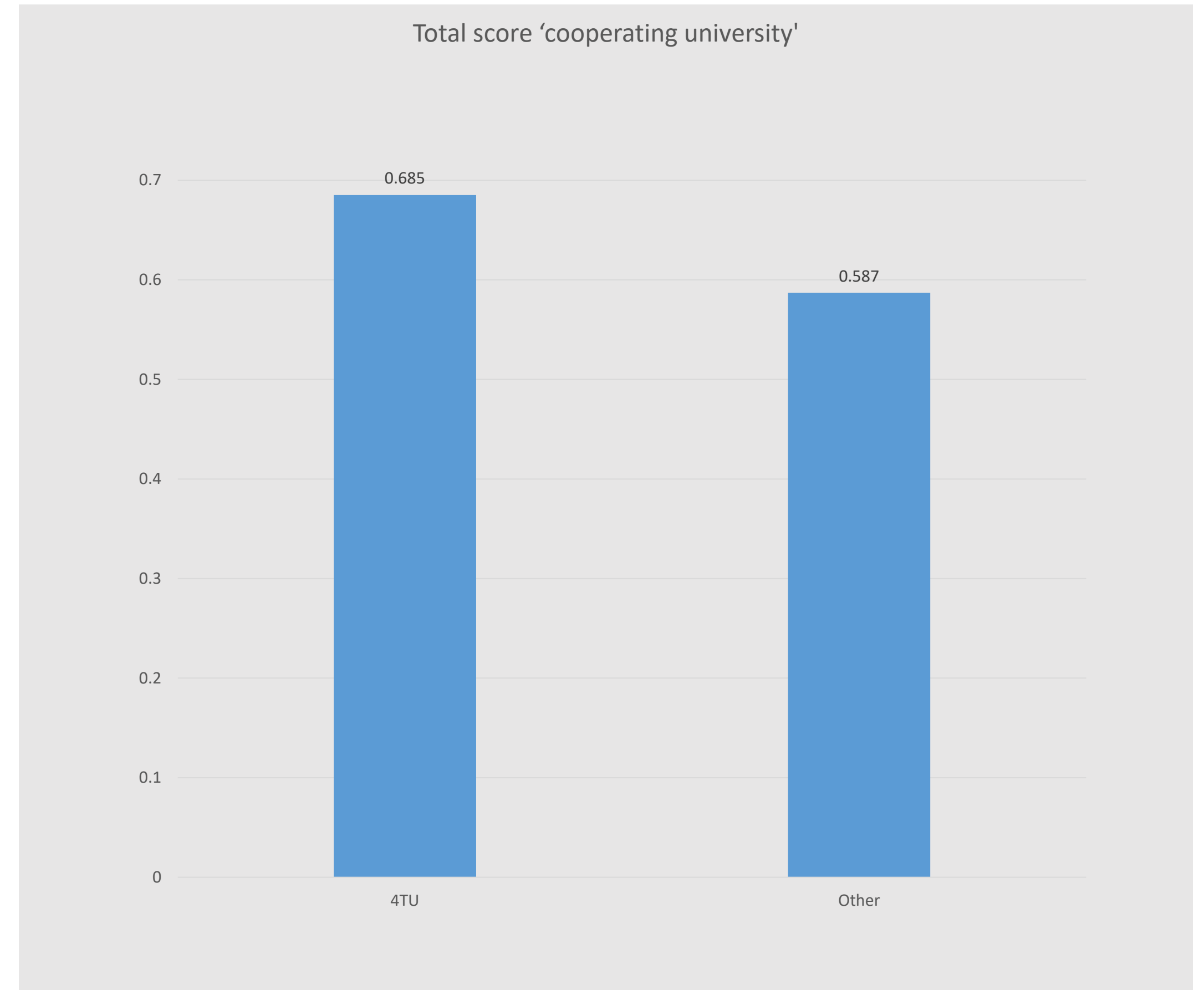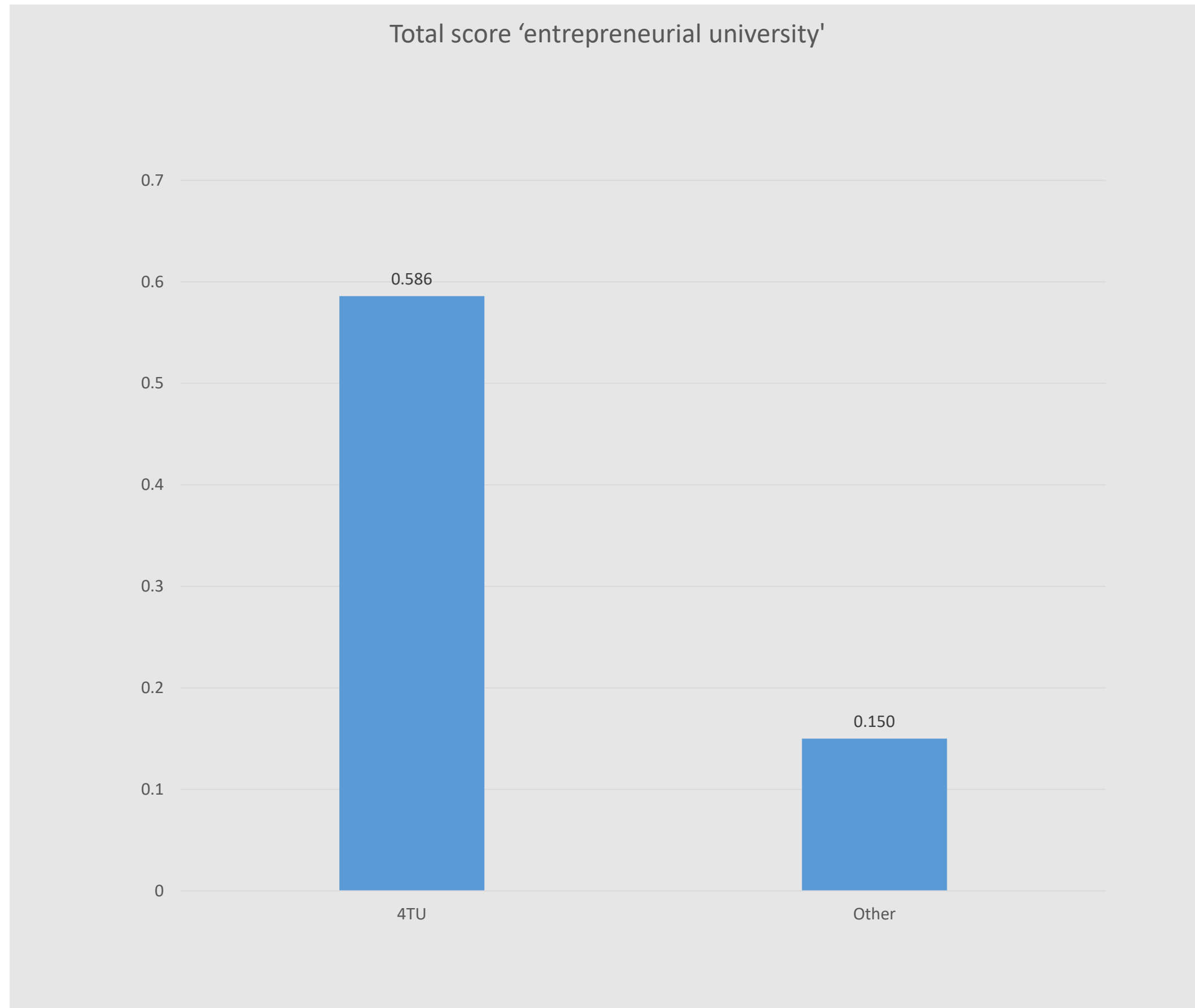
On others they excell

Total score 'societal university'

4TU	0.388
Other	0.560

Total score 'communicating university'

4TU	0.354
Other	0.559

ScienceWorks
Connecting Science & Society
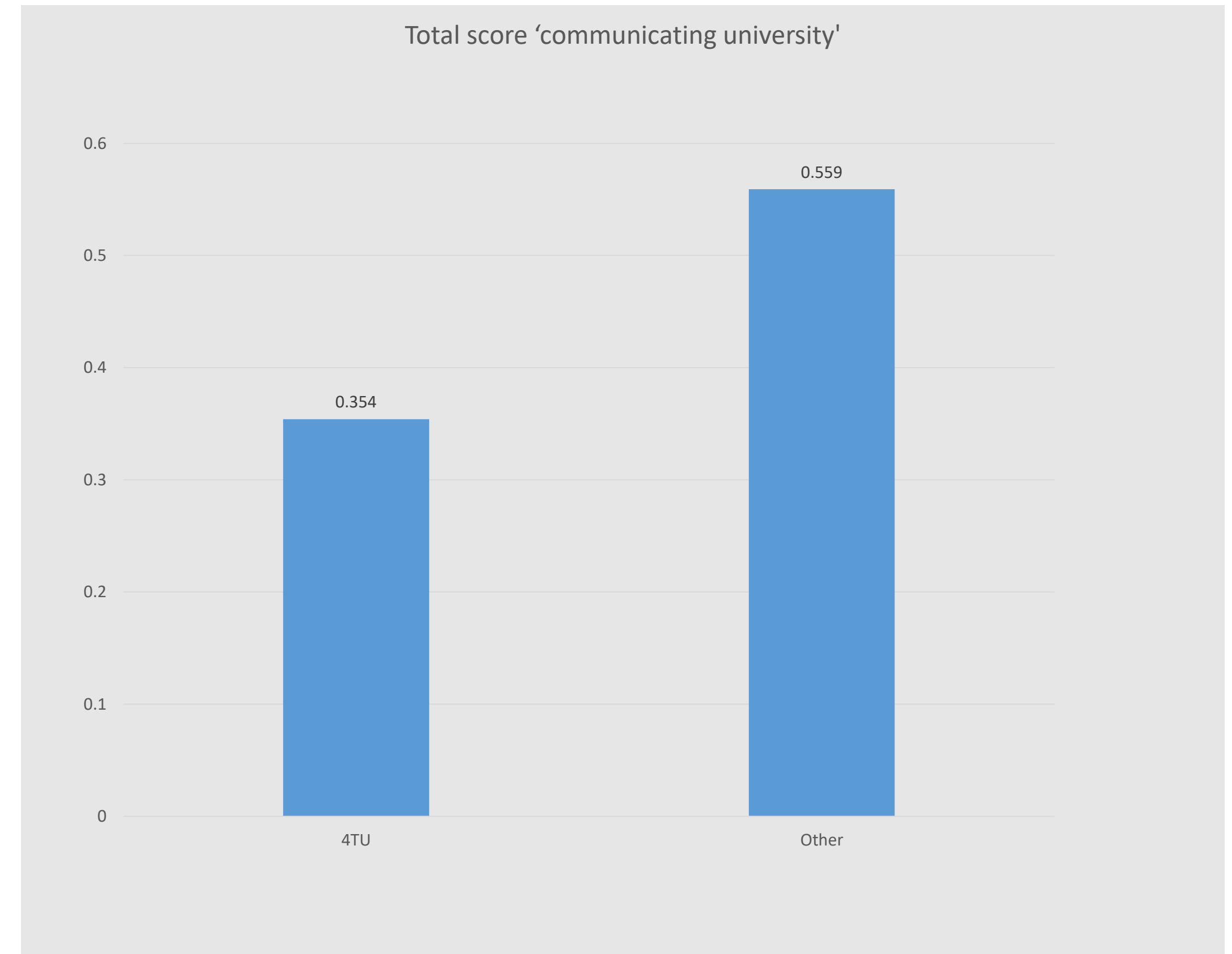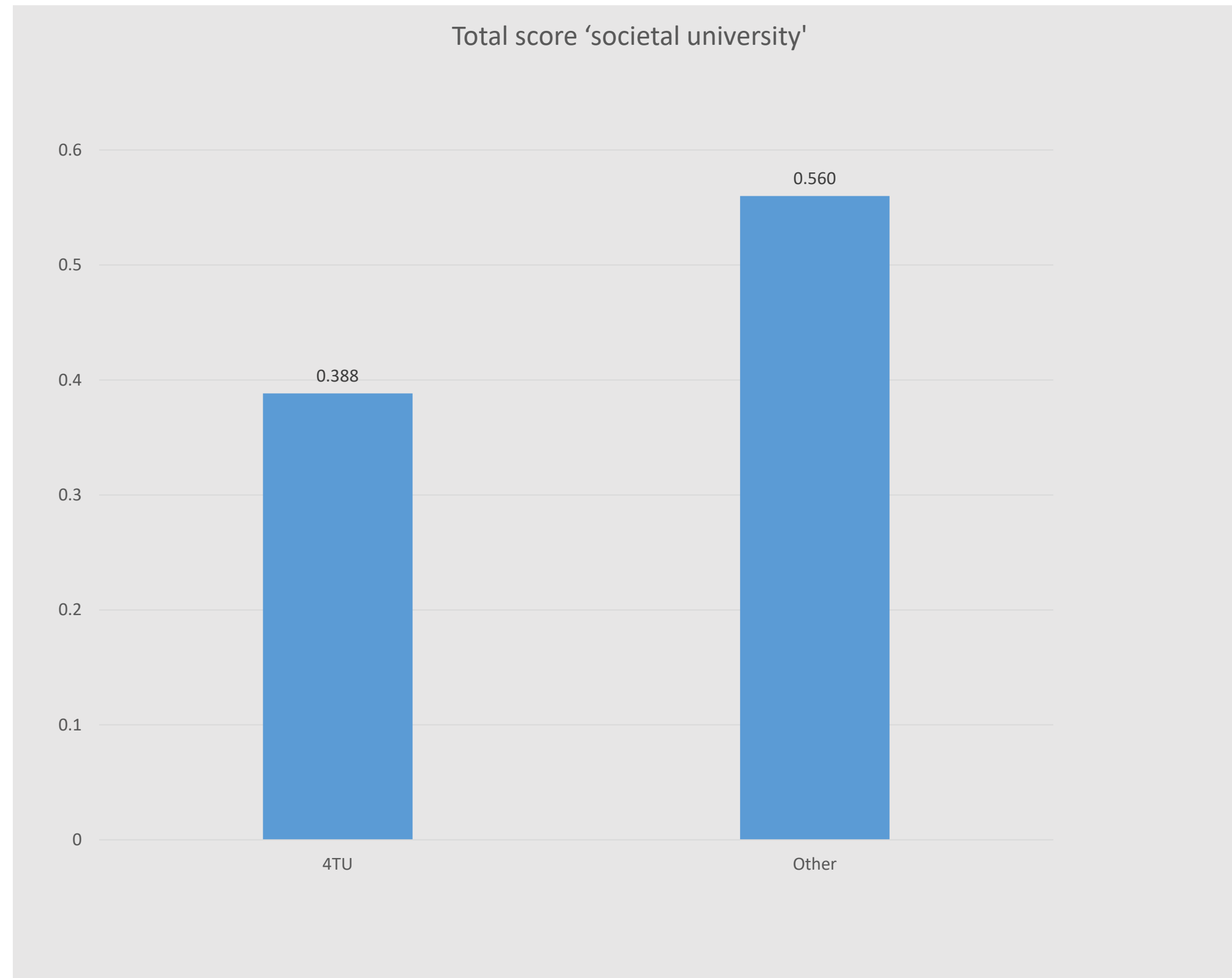
Assessing the regional impact of science

Technopolicy Model (based on Prof. P. Nijkamp/Prof. R.Stough)

Evaluating your impact internally
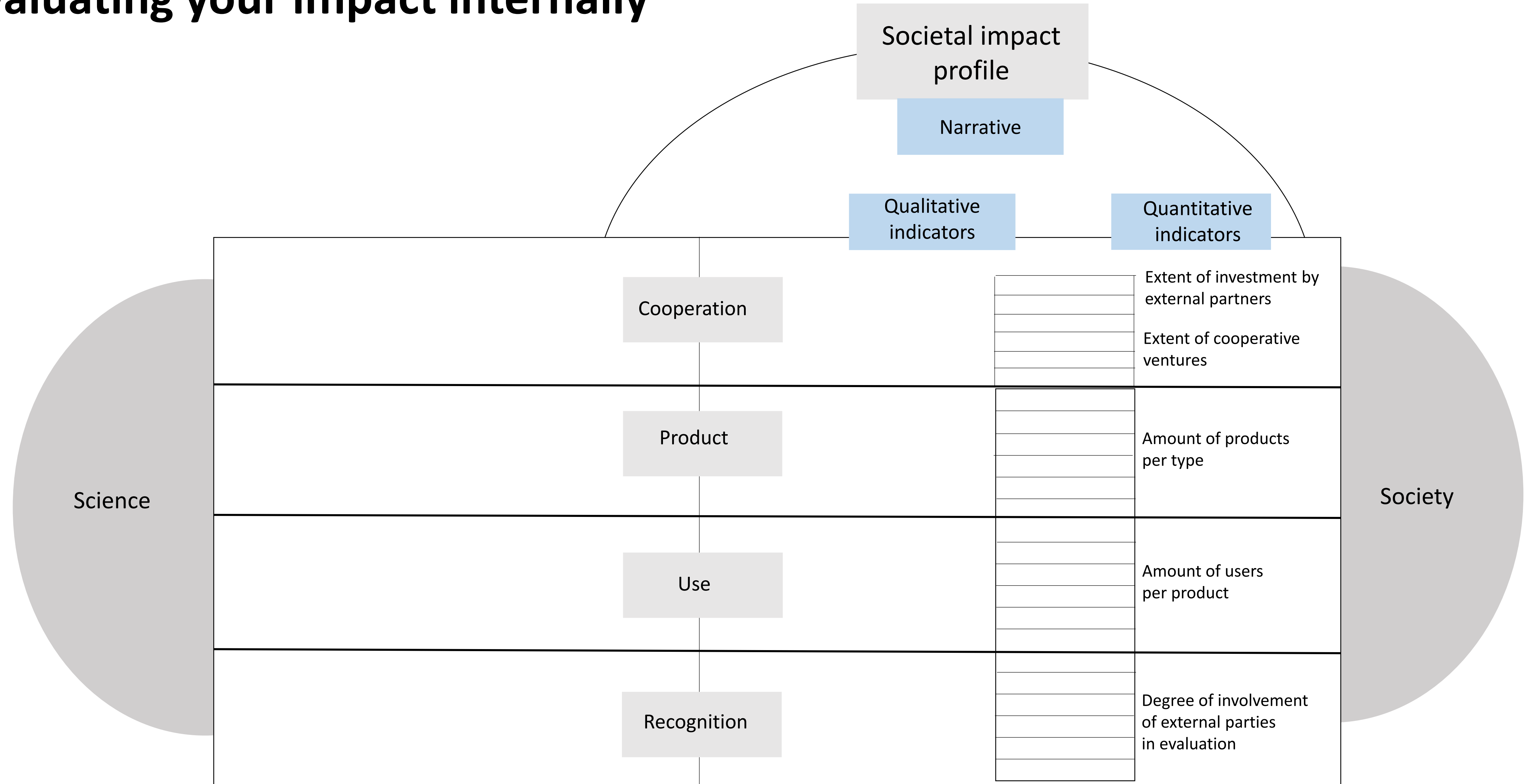
Thanks for your attention!

Effectively Demonstrating & Amplifying the Impact of Research

Ulysses Palmones

Senior Science Research Specialist, Philippine Council for Industry, Energy and Emerging Technology Research and Development, Philippine

AESIS

#SSHA22

Challenges in the Implementation of Impact Assessment:
A DOST-PCIEERD Experience

ULYSSES M. PALMONES
Senior Science Research Specialist

Demonstrating Impact, AESIS, Stockholm, November 3, 2022

Who is DOST-PCIEERD?

The **Philippine Council for Industry, Energy, and Emerging Technology Research and Development** (PCIEERD) is one of the three sectoral planning councils of the Department of Science and Technology (DOST).

Our Mandate

Support for Research and Development

Human Resource and Institution Development

S&T Information Dissemination and Promotion

Support for Technology Transfer and Commercialization

Policy Development and Advocacy

Our Sectoral Coverage

INDUSTRY

Electronic & Semiconductor Industries

Mining & Minerals

Metals & Engineering

Food Processing

Process

ENERGY

Energy efficiency

Transportation

EMERGING TECHNOLOGY

Materials Science/ Nanotechnology

Genomics/ Biotechnology

Information & Communications Technology

Space Technology Applications

Photonics

Artificial Intelligence

Data Science

SPECIAL CONCERNS

Climate Change Adaptation

Disaster Risk Reduction & Management

Environment

Human Security

Creative Industries

R&D and Social Science, Humanities and the Arts

R&D is a creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture, and society, and the use of this stock of knowledge to devise new applications

3 Main Activities of R&D

1. Basic Research
2. Applied Research
3. Developmental

The OECD 'Frascati Manual' definition of R&D recognizes the importance of AHSS research
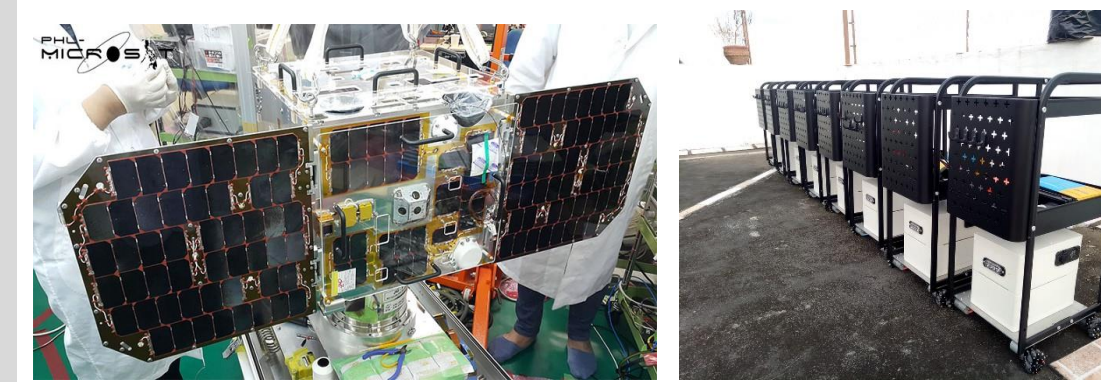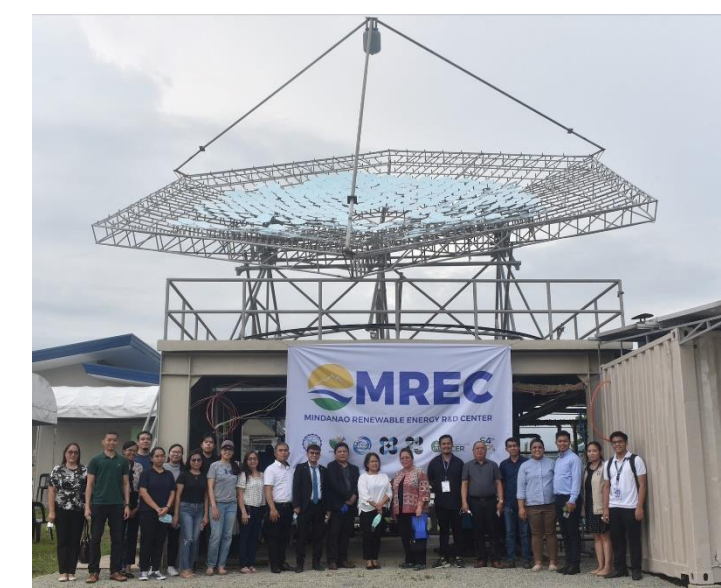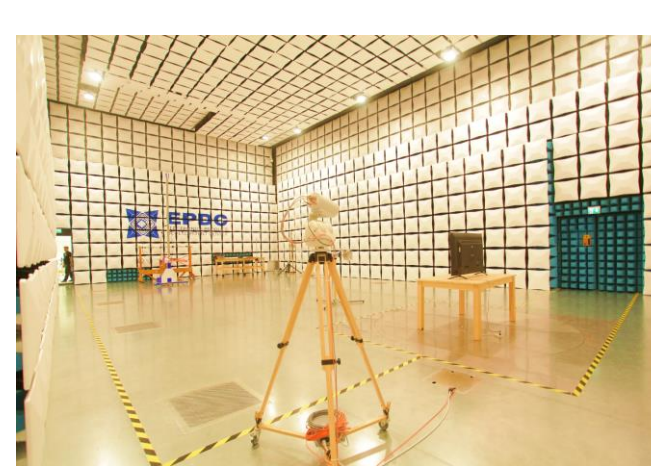
PCIEERD High Impact Research Projects
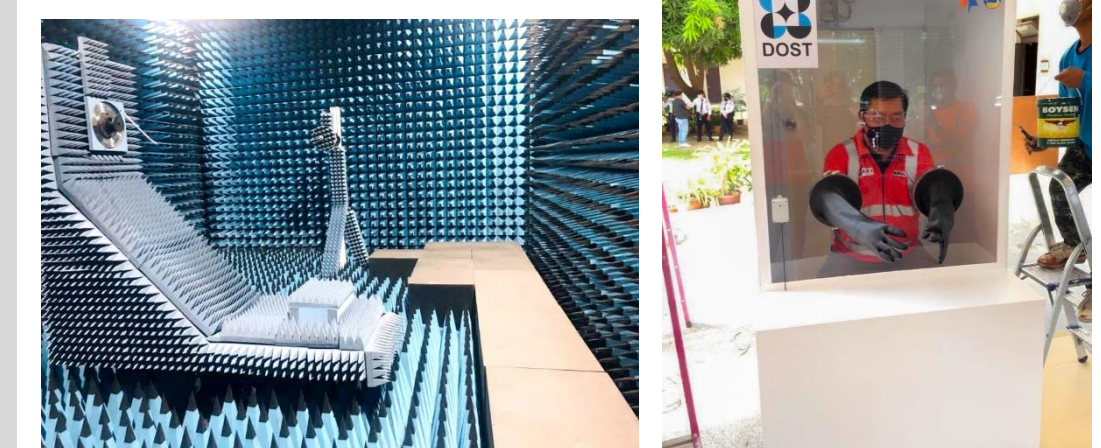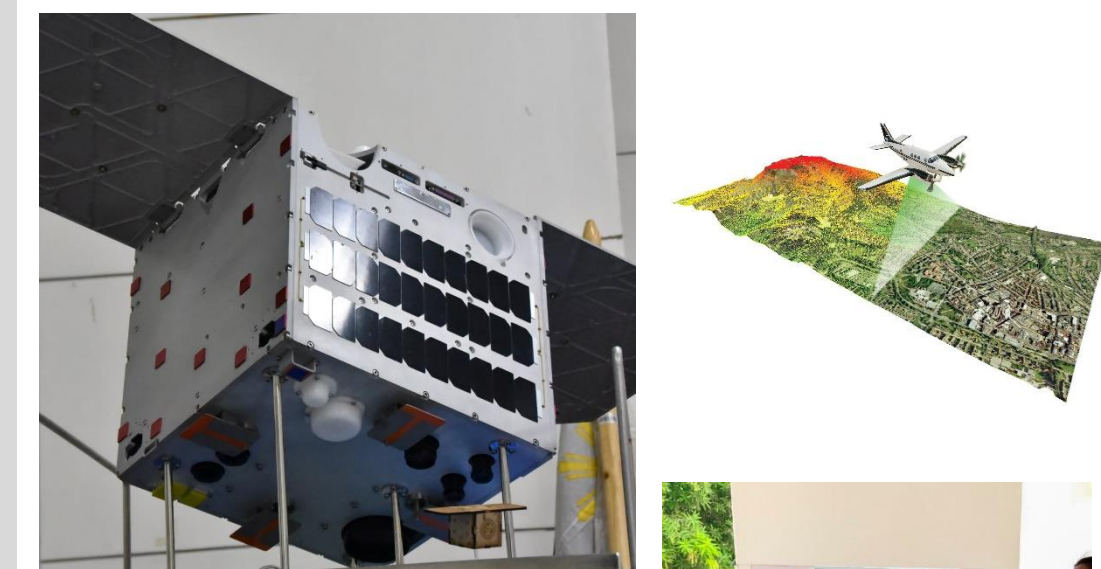
DOST-PCIEERD TBI NETWORK

TBI PH

54 Technology Business Incubator Facilities Across the Country

PROGRAM COMPONENTS
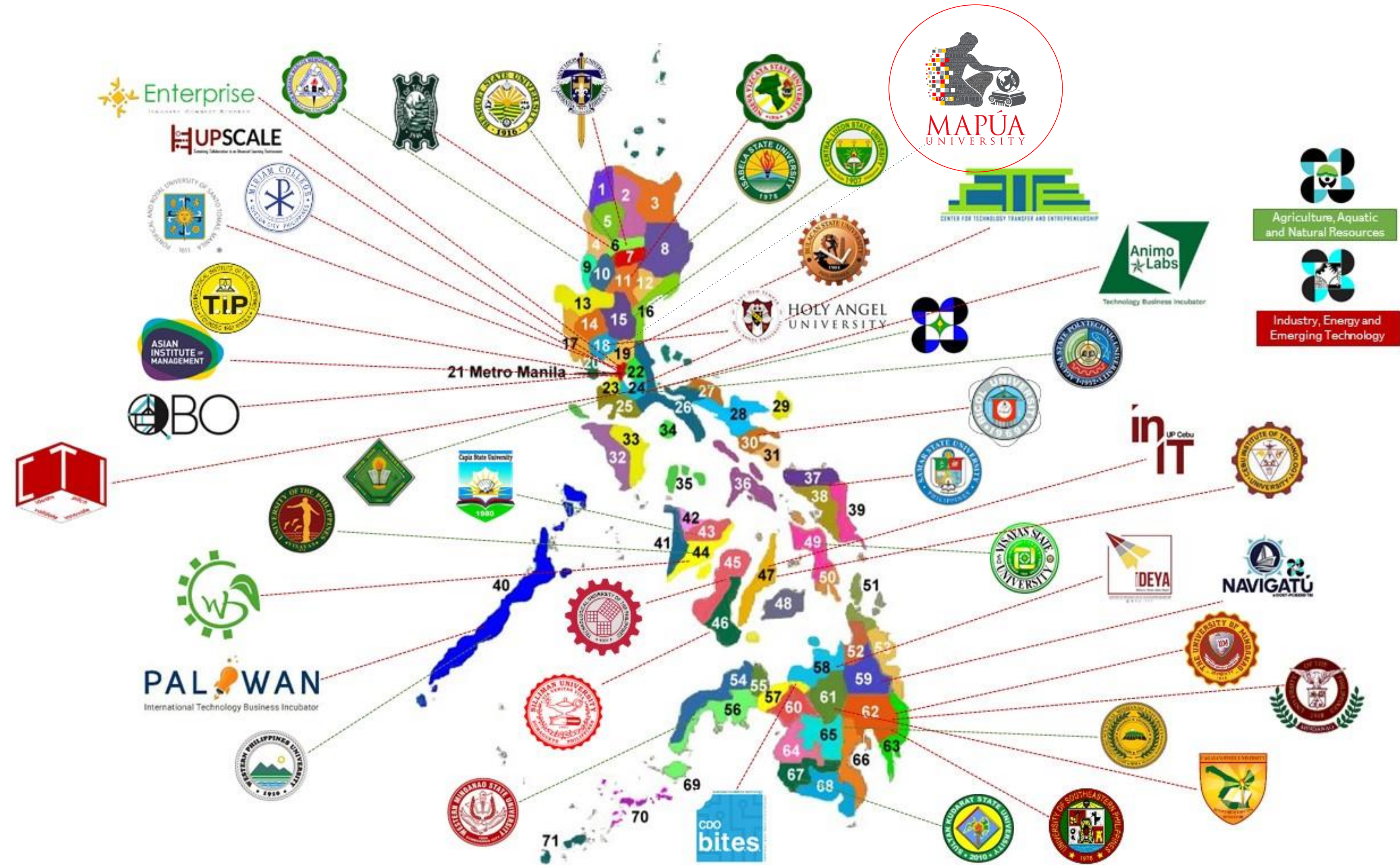
WHWise

WOMEN-HELPING-WOMEN:

INNOVATING SOCIAL

ENTERPRISE PROGRAM

Customized Incubation Program for Women-Led Social Enterprises

Funding Support for Women-Led Social Enterprises

MISSION: To help <u>10 women led entrepreneurs</u> yearly

How to Measure Societal Impact of Research?
What is impact assessment (IA)?

Impact Assessment refers to "the process of identifying the future consequences of a current or proposed action"(Vanclay, Esteves, Aucamp, & Franks, 2015)

IA can be EX ANTE or EX POST Assessment

What is an impact?

The impact of an activity is a deviation
(a change) from the **baseline situation**
that is caused by the activity.

The baseline situation is the existing
environmental, social or economic
situation or condition in the absence
of the activity.

**The baseline situation is a key
concept in IA.**

positive
and
negative

intended
and
unintended

mic

ental
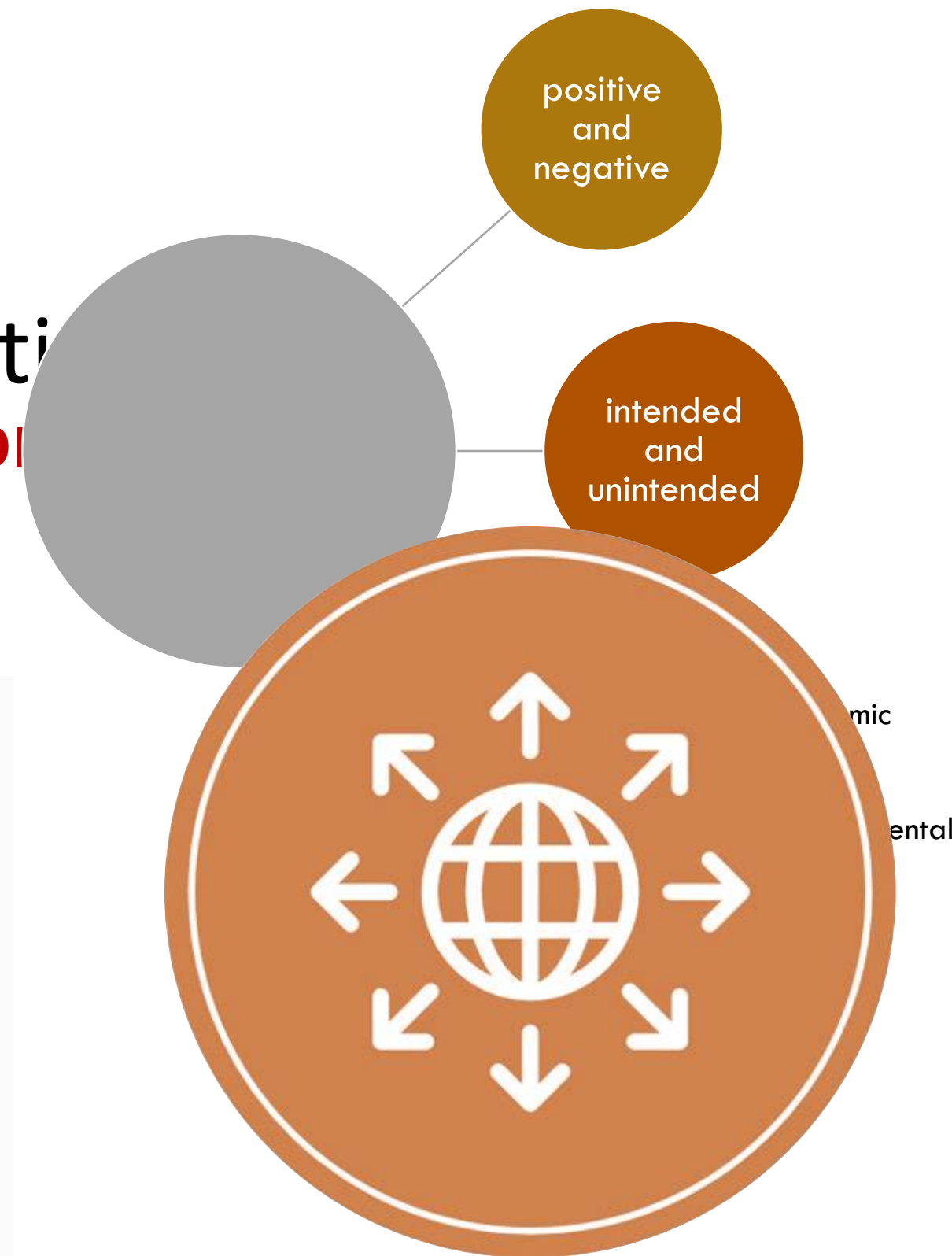
IMPACT
(change)

! To measure an impact, you must
know what the baseline
situation is.

COMMON IMPACT PATHWAY

INPUTS → OUTPUTS
- Product
- Services
- Deliverables

→ OUTCOMES → IMPACTS
- Social
- Economic
- Environmental

THE IMPACT ASSESSMENT FRAMEWORK

Davis et al. (2008)
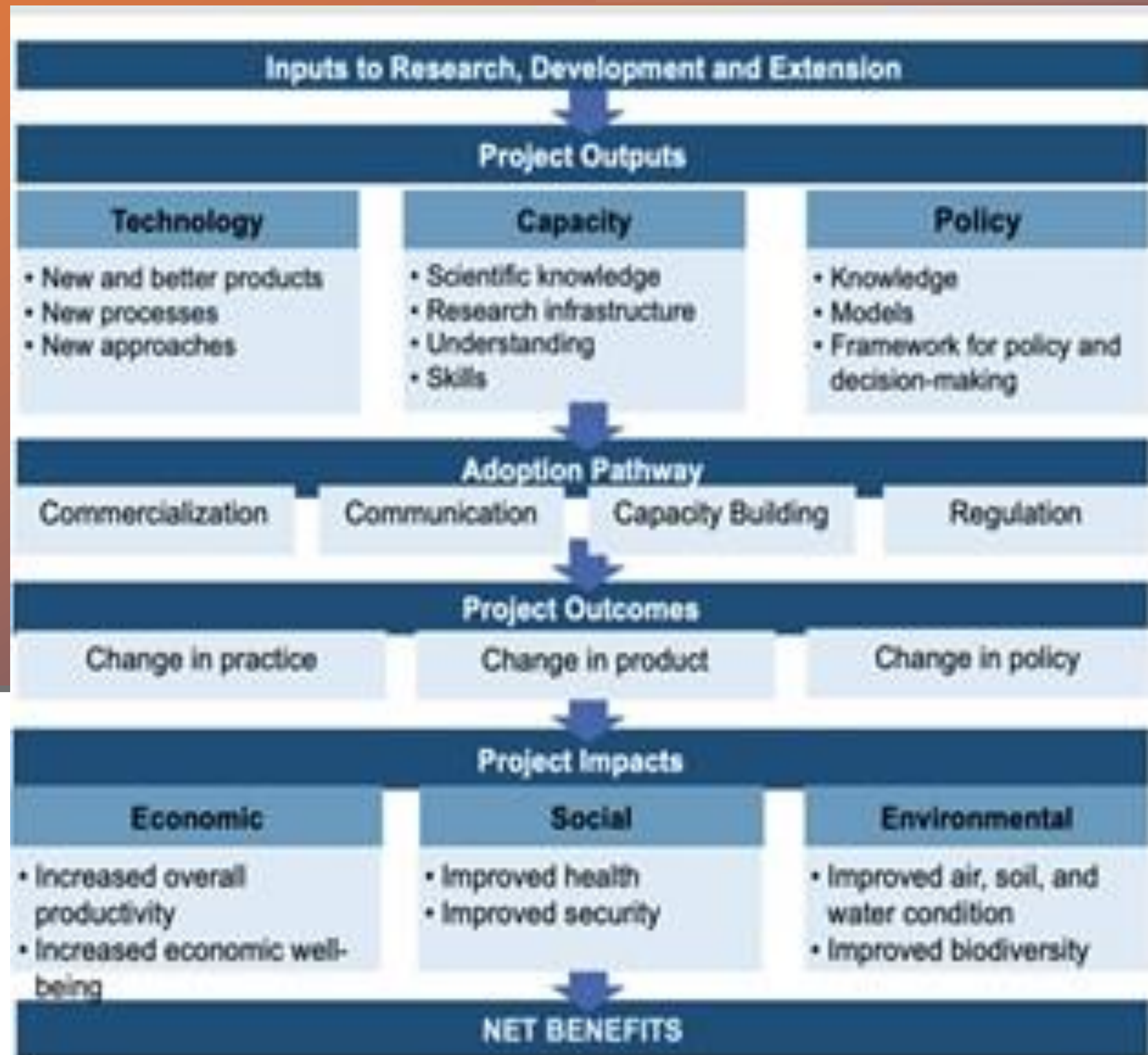
The 6Ps of PCIEERD in measuring Impacts

Publication

Patent

Product

People Services

Places & Partnership

Policy
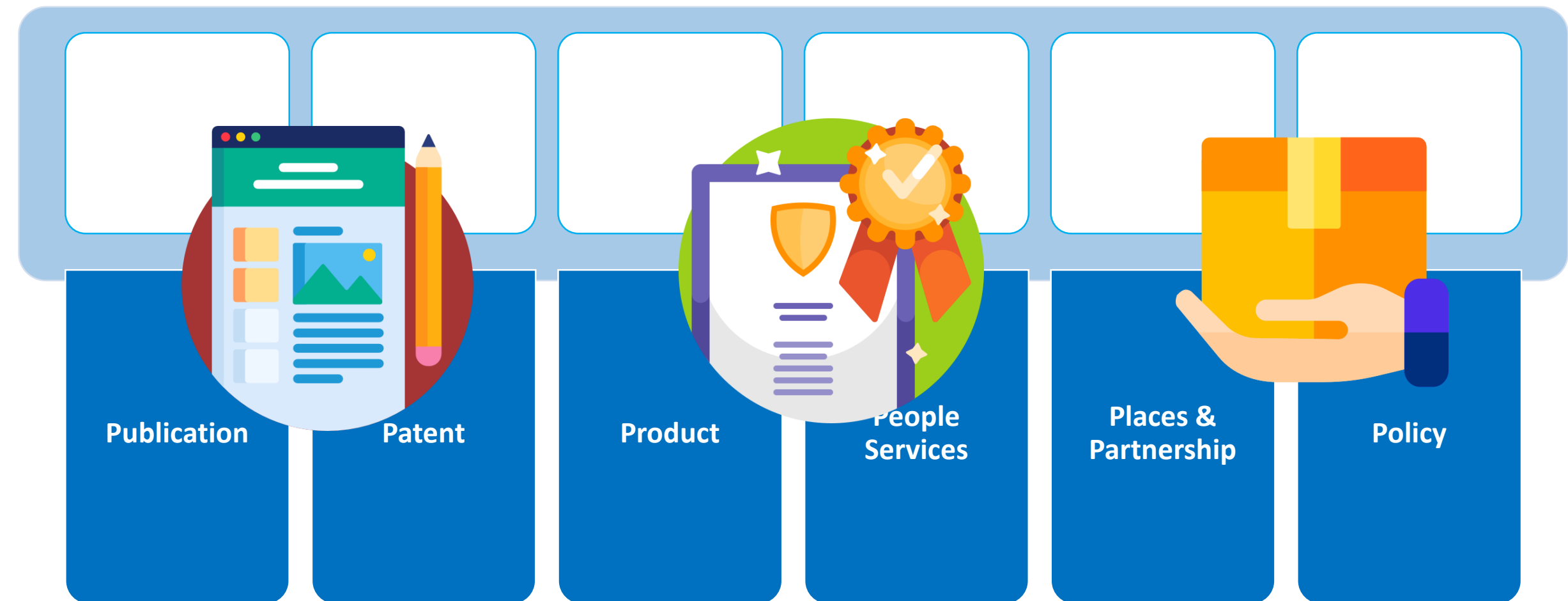
Necessary steps to institutionalize impacts

Capacity Building

- Building capacity on Impact Assessment in general
- Building capacity on desired IA framework

Implementation

- Include impact pathway in project proposal
- Incorporate IA into the M&E protocol

Communication

- Improved alignment among units for the communication of IA results
- IA results may also be disseminated externally (i.e., publication specifically for IA results)

Concepts to consider

Attribution	• What quantitative proportion of outcomes or impacts can we attribute to the program?
Contribution	• What role did the program play in bringing about the outcomes or impact?
Context Mapping	• The context could be in terms of economic development path, natural capital or physical resource available, policy, investments or incentives present, market access, external factors, etc.
Impact Scoping	• This component defines the scope of assessment in terms of levels of analysis (e.g. household, community, and institutional) and sub-frameworks or dimensions (e.g. economic, environmental, and social).
Outcome	• Defined as the change in practices, behavior/skills/attitude, institutions, government policy and plans, accessibility to programs as a result of interventions or R&D outputs

PCIEERD IMPACT ASSESSMENT ROADMAP

Vision:

To provide knowledge-based evidence on the continuous financial sustenance to R&D programs for sustainable development

Overall Strategies

Human Resource
- Development of core competencies in the conduct of impact assessment
- Provide training on impact assessment both for researchers and program/project managers through the following:
  - Establishment of Community of Practice (CoP)
  - Interchange of IA knowledge between third party experts and in-house employees
- Plantilla Positions for PCIEERD IA team

R&D Technologies
- expanded monitoring and evaluation process to cover beyond the 6Ps metric by including medium and long-term benefits.

Facilities / Services
- Provide researchers with impact assessment tools for completed projects
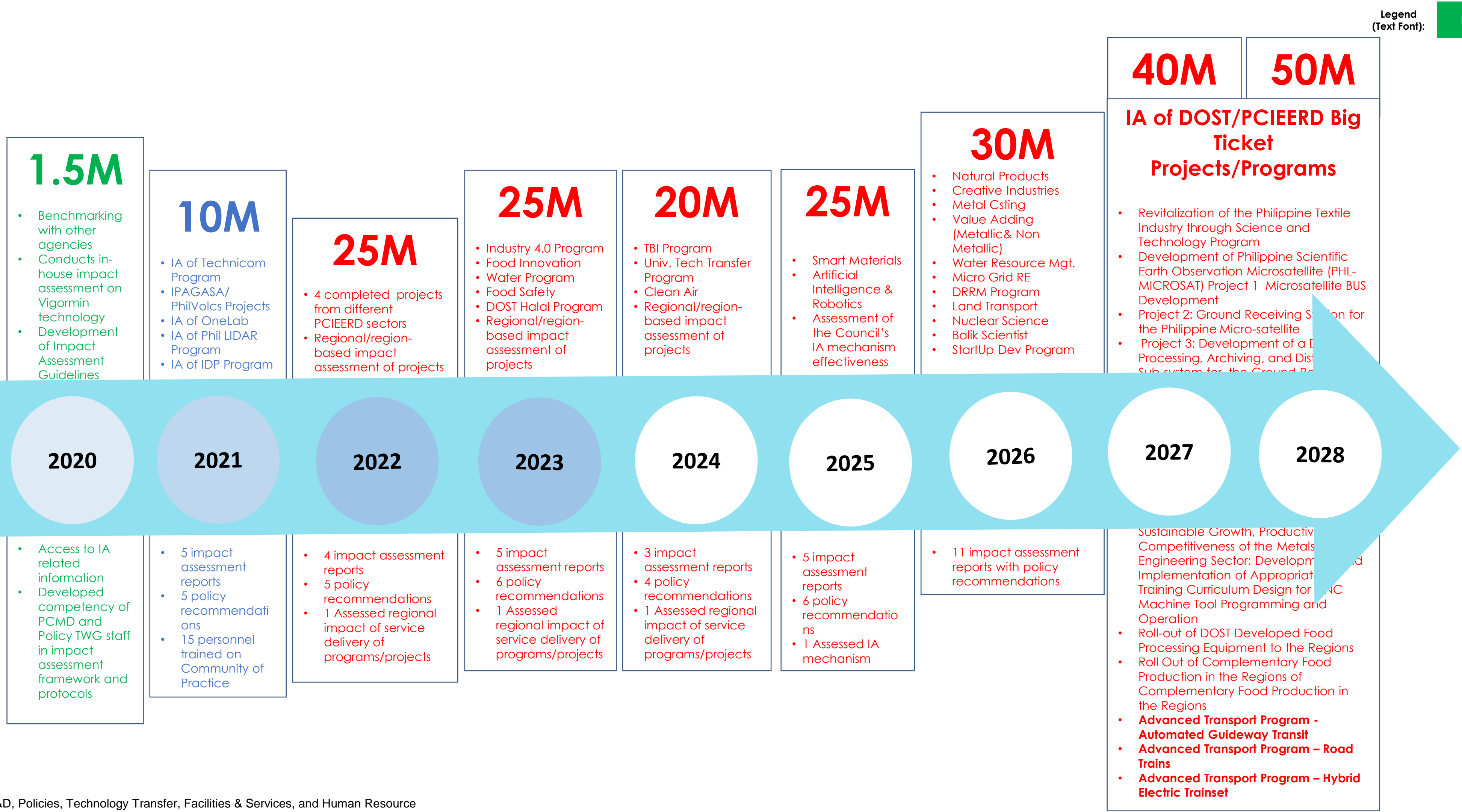- Establishment of impact assessment team to facilitate IA implementation

S&T Policies
- Development of Impact Assessment guidelines, framework and protocols
- Updating/amendment of IA related guidelines
- Establishment of mechanism in improving the national development strategies and plans in the subsequent implementation of the projects and programs

*Priority S&T Programs/Projects include R&D, Policies, Technology Transfer, Facilities & Services, and Human Resource

1.5M
- Benchmarking with other agencies
- Conducts in-house impact assessment on Vigormin technology
- Development of Impact Assessment Guidelines

10M
- IA of Technicom Program
- IPAGASA/ PhilVolcs Projects
- IA of OneLab
- IA of Phil LIDAR Program
- IA of IDP Program

25M
- 4 completed projects from different PCIEERD sectors
- Regional/region-based impact assessment of projects

25M
- Industry 4.0 Program
- Food Innovation
- Water Program
- Food Safety
- DOST Halal Program
- Regional/region-based impact assessment of projects

20M
- TBI Program
- Univ. Tech Transfer Program
- Clean Air
- Regional/region-based impact assessment of projects

25M
- Smart Materials
- Artificial Intelligence & Robotics
- Assessment of the Council's IA mechanism effectiveness

30M
- Natural Products
- Creative Industries
- Metal Csting
- Value Adding (Metallic& Non Metallic)
- Water Resource Mgt.
- Micro Grid RE
- DRRM Program
- Land Transport
- Nuclear Science
- Balik Scientist
- StartUp Dev Program

40M   50M

IA of DOST/PCIEERD Big Ticket Projects/Programs
- Revitalization of the Philippine Textile Industry through Science and Technology Program
- Development of Philippine Scientific Earth Observation Microsatellite (PHL-MICROSAT) Project 1 Microsatellite BUS Development
- Project 2: Ground Receiving Station for the Philippine Micro-satellite
- Project 3: Development of a Data Processing, Archiving, and Distribution Sub-system for the Ground Receiving Station
- Sustainable Growth, Productivity and Competitiveness of the Metals and Engineering Sector: Development and Implementation of Appropriate Training Curriculum Design for CNC Machine Tool Programming and Operation
- Roll-out of DOST Developed Food Processing Equipment to the Regions
- Roll Out of Complementary Food Production in the Regions of Complementary Food Production in the Regions
- **Advanced Transport Program - Automated Guideway Transit**
- **Advanced Transport Program – Road Trains**
- **Advanced Transport Program – Hybrid Electric Trainset**

2020 | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028**

2020
- Access to IA related information
- Developed competency of PCMD and Policy TWG staff in impact assessment framework and protocols

2021
- 5 impact assessment reports
- 5 policy recommendations
- 15 personnel trained on Community of Practice

2022
- 4 impact assessment reports
- 5 policy recommendations
- 1 Assessed regional impact of service delivery of programs/projects

2023
- 5 impact assessment reports
- 6 policy recommendations
- 1 Assessed regional impact of service delivery of programs/projects

2024
- 3 impact assessment reports
- 4 policy recommendations
- 1 Assessed regional impact of service delivery of programs/projects

2025
- 5 impact assessment reports
- 6 policy recommendations
- 1 Assessed IA mechanism

2026
- 11 impact assessment reports with policy recommendations

Overall Outcomes

Human Resource
- Increased number of personnel trained in impact assessment
- Increased number of researchers, programs leaders trained in impact assessment
- Sustainable impact assessment unit of the Council

R&D Technologies
- Improved/expanded M&E process beyond 6Ps metric

Facilities / Services
- Established impact assessment tools
- Established IA team that can facilitate impact evaluation

S&T Policies
- Policy/Guidelines as a result of the assessment
- Improved mechanism in the implementation of subsequent programs and projects

Perennial Problems in IA Implementation

IA requirements are often avoided

Public participation in IA is often inadequate

IA is often not carefully integrated into planning

Proposed mitigations may not be implemented

IA doesn't ensure environmentally sound projects

Post project monitoring is rarely conducted

IA is done primarily for projects, not programs or policies

Assessments of risk and social impacts are often omitted from IAs

Cumulative impacts are not assessed frequently

Challenges Encountered

Limited participation and projects' stakeholders' engagement during the assessment process

Lack of reference materials such as accomplishment and financial reports of completed projects

Low turnout of respondents due to online medium used for data collection

Issues on confidentiality imposed by companies restrict engagements of stakeholders

Recommendation
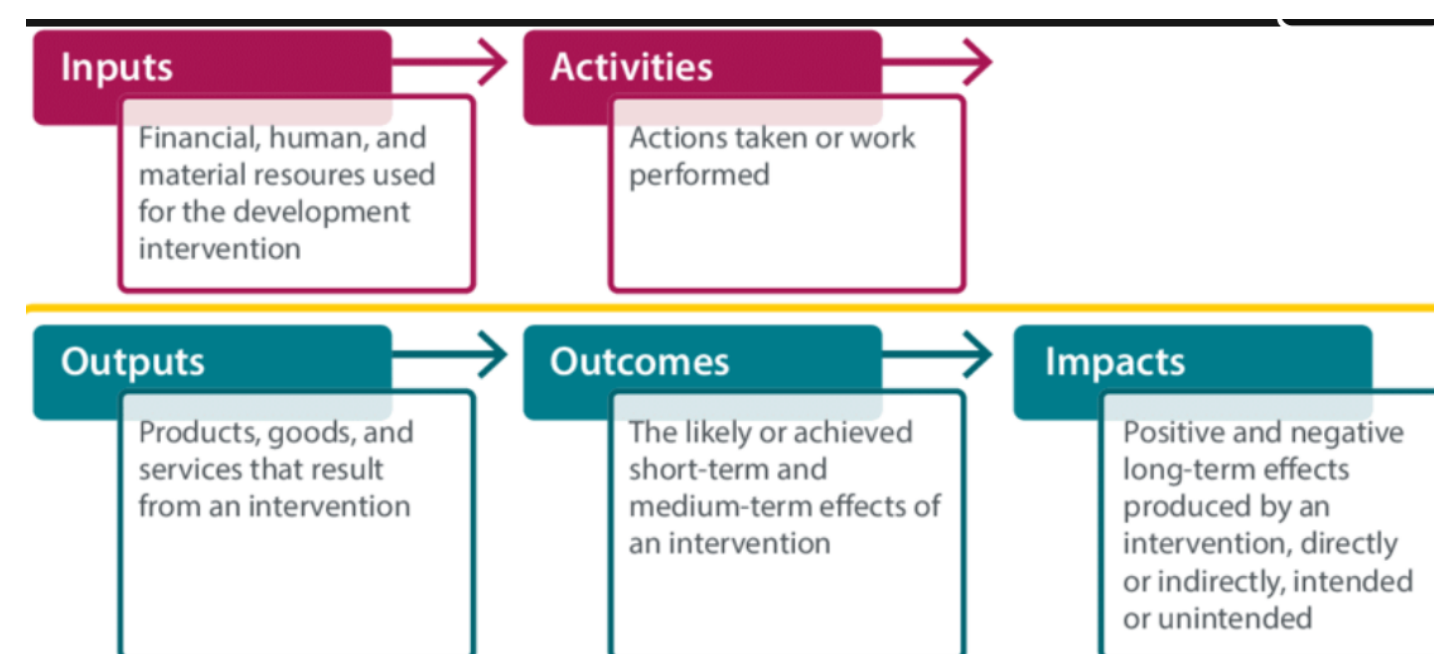
Determine the extent of impact that the agency would want to see or address

Use of common framework for assessing impact

Consult the SDGs in determining indicators

Enhance collaboration among stakeholders

Follow us on social media!

/dostpcieerd

@dostpcieerd

@dostpcieerd

pinoyscience
/pinoyscience

PHILIPPINE COUNCIL
FOR INDUSTRY, ENERGY,
AND EMERGING TECHNOLOGY
RESEARCH AND DEVELOPMENT
(DOST-PCIEERD)

INNOVATION COUNCIL
FOR INDUSTRY, ENERGY AND EMERGING TECHNOLOGIES (DOST-PCIEERD)

interfolio

Effectively Demonstrating & Amplifying the Impact of Research

AESIS 2022 - Societal Impact of Social Sciences, Humanities, and Arts

Hello!

- Working with technology for 10+ years
- Networking with the research impact community, for 6 years, hearing the typical challenges

- Researchfish is a platform that aims to track research outcomes, outputs and impacts, to support research evaluations and impact assessment

- We aim to collect outcome data that demonstrates 'wider world' impact, and look beyond bibliometrics

Katy Elliott

Account Executive

What are the best ways to demonstrate the often <u>indirect</u> and <u>long-term</u> impacts of SSHA research and further <u>amplify</u> this impact?

Why Impact Matters

What are the best ways to demonstrate the often <u>indirect</u> and <u>long-term</u> impacts of SSHA research and further <u>amplify</u> this impact?

…Who for? And Why?

interfolio

Typical Demands

| Informing Strategy	Identify and maximise social and economic value	Stakeholder and Community Relationships
Are we addressing our mission? Can we identify what we are doing right?	Are we making a difference to society/community? Are we valued and engaged?	Are we combining resources? Can we secure funding?

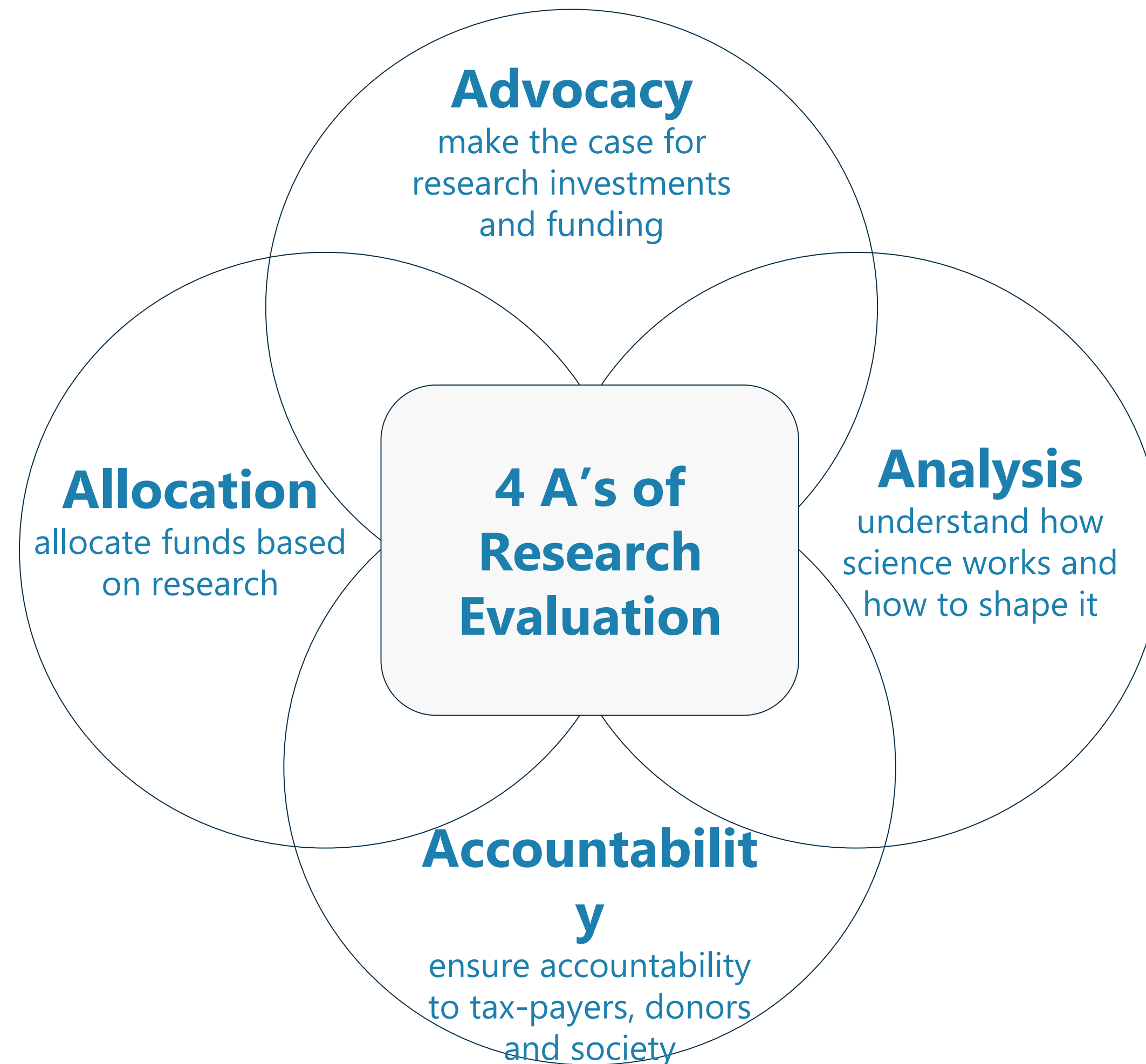# ToC's, Frameworks, Logic Models….

INDIRECT, LONG-TERM, AMPLIFY

Many organisations may develop an impact framework, based on a logic model, to understand the indirect, long-term inputs, outputs, outcomes and impacts…
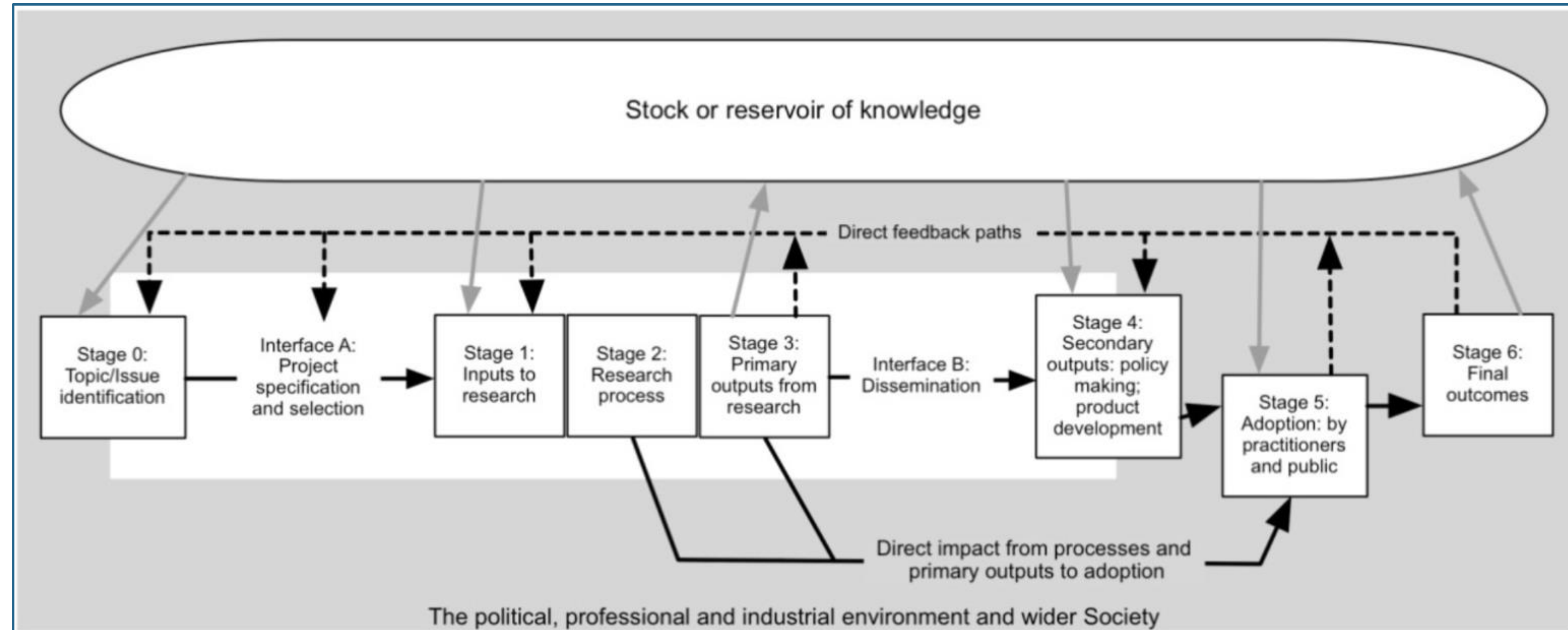
Answer strategic questions, demonstrate the 4 A's….

(Adam, P., Ovseiko, P.V., Grant, J. et al. (2008))

Data & Evidence - mapping indirect and longterm impact

Time & Resources

- Data everywhere - struggle to map it (RIMs, Libraries, Departments)

- Paper based, siloed or complicated

- Door knocking exercises

- Moving staff (academic and administrative)

What typically demonstrates or evidences impact in someway? - Indirect

The data needs to have consistency....

- Think about non standard or non traditional outputs...

- Is there commonality across programs or projects - can we standardise our approach?

- Can we re-use and re-shape for different purposes?

Publications	**Collaboration**	**Engagement Activities**	**Further Funding**
Next Destination & Skills	**Research Databases & Models**	**Research Tools & Methods**	**IP & Licensing**
Awards & Recognition	**Artistic & Creative Products**	**Software & Technical Products**	**Influence on Policy, Practice & the Public**
Spinouts	**Other Outputs and Knowledge**	**Medical Products & Clinical Trials**	**Use of Facilities & Resources**

What typically demonstrates or evidences impact in someway? - Indirect

The outcomes and outputs identified, need to have:

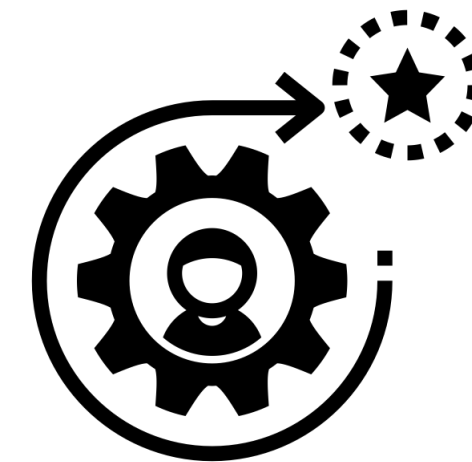**Consistent**
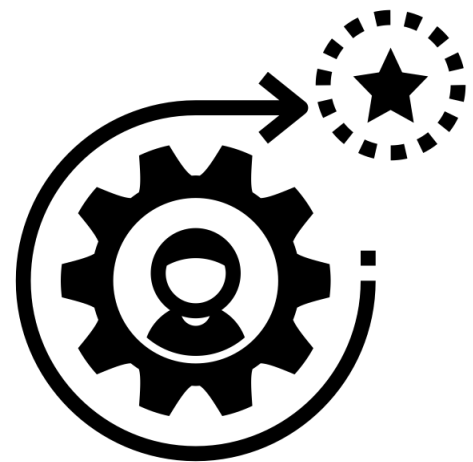
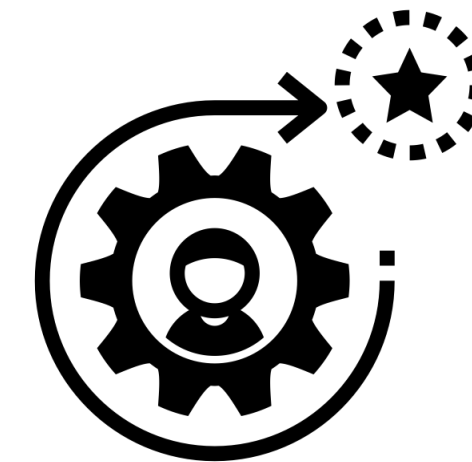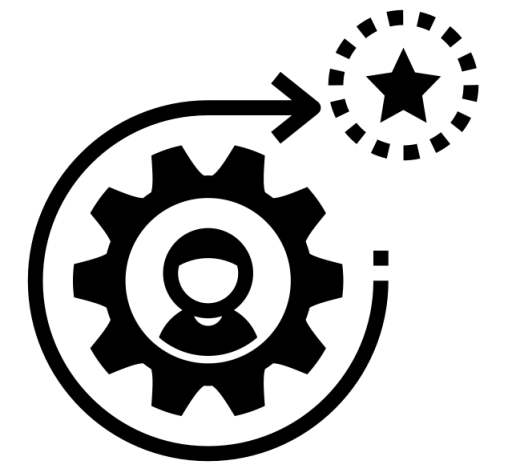**Semi-structured & Standardised**
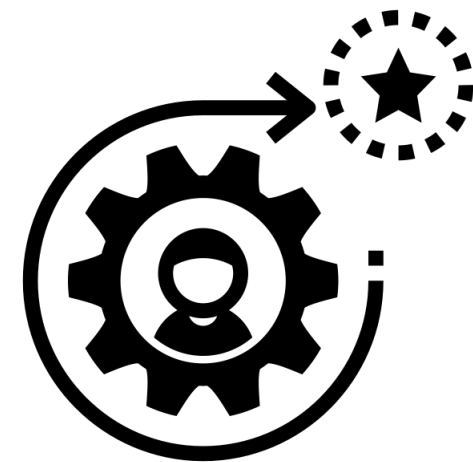
Re-usable

Include longitudinal view

Connected

interfolio

What typically demonstrates or evidences impact in someway? - Indirect

> "What collaborative networks are taking place in [enter local area or country]"
>
> "Are we increasing interactions in the [private] sector?"
>
> "Which other funders are funding "my" researchers?"
>
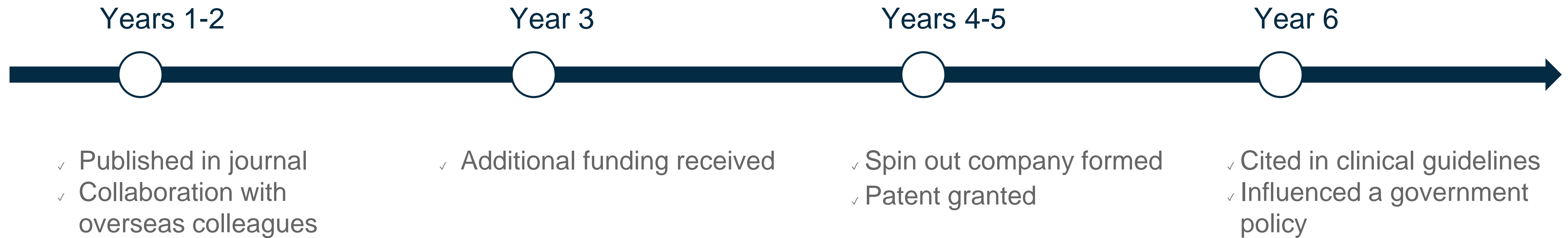> "Do PHD students go on to continue research? Or move to another sector?"

A Longitudinal view is needed

Years 1-2 — **Year 3** — **Years 4-5** — **Year 6**

Years 1-2
- Published in journal
- Collaboration with overseas colleagues

Year 3
- Additional funding received

Years 4-5
- Spin out company formed
- Patent granted

Year 6
- Cited in clinical guidelines
- Influenced a government policy

"How long does it take for projects/programmes to produce different outcomes/impact?"

"Do schemes to promote public engagement do more activities quicker and/or more activities overall?"

"If we evaluate this now, can we predict what will be missing?"

Evidence the holistic impact of research - think about non standard outputs

New knowledge

- Publications
- Research Tools and methods
- Research Databases and Models

Knowledge transfer and exchange

- IP and licencing
- New products (medical, software, artistic etc.)
- Spin Outs

Wider Engagement

- Influence on policy, practice and the public
- Engagement activities

Research ecosystem development

- Next destination and skills
- Awards and recognition
- Use of facilities and resources

Further research and collaborations

- Further funding
- Collaborations and partnerships

Social Innovation

- Collaborators
- Financial Contributors
- Local Income?

researchfish by interfolio

interfolio

Amplify

Could Researchfish help you?

- **ResearchFish data collection tool**

- **Impact reporting**

- **Consultancy & Impact Training**

Come say hello!

katy.elliott@interfolio.com

Effectively Demonstrating & Amplifying the Impact of Research

Panel discussion and Q&A

Frank Zwetsloot(Chair)

Ulysses Palmones

Katy Elliott

AESIS

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