從 OA 到 SDGs：圖書館的發展契機

黃偉富 ICS Research

- OA是出版社與研究者之間新的商業模式
- SDG則是聯合國提出的目標，並獲得各國政府(研究經費贊助單位) 的支持

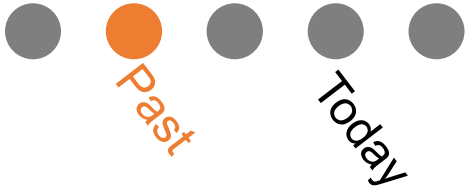
Past Today

OA

17 SDGs

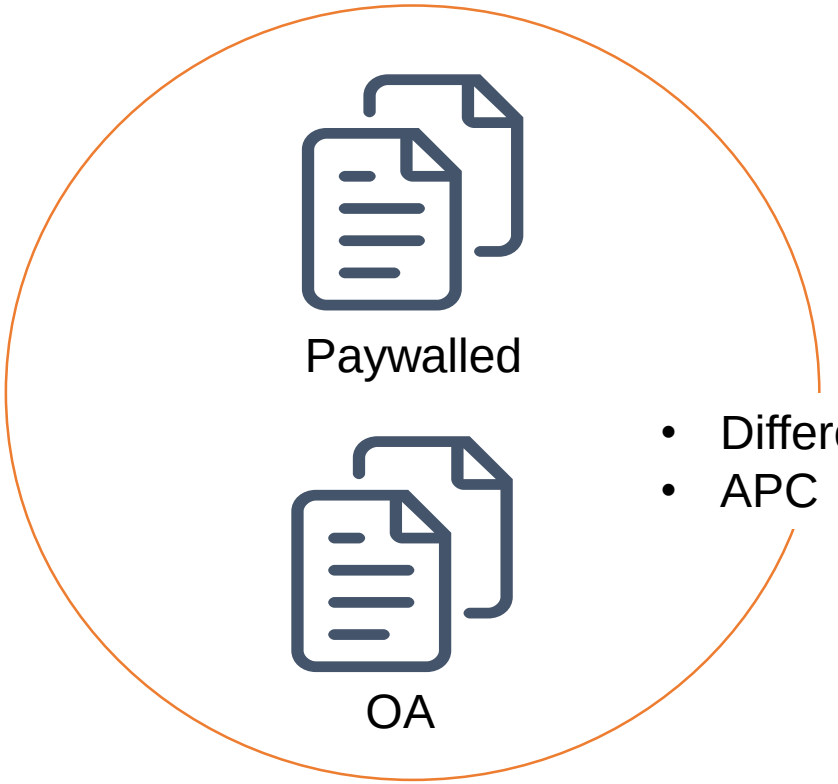
- A new business model between publishers and researchers
- It is supported by funders and UNESCO

- 圖書館往往透過引文分析或其他分析工具支援跨領域合作研究
- 圖書館同時也透過IR、RDM等支持開放科學



- Support Interdisciplinary Collaboration via citation analysis or subscription of analytical tools
- Support Open Science via management of IR, data (FAIR)

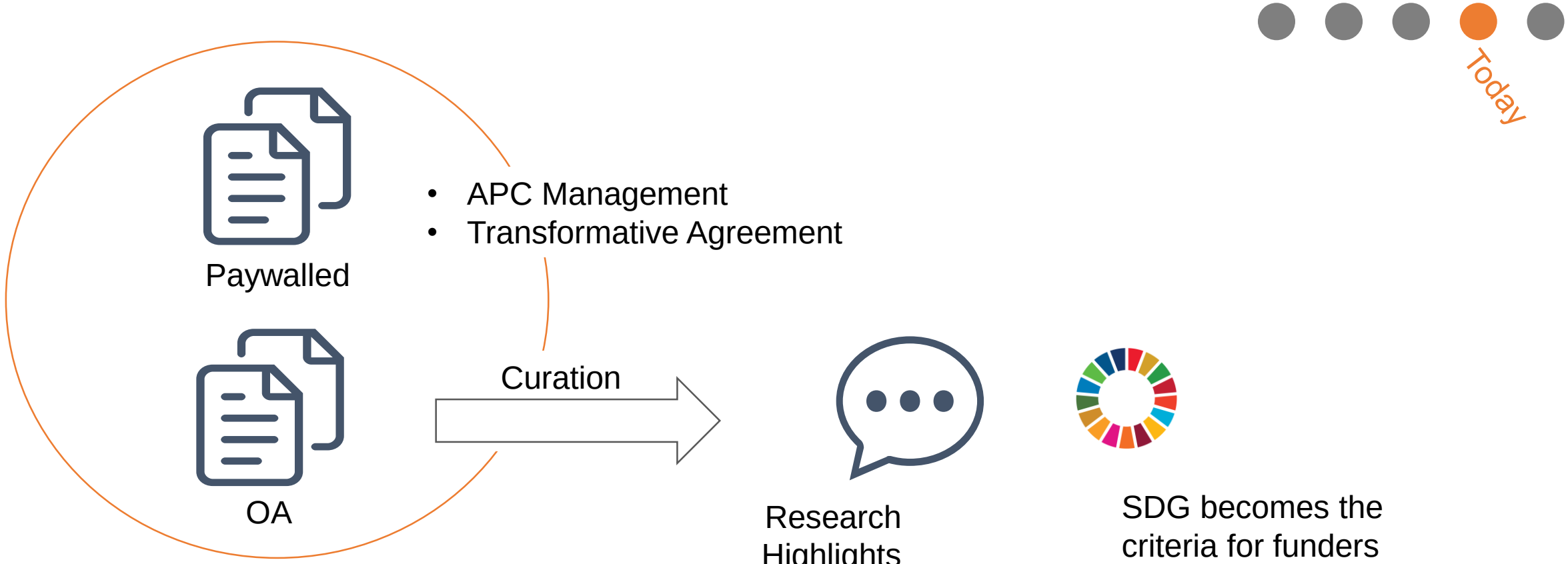
Past Today



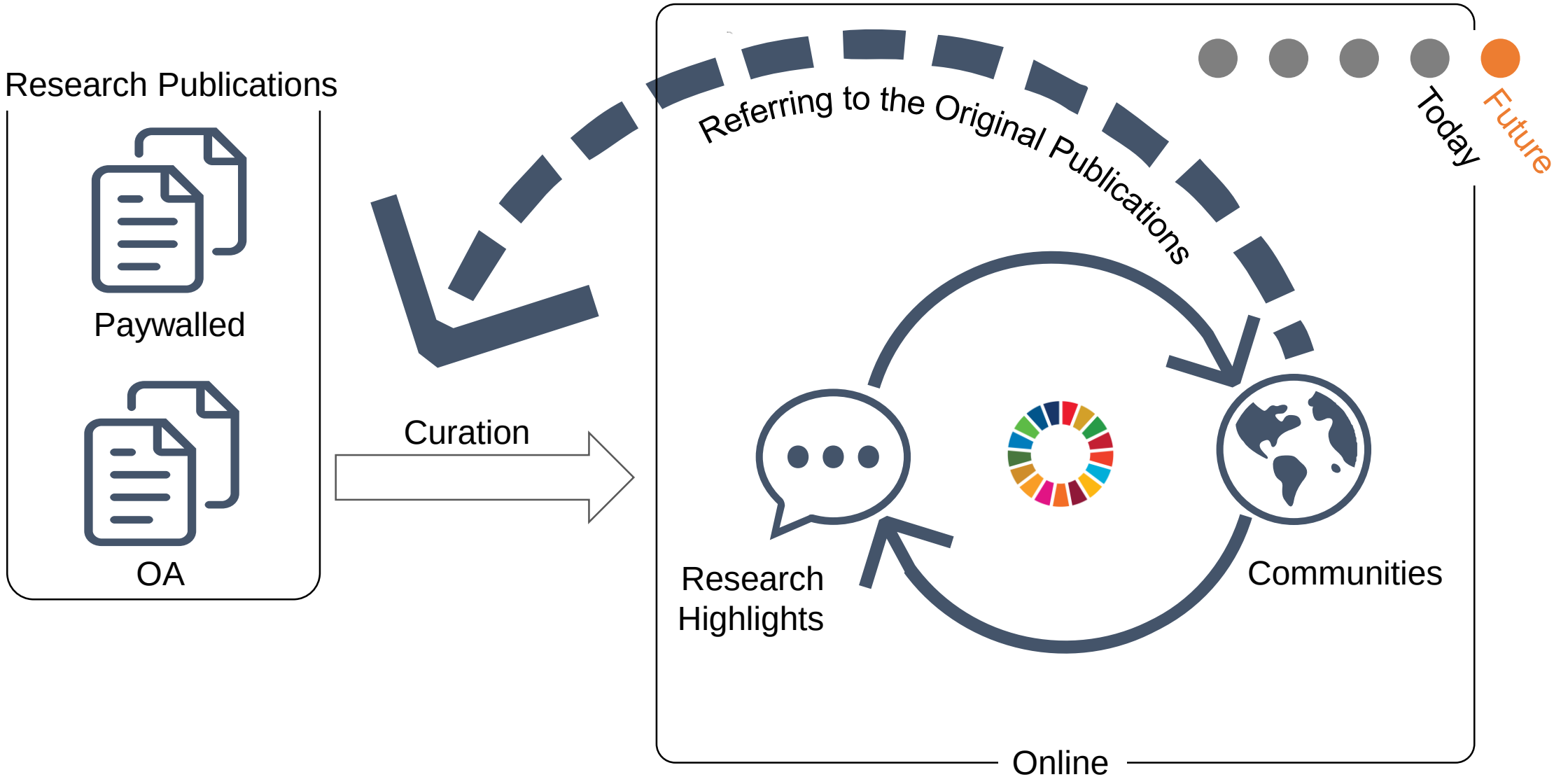
- Different types of OA
- APC

17 SDGs

- OA種類很多，有些出版社會收取APC



- OA除了影響APC管理及訂購模式轉型，另一個值得思考的議題是如何利用開放機制提升研究的社會影響力(SDG)
- 內容開放(OA)不代表研究成果帶來影響，必須轉化為研究亮點，與SDG連結，才能引人注意 (特別是SDG已被許多 funders 與 rankers 接受成為衡量影響力的標準)



- 將專業的研究內容透過SDG與社群大眾連結，有助於論文本身能見度的提升，甚至影響被引用數

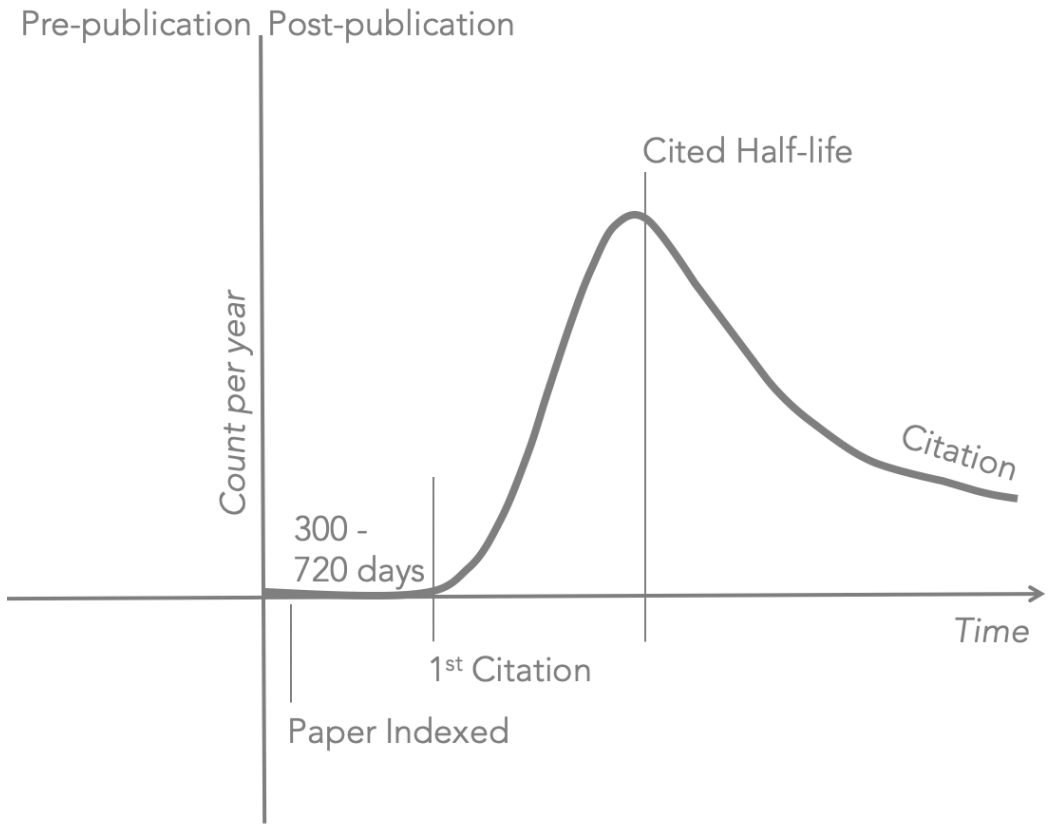
Evolution of Research Measurements

Impact Measurements
(based on UN SDG)

Number of Visibility
(in Altmetric or PlumX Metrics)

Number of Citation Counts
(in ISI or Scopus Citation Index Database)

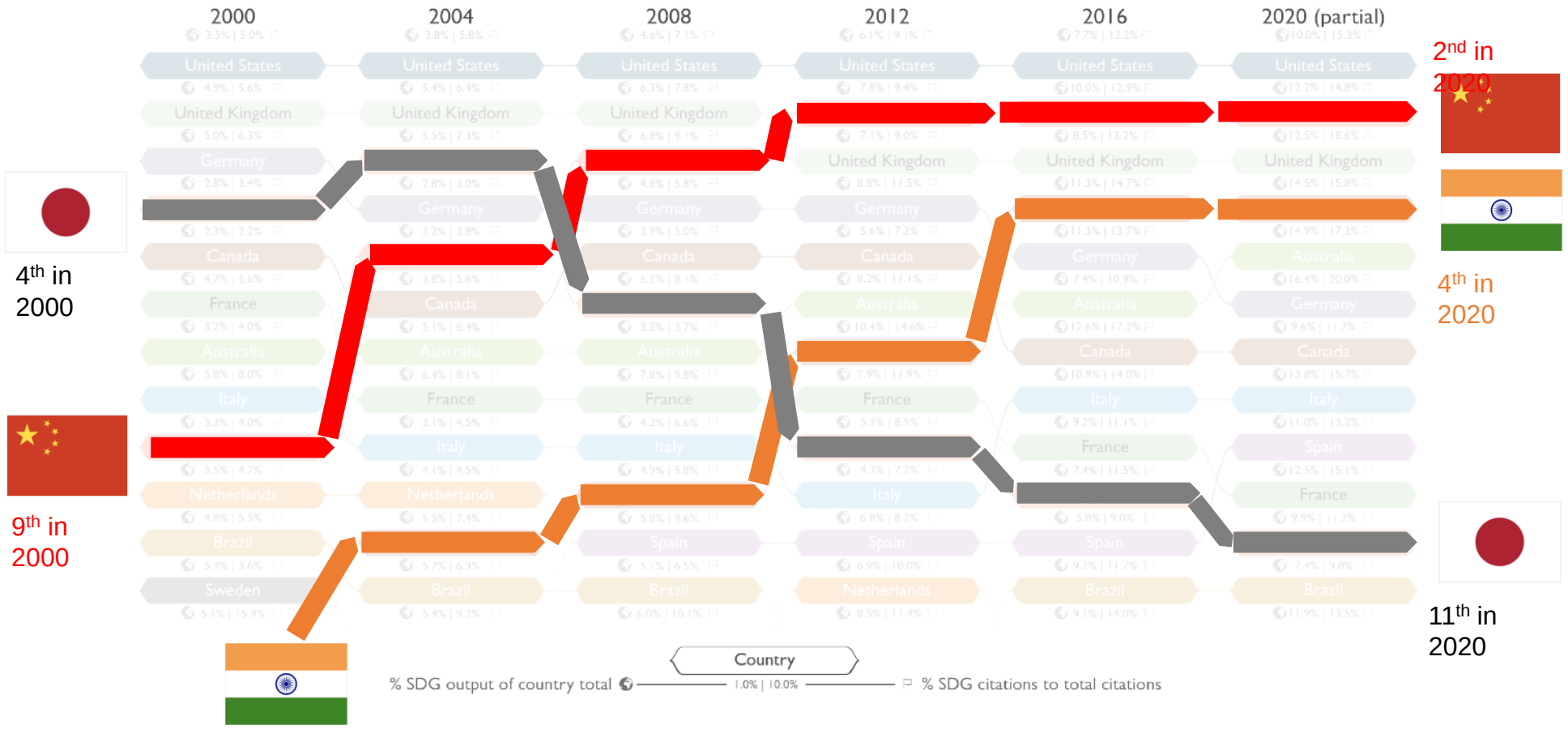
Number of Publications
(in ISI-indexed or Scopus-indexed journals)



- 研究管理的測量指標將從論文數、被引用數，到衡量能見度、影響力

Note: ISI, Scopus, Altmetric and PlumX Metrics are trademarks. UN SDGs means United Nation Sustainable Development Goals.

Evolution of Global Locus of SDG Research since 2000

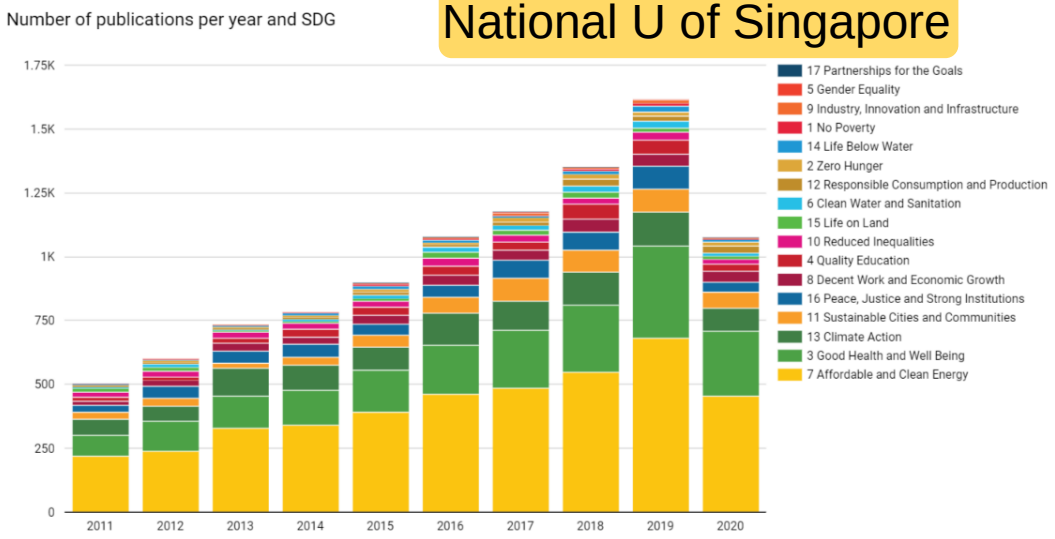


- 根據Digital Sciences發布的報告，過去二十年各國與SDG相關的研究成果比例，中國與印度的排名持續提升，日本則是下降

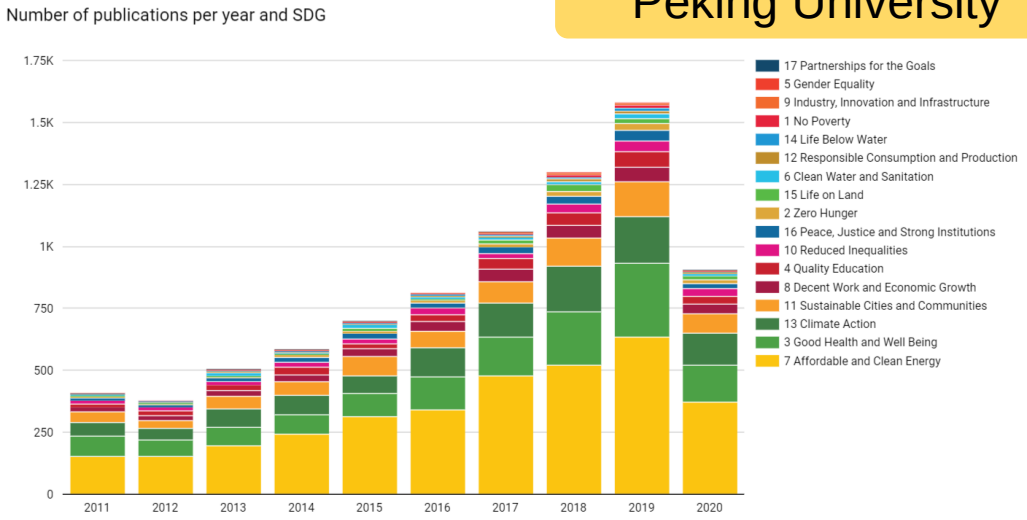
Source: Digital Science Dimensions from 2000-2020

UN SDG-7 centric Universities

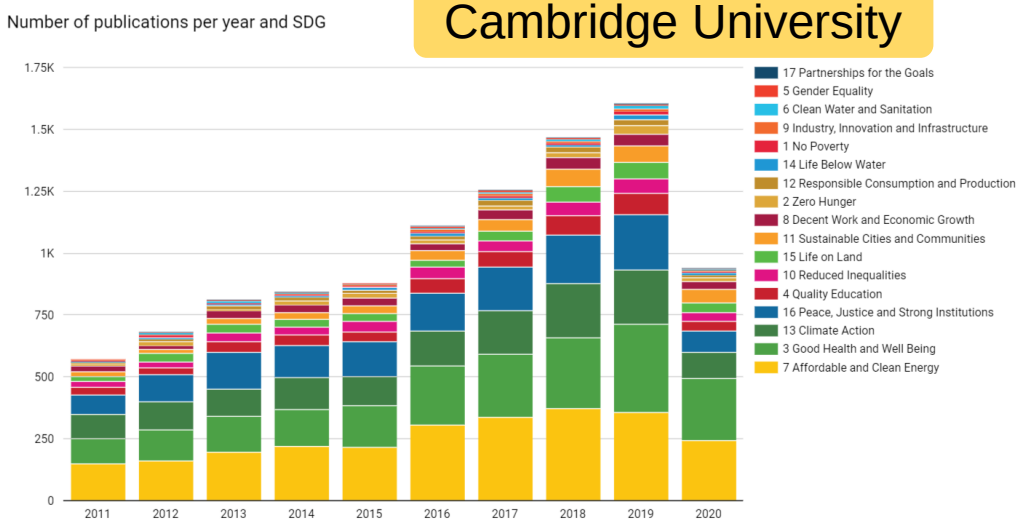
National U of Singapore



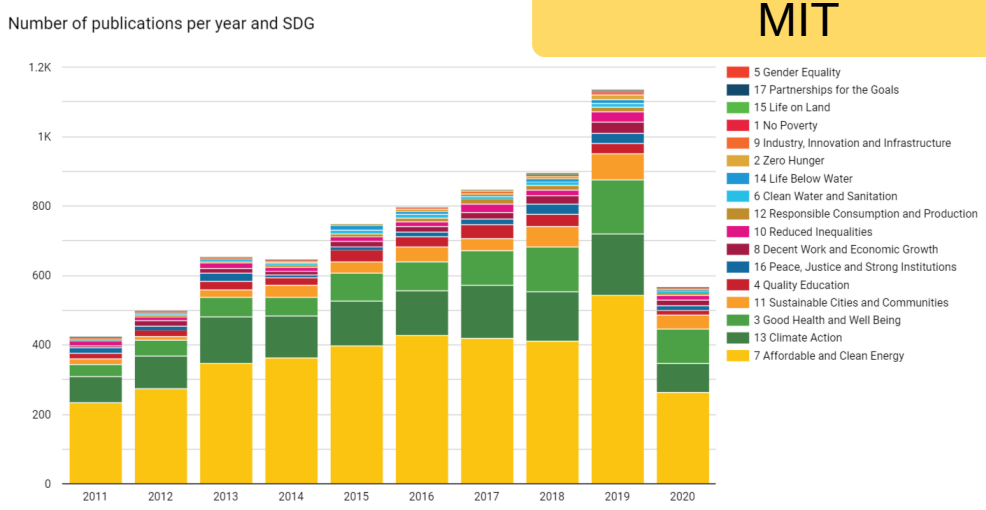
Peking University



Cambridge University



MIT

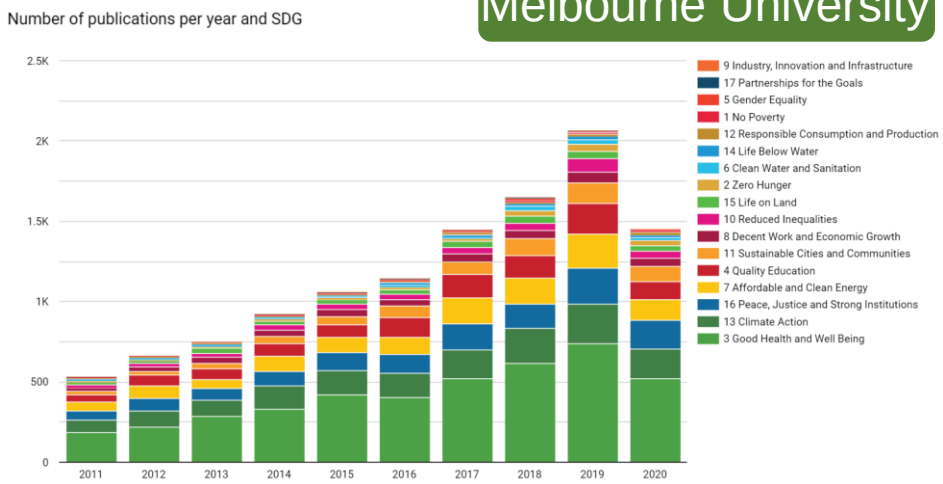


- SDG 7: Affordable and Clean Energy

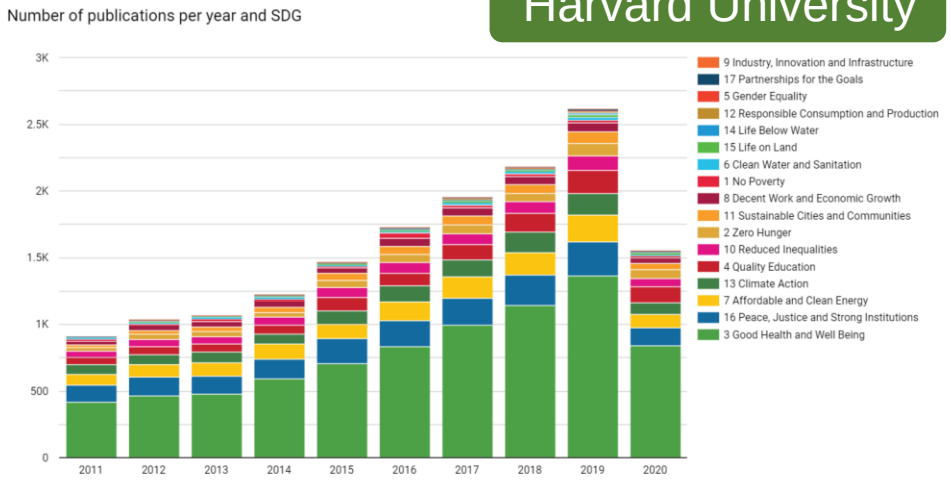
Source: Digital Science Dimensions from 2011-2020

UN SDG-3 centric Universities

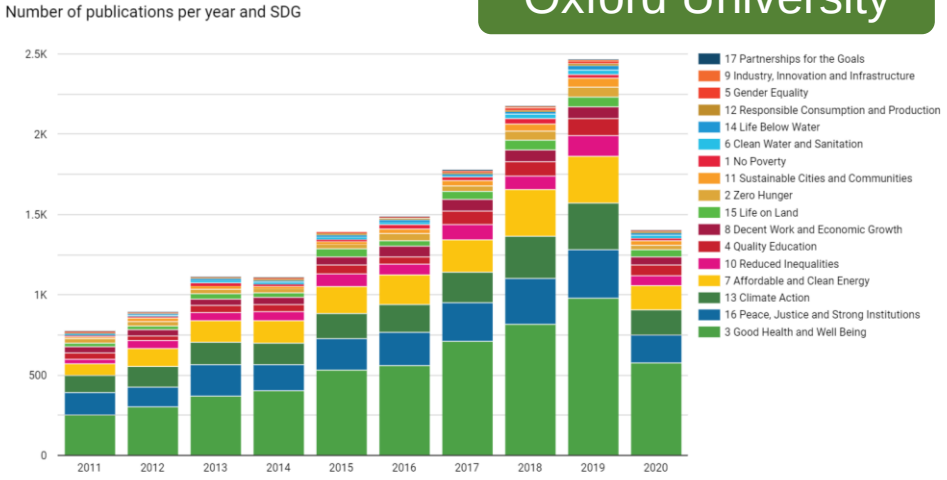
Melbourne University



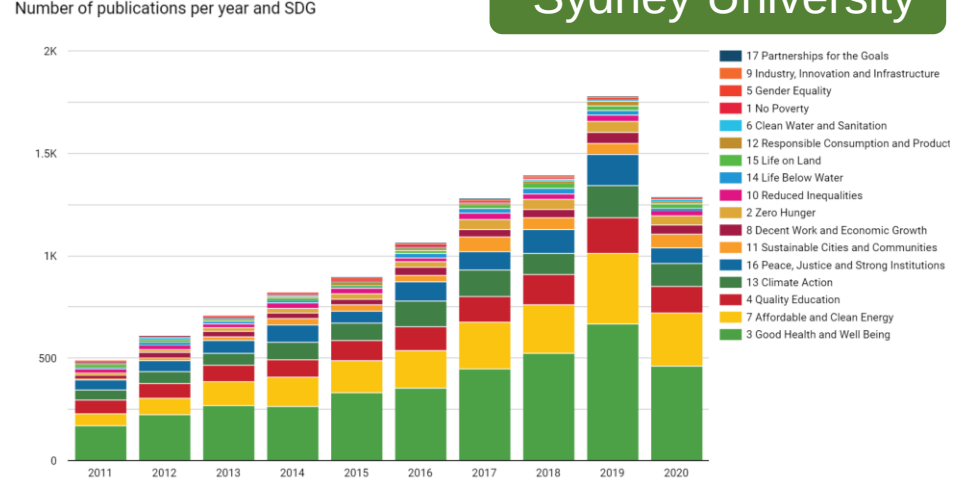
Harvard University



Oxford University



Sydney University



- SDG 3: Good Health and Well Being

Source: Digital Science Dimensions from 2011-2020

THE Impact Rankings 2020: methodology

The *Times Higher Education* Impact Rankings measure global universities' success in delivering the United Nations' Sustainable Development Goals. Here, we explain how we arrived at the results

April 17, 2020

Browse the full Impact Rankings 2020 results

The *Times Higher Education* Impact Rankings are the only global performance tables that assess universities against the United Nations' Sustainable Development Goals (SDGs). We use carefully calibrated indicators to provide comprehensive and balanced comparisons across three broad areas: **research**, **outreach** and **stewardship**.

Which SDGs are included?

There are 17 UN SDGs and we are evaluating university performance on all of them in our second edition of the ranking (click on a category below to view its specific methodology):

- SDG 1 – no poverty
- SDG 2 – zero hunger
- SDG 3 – good health and well-being
- SDG 4 – quality education
- SDG 5 – gender equality
- SDG 6 – clean water and sanitation
- SDG 7 – affordable and clean energy
- SDG 8 – decent work and economic growth
- SDG 9 – industry, innovation and infrastructure
- SDG 10 – reduced inequalities
- SDG 11 – sustainable cities and communities
- SDG 12 – responsible consumption and production
- SDG 13 – climate action
- SDG 14 – life below water
- SDG 15 – life on land
- SDG 16 – peace, justice and strong institutions
- SDG 17 – partnerships for the goals

Three broad areas:

1. Research
2. Outreach
3. Stewardship

- THE大學影響力排名採用的指標著眼於三方面: 研究(如: 研究成果)、推廣(如: 社區推廣)、盡責 (如: 機構營運)

THE Impact Rankings 2020 by SDG: affordable and clean energy (SDG 7) methodology

April 17, 2020

Browse the full Impact Rankings 2020 results

This ranking focuses on universities' research related to energy, their energy use and policies, and their commitment to promoting energy efficiency in the wider community.

Please view the methodology for the Impact Rankings 2020 to find out how these data are used in the overall ranking.

Metrics

Research on affordable and clean energy (27%)

- Proportion of papers in the top 10 per cent of journals as defined by Citescore (10%)
- Field-weighted citation index of papers (10%)
- Number of publications (7%)

This focuses on research that is relevant to affordable and clean energy, measuring the proportion of papers in the top 10 per cent of cited journals, citation impact and the volume of research produced. The field-weighted citation index is a subject-normalised score of the citation performance of publications.

The data are provided by Elsevier's Scopus dataset and based on a query of keywords associated with SDG 7 (affordable and clean energy). They include all indexed publications between 2014 and 2018. The data are normalised across the range using Z-scoring.

Clean energy measures (23%)

- Policy to ensure all renovations or new builds follow energy efficiency standards (3.85%)
- Plans to upgrade existing buildings to hig… …ting (3.85%)
- Process for carbon management and… …ans (3.85%)
- Plan to reduce overall energy c…
- Reviews to identify areas whe…
- Policy on divesting from carb… oil (3.8%)

The data and evidence for these … evidence was evaluated and score… …d.

Energy use (27%)

This is defined as the energy used per … buildings. It measures units of energy use… …ation or product at the university.

The data were provided directly by universities and normalised across the range using Z-scoring.

Energy and the community (23%)

- Programmes for local community to learn about the importance of energy efficiency and clean energy (4.6%)
- Promote pledge on 100 per cent renewable energy (4.6%)
- Services aimed at improving energy efficiency and clean energy for local industry (4.6%)
- Inform and support governments on policy development related to clean energy and energy-efficient technology (4.6%)
- Assistance for start-ups that foster and support a low-carbon economy or technology (4.6%)

50.0% influenced by Research and Outreach

7 AFFORDABLE AND CLEAN ENERGY

THE Impact Rankings 2020 by SDG: good health and well-being (SDG 3) methodology

April 17, 2020

Browse the full Impact Rankings 2020 results

This ranking focuses on universities' research on the key conditions and diseases that have a disproportionate impact on health outcomes across the world, their support for healthcare professions, and the health of students and staff. It is not a general measure of a university's medical teaching and research.

Please view the methodology for the Impact Rankings 2020 to find out how these data are used in the overall ranking.

Metrics

Research on health and well-being (27%)

- Proportion of research papers that are viewed or downloaded (10%)
- Proportion of research papers that are cited in clinical guidance (10%)
- Number of publications (7%)

This focuses on research that is relevant to key diseases and conditions, measuring paper views, clinical citations and the volume of research produced.

The data are provided by Elsevier's Scopus dataset, based on a query of keywords associated with SDG 3 (good health and well-being). The data include all indexed publications between 2014 and 2018 and are normalised across the range using Z-scoring.

3 GOOD HEALTH AND WELL-BEING

65.4%
influenced by Research and Outreach

Proportion of health graduates (34.6%)

In order to understand how a university is supporting health professions we measure the proportion of graduates who receive a degree associated with a health-related profession out of the institution's total number of graduates.

The data relate to the number of graduates in the 2018 academic year. The degree does not necessarily give them the ability to practise directly; additional qualifications may be required.

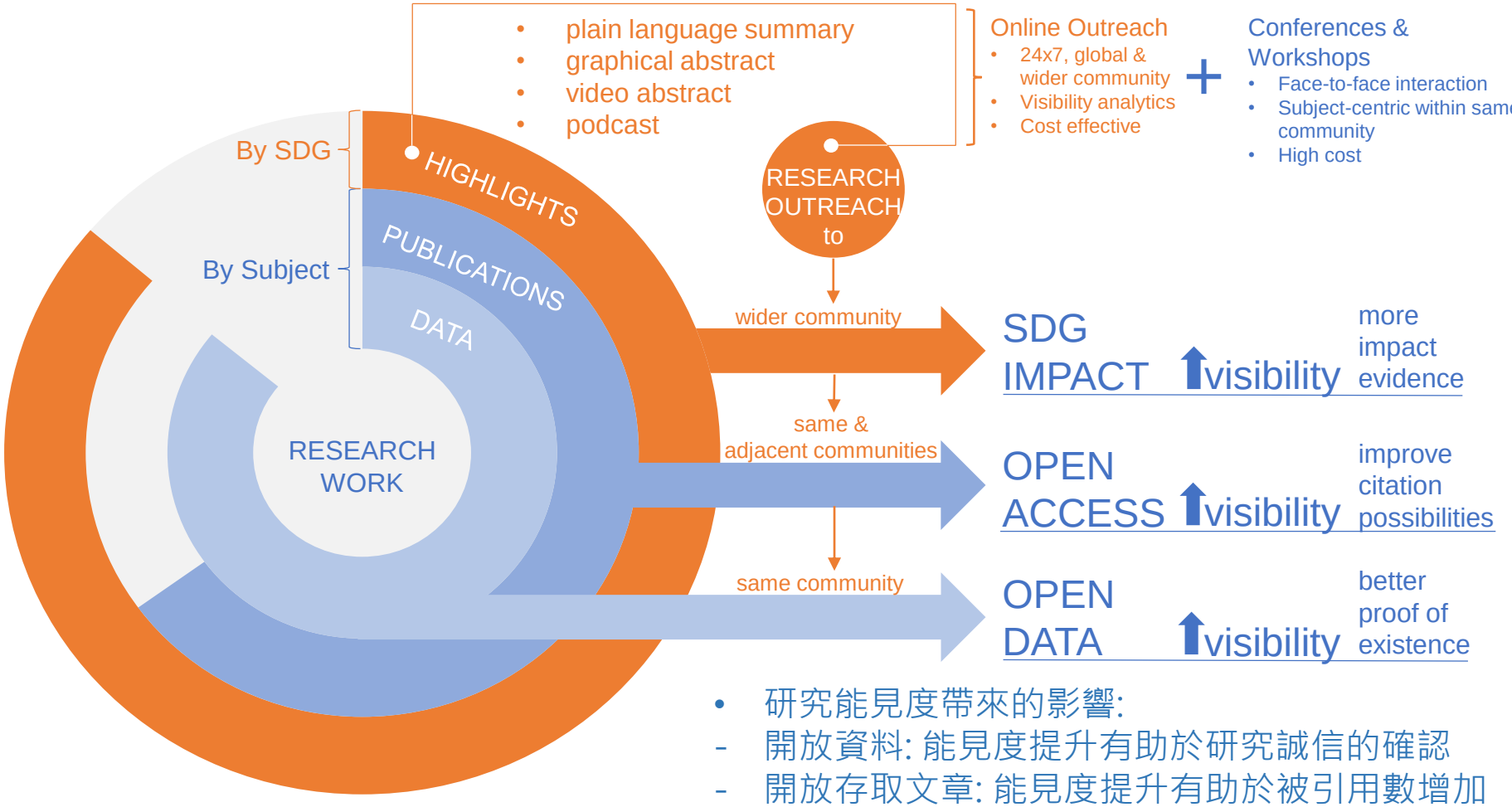
The data were provided directly by universities and normalised across the range using Z-scoring.

Collaborations and health services (38.4%)

- Smoke-free policy (8%)
- Collaborations with local or global health institutions to improve health and well-being outcomes (7%)
- Outreach programmes in the local community to improve health and well-being (7%)
- Access to sexual and reproductive healthcare services for students (7%)
- Free mental health support for students and staff (7%)
- Community access to university sports facilities (2.4%)

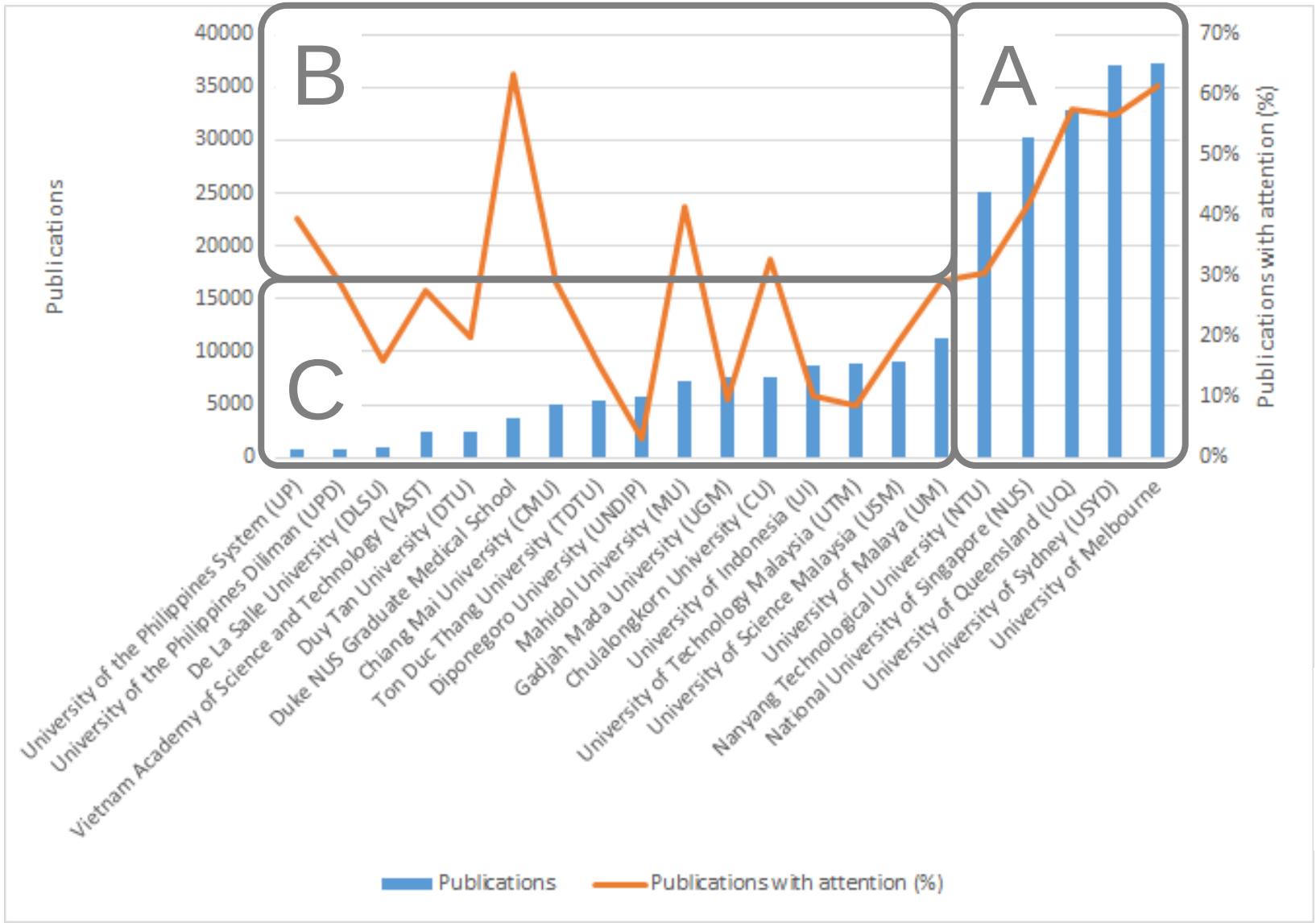
Research Visibility helps Open Science

for Impact Evidencing, better Citation Counts, and Data Integrity



- 研究能見度帶來的影響:
  - 開放資料: 能見度提升有助於研究誠信的確認
  - 開放存取文章: 能見度提升有助於被引用數增加
  - SDG影響: 能見度提升有助於發揮社會影響力

Publication Volume versus Publication Visibility



A: Powerhouse

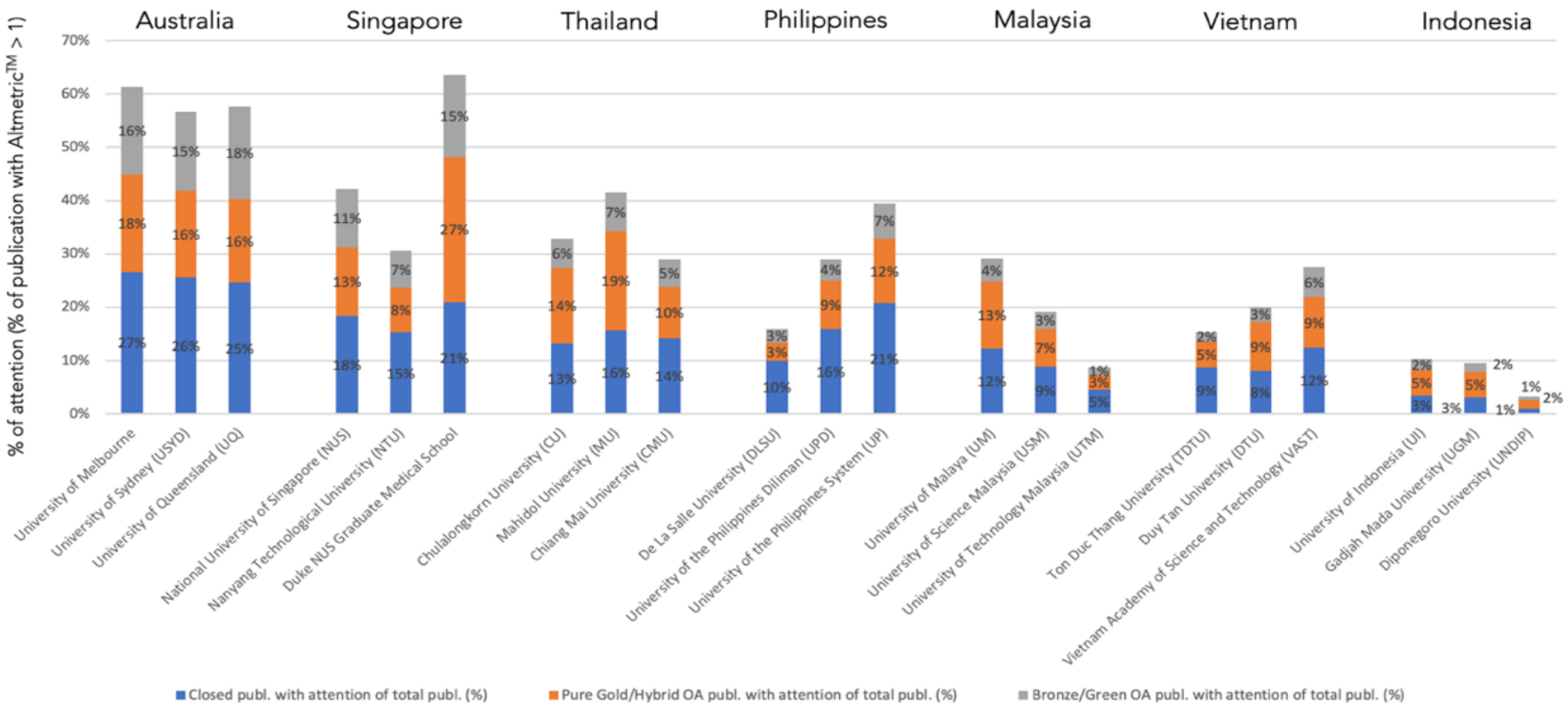
B: Niche

C: Underdog

- 論文量與能見度的關係:
- Powerhouse: 論文量與能見度均高者
- Niche: 論文量低但能見度高者
- Underdog: 論文量與能見度均低者

OA and Visibility

- 澳洲與新加坡的研究能見度較高
- 絕大多數學校的論文仍以非OA的方式出版



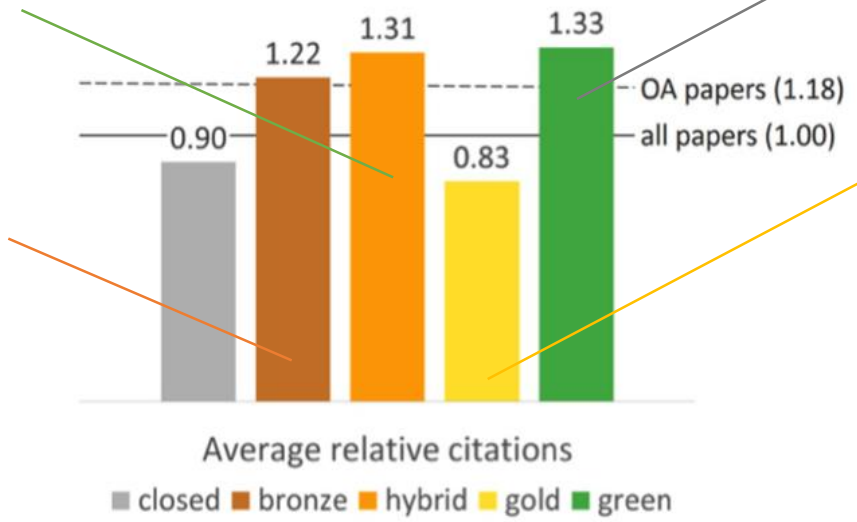
Source: Digital Science Dimensions from 2017-2020

The Variation of OA

- OA與被引用數的關係

Hybrid
- High APC
- Immediate OA
- Piggyback on branded closed journals

Bronze
- No APC
- Embargo
- Not a real OA



Green
- No APC
- Embargo

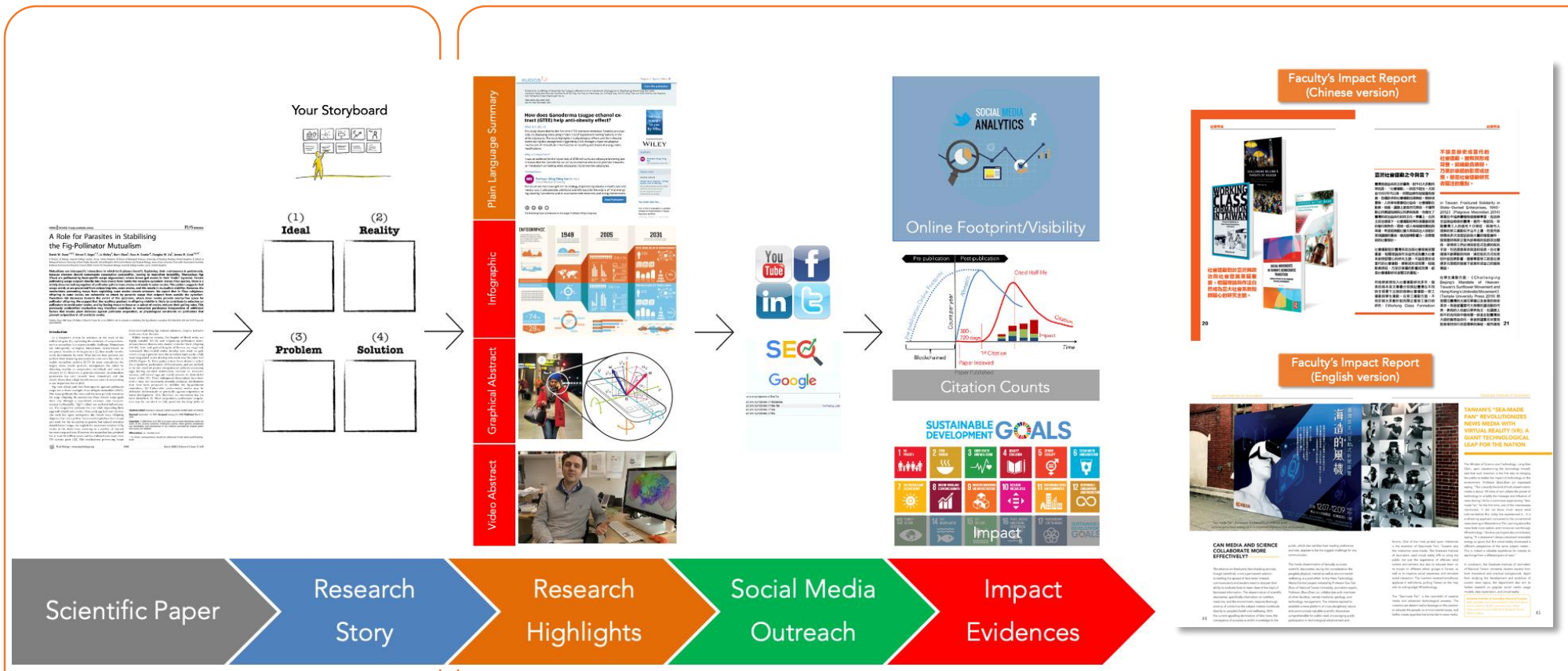
Gold
- APC
- Immediate OA

Average relative citations of different access types of a random sample of Web of Science® articles and reviews with a DOI published between 2009 and 2015

Source: H Piwowar, "The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles", PeerJ, 2018

The Process of Research Communication

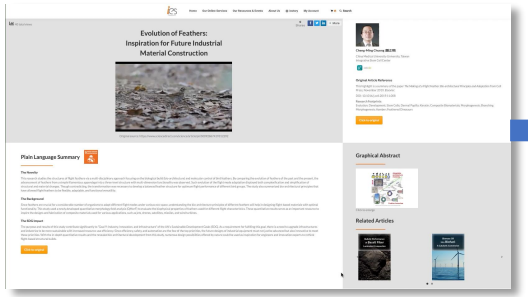
- 研究傳播的過程包括: 找出適合傳播的內容以及為傳播過程留下紀錄



The Process of Research Communication

- 過去的傳播方式只是消極地將相同內容放在不同平台，主要針對專業或特定讀者群
- 積極的推廣方式則是找出研究亮點，用適當的方式包裝，針對領域外的跨領域社群

active outreaching



research highlight (*iestory*) with
PLS, Graphical/Video Abstracts

- wider audiences include policy makers and industrial
- bite-sized messages
- interdisciplinary engagement on SDG perspective issues

passive posting

publisher

institution repository

researchgate™

commercial aggregators

- primarily domain experts
- overwhelming details
- engagement within related disciplines

The Research Highlight, *iestory*

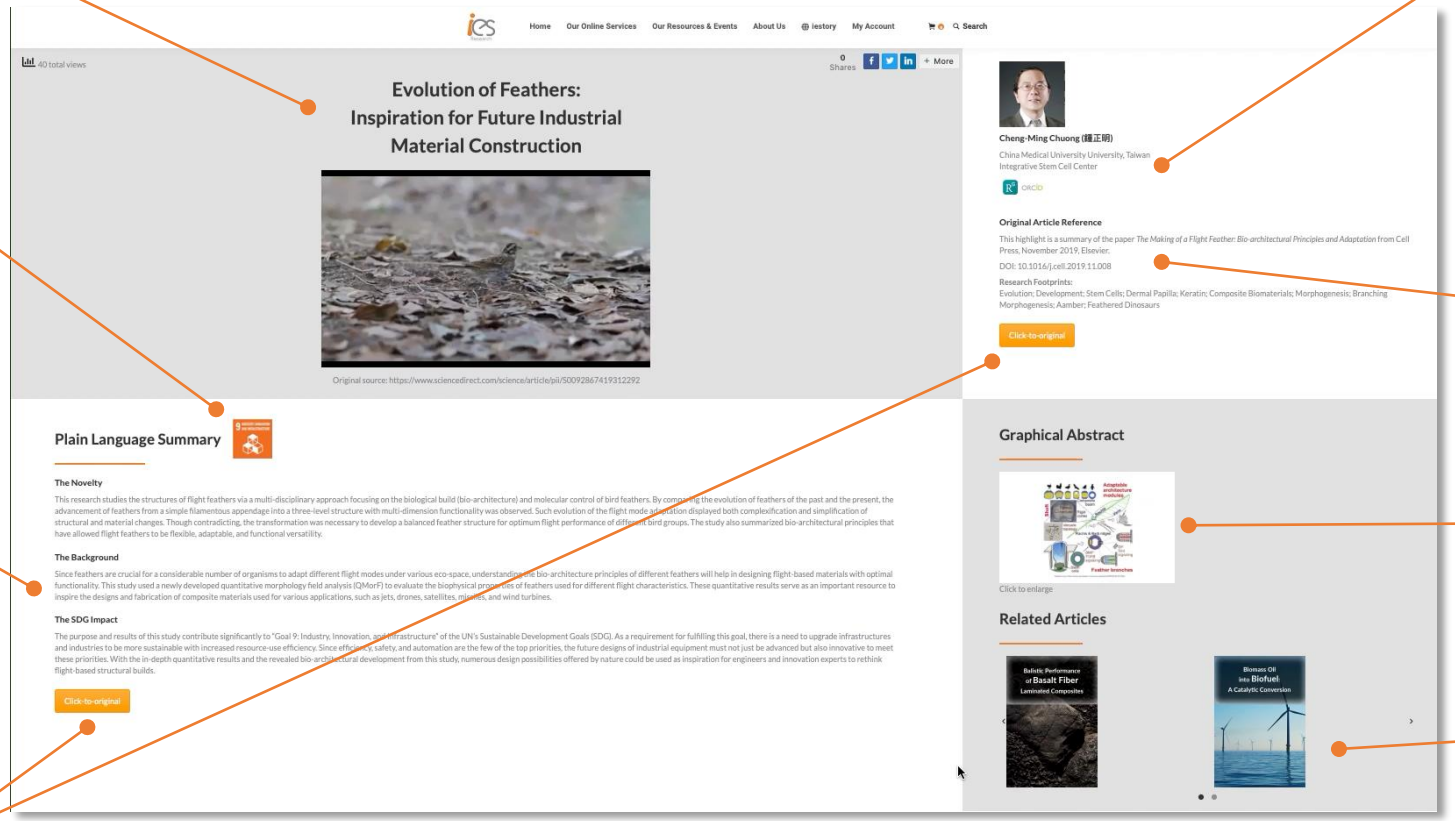
- iestroy方便讀者用最短時間掌握重點，訣竅包括: 平易近人的短文、影片或圖像等視覺設計、與SDG連結。讀者可決定是否連結到出版社網頁進一步閱讀細節

Headline

SDG

Plain Language Summary

Click-to-Original



Author's ORCID & ResearchGate links

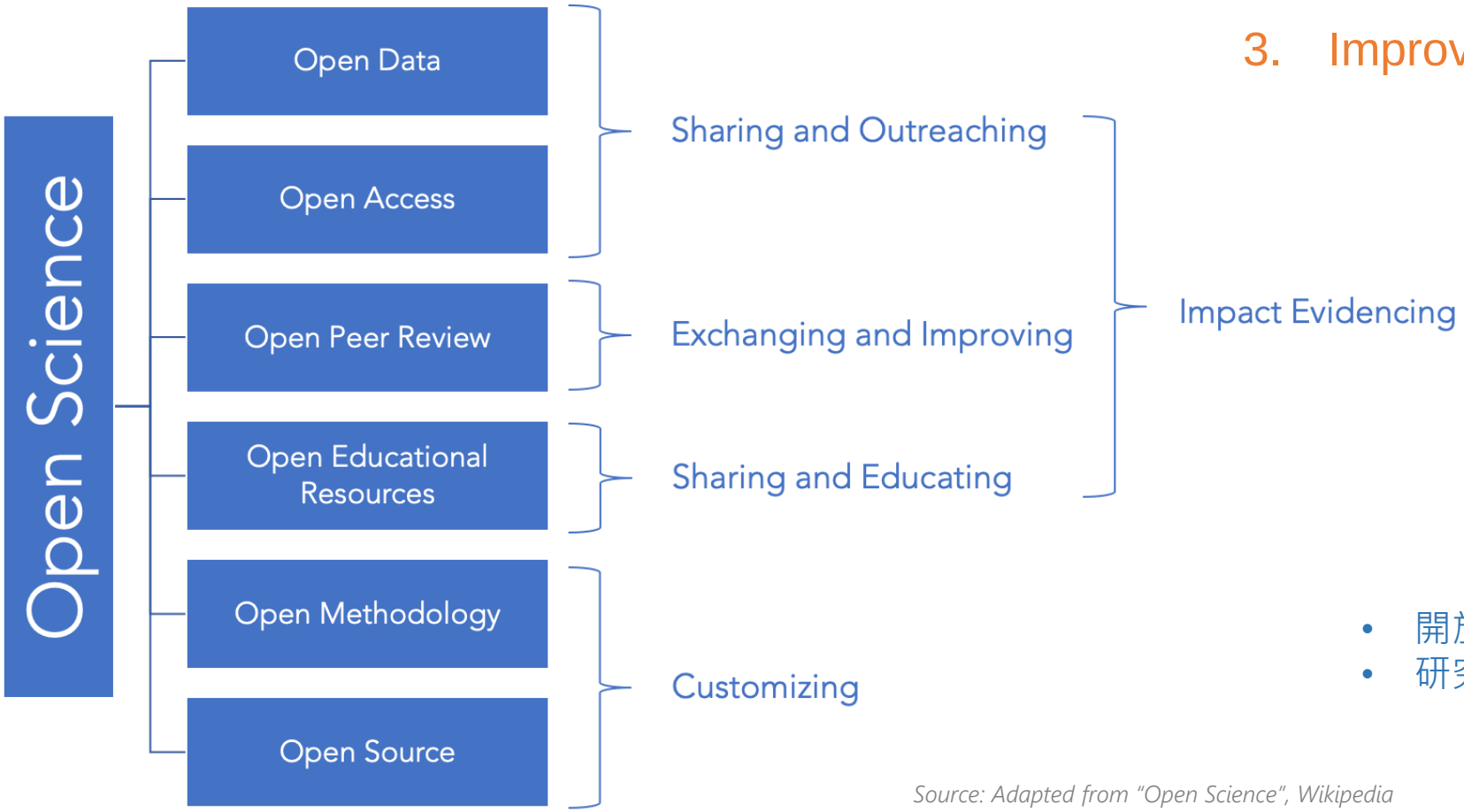
Full-text Details

Graphical Abstract

SDG-related articles

Open Science is the game-changer for achieving SDGs

1. Collaborate and accelerate discovery
2. Share research to the world
3. Improve reproducibility

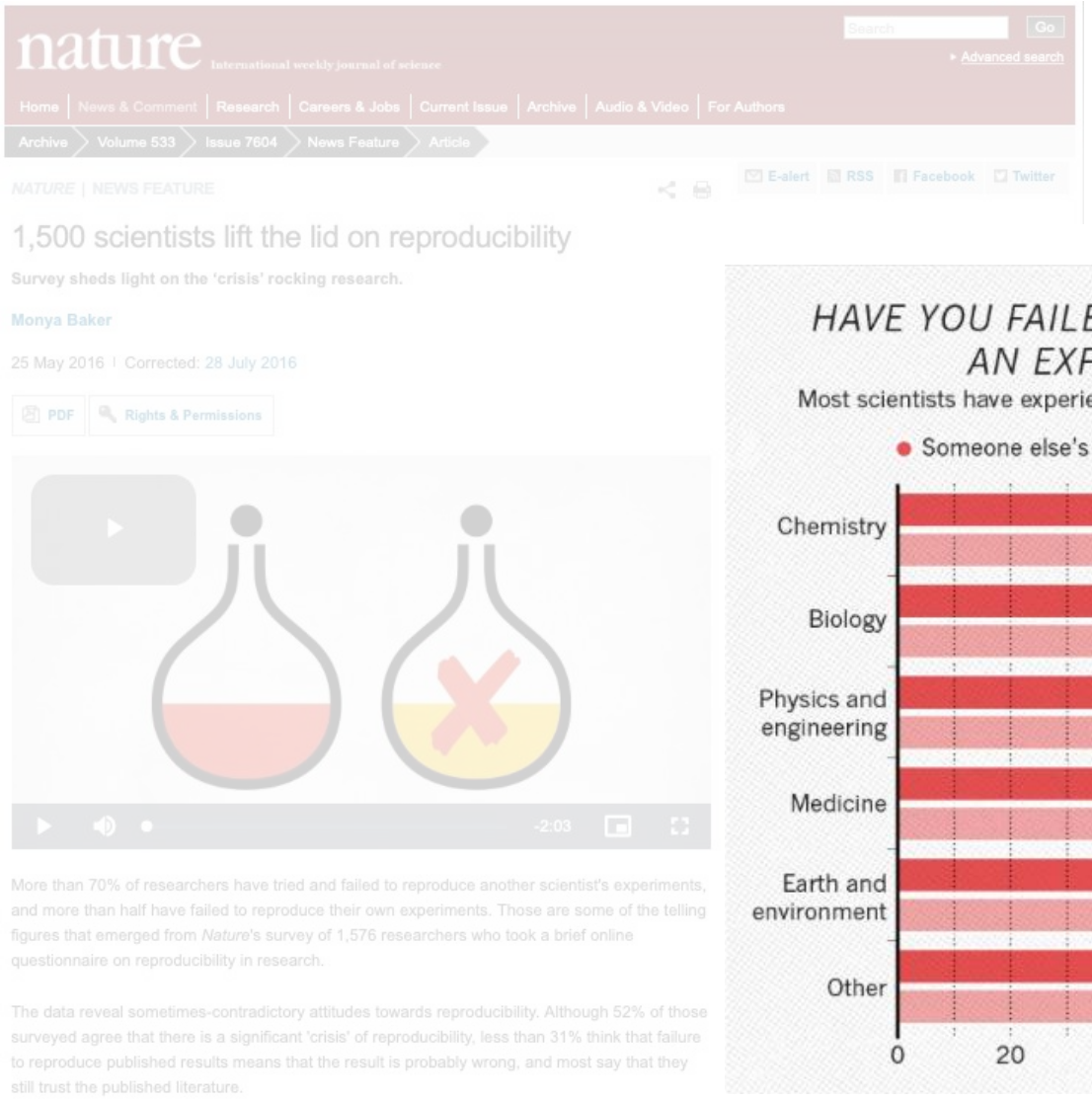


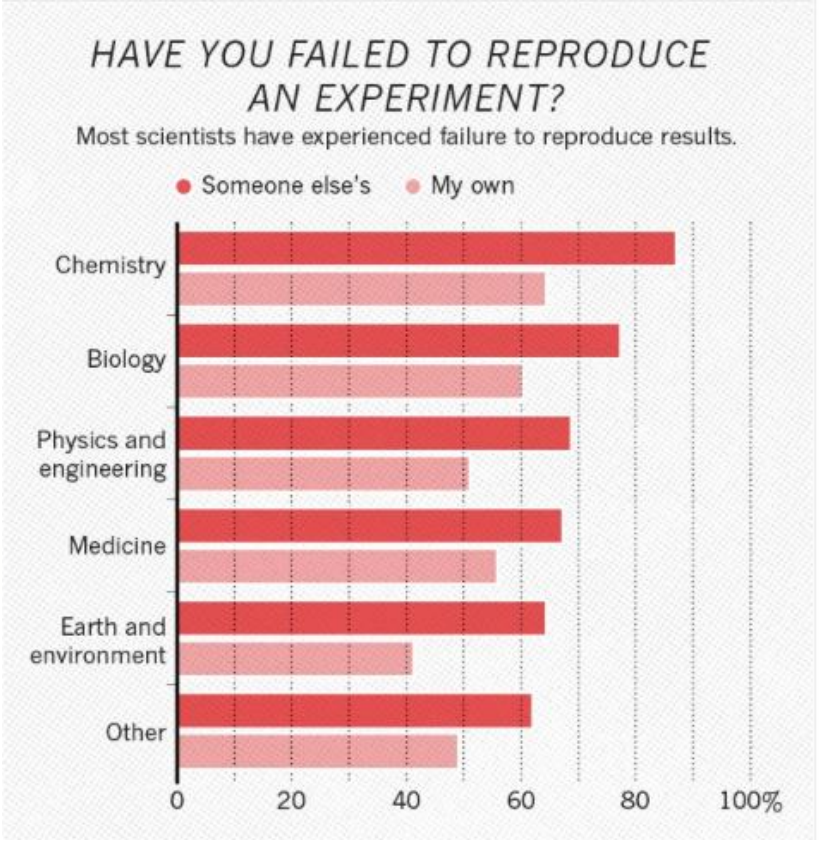
- 開放科學對於實現SDG非常重要
- 研究成果必須能: 分享、交換、可得、重製

Source: Adapted from "Open Science", Wikipedia

Open Science is the game-changer for achieving SDGs

1. Collaborate and accelerate discovery
2. Share research to the world
3. Improve reproducibility





- 能被重製的研究才具可信度

Source: Nature, News Feature, "1,500 scientists lift the lid on reproducibility", 25 May 2016

Nobel Prize-winning scientist Frances Arnold retracts paper

3 January 2020 Share

Nobel Prize

Prof Arnold works in the department of chemical engineering at Caltech

American scientist Frances Arnold, who won the Nobel Prize for chemistry, has retracted her latest paper.

Prof Arnold shared the award with George P Smith and Gregory Winter for their research on enzymes in 2018.

A subsequent paper on enzymatic synthesis of beta-lactams was published in the journal Science in May 2019.

It has been retracted because the results were not reproducible, and the authors found data missing from a lab notebook.

Reproduction is an essential part of validating scientific experiments. If an experiment is a success, one would expect to get the same results every time it was conducted.

Prof Arnold came forward with the news herself on Twitter on 2 January.

"For my first work-related tweet of 2020, I am totally bummed to announce that we have retracted last year's paper on enzymatic synthesis of beta-lactams. The work has not been reproducible," she tweeted.

"It is painful to admit, but important to do so. I apologize to all. I was a bit busy when this was submitted, and did not do my job well."

Thank You

we share your discovery!

https://iesresearch.solutions