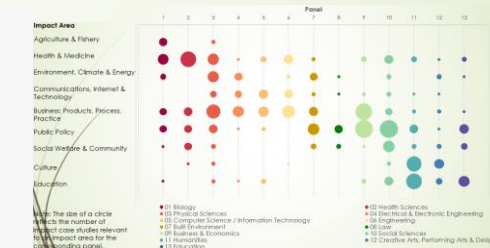大學教育資助委員會
University Grants Committee

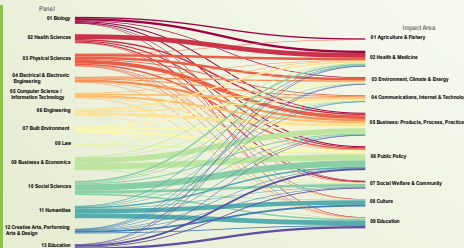# Research Assessment Exercise 2020
Talk on Research Impact

by Prof. Philip Gummett
# UGC's RAE Consultant

28 July 2021

REACH

IMPACT

SIGNIFICANCE

UGC 大學教育資助委員會
University Grants Committee

RAE 2020 - Talk on Research Impact - Rundown

UK Time	HK Time	Programme
09:00 - 09:05	16:00 - 16:05	Introduction
09:05 - 09:55	16:05 - 16:55	Presentation by Prof. Philip Gummett, UGC's RAE Consultant
09:55 - 10:10	16:55 - 17:10	Short Break
10:10 - 11:00	17:10 - 18:00	Q&A Session Round 1: each university take turns to raise questions; Round 2: universities free to raise questions to the Zoom meeting host

UGC 大學教育資助委員會
University Grants Committee

RAE 2020 - Talk on Research Impact - Outline

- ▸ **Part A – An overview of the RAE 2020 and the overall results**

- ▸ **Part B – An overview on research impact (the submissions, assessment criteria and assessment process)**

- ▸ **Part C – What were shown in the submissions (main area of impact, focus of impact under each panel)**

- ▸ **Part D – How to improve impact performance and culture and How to improve presentation of impact case studies – An observation by the panels**

REACH

IMPACT

SIGNIFICANCE
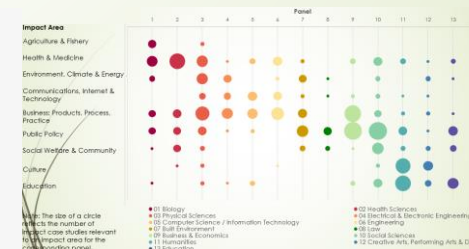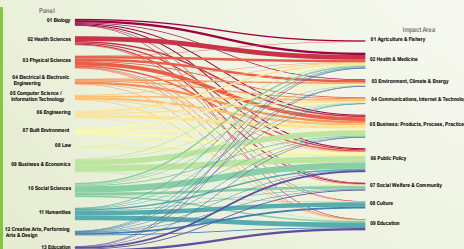
A1. RAE Overview

Panels emphatic:
RAE 2020 conducted effectively, fairly, no loss of rigour

Outcomes

- general improvement in quality compared to 2014
- judged against the highest standards globally
- all panels saw work equal to the best anywhere in the world

Robustly justifiable

in terms of
- assessment process
- expectations from generally rising global research standards
- significant investment in research in Hong Kong since 2014
- evidence on research strategies within the submissions

Submissions & Outcomes

A rich source for
- explaining the value of investment in the UGC-funded universities
- promoting the universities both within HK & globally
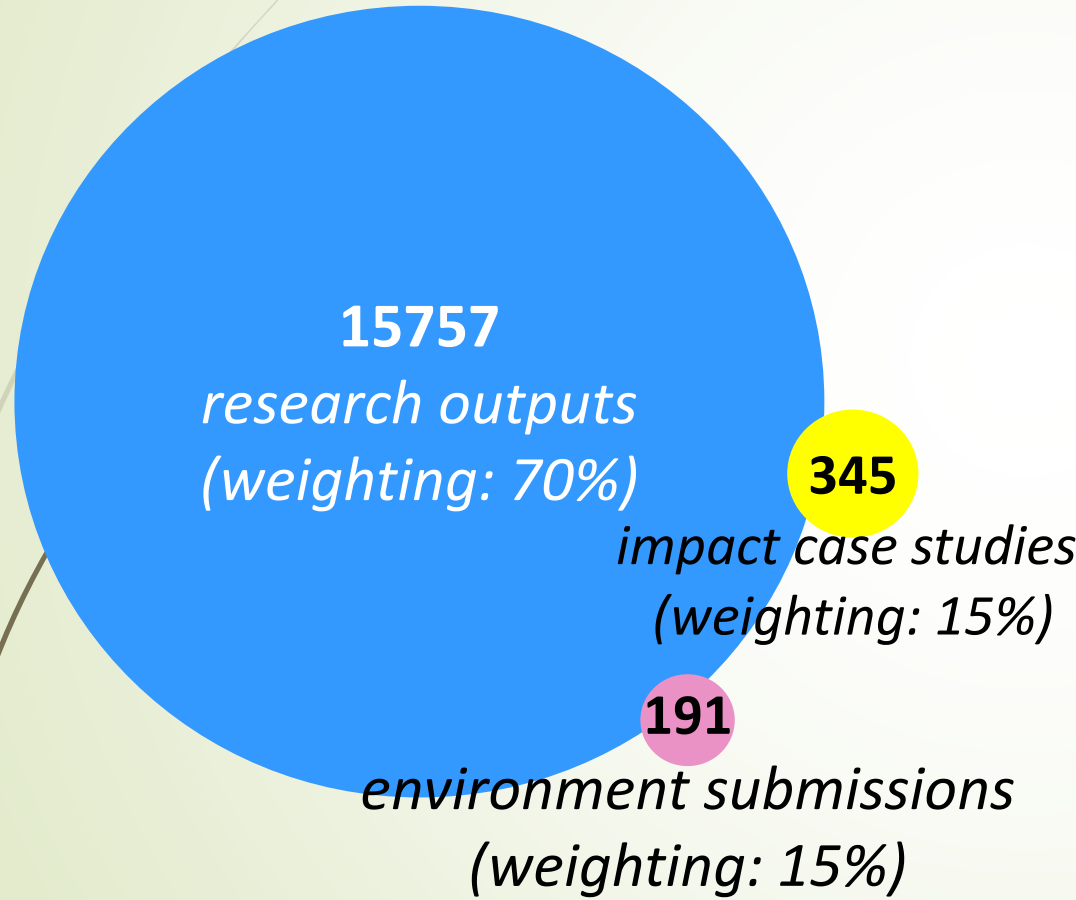- building an even stronger culture of impact in future

4 223 eligible staff from 8 UGC-funded universities

RAE 2020 Panel Members 361

15757
research outputs (weighting: 70%)

345
impact case studies (weighting: 15%)
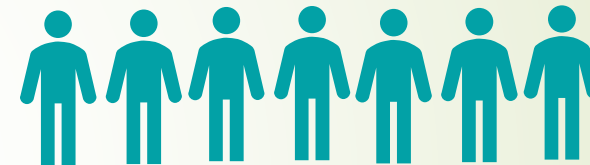
191
environment submissions (weighting: 15%)

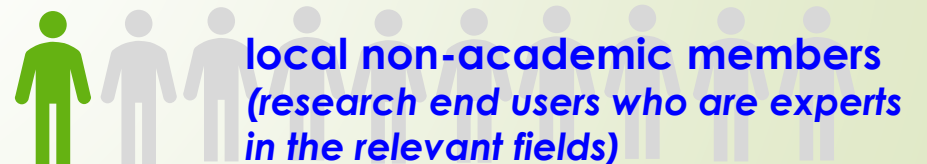**Total submissions: 16 293**

252 **non-local academic members** *(from 20 countries/ regions)*

77 **local academic members**

32 **local non-academic members** *(research end users who are experts in the relevant fields)*

6

13 assessment panels with 41 units of assessment

Business & Economics — **53 PMs**
- accountancy
- economics and finance
- business
- hotel management & tourism

Humanities — **42 PMs**
- Chinese language & literature
- English Language & literature
- translation
- linguistics & language studies
- history
- area studies, cultural studies and other arts/humanities
- philosophy
- religious studies

Physical Sciences — **37 PMs**
- physics & astronomy
- materials science and materials technology
- chemistry
- earth sciences and other physical sciences
- mathematics and statistics

Biology — **22 PMs**
- biological sciences
- pre-clinical studies

Engineering — **22 PMs**
- mechanical engineering, production engineering, textile technology and aerospace engineering
- chemical engineering, biomedical engineering, other technologies and marine engineering

Built Environment — **19 PMs**
- civil engineering and building technology
- architecture
- planning and surveying

CS/IT — **16 PMs**
- computer studies/science

Health Sciences — **51 PMs**
- clinical medicine
- clinical dentistry
- nursing, optometry, rehabilitation sciences and other health care professions
- Chinese medicine

Social Sciences — **38 PMs**
- psychology
- political science
- geography
- sociology & anthropology
- social work and social policy
- communications & media studies

Education — **20 PMs**
- physical education, sport, recreation & physical activities
- education

EEE — **15 PMs**
- electrical & electronic engineering

Creative Arts, Performing Arts and Design — **14 PMs**
- visual arts, design, creative media, other creative arts and creative writing
- music and performing arts

Law — **12 PMs**
- law

7

RAE 2020 Sector-wide Performance

**Percentage of submissions attaining
the rating on the 5-point scale (%)**

70%

25%

45%

30%

Rating

4*
world-leading

3*
internationally
excellent

2*, 1* & υ/c
international standing,
limited standing and
unclassified
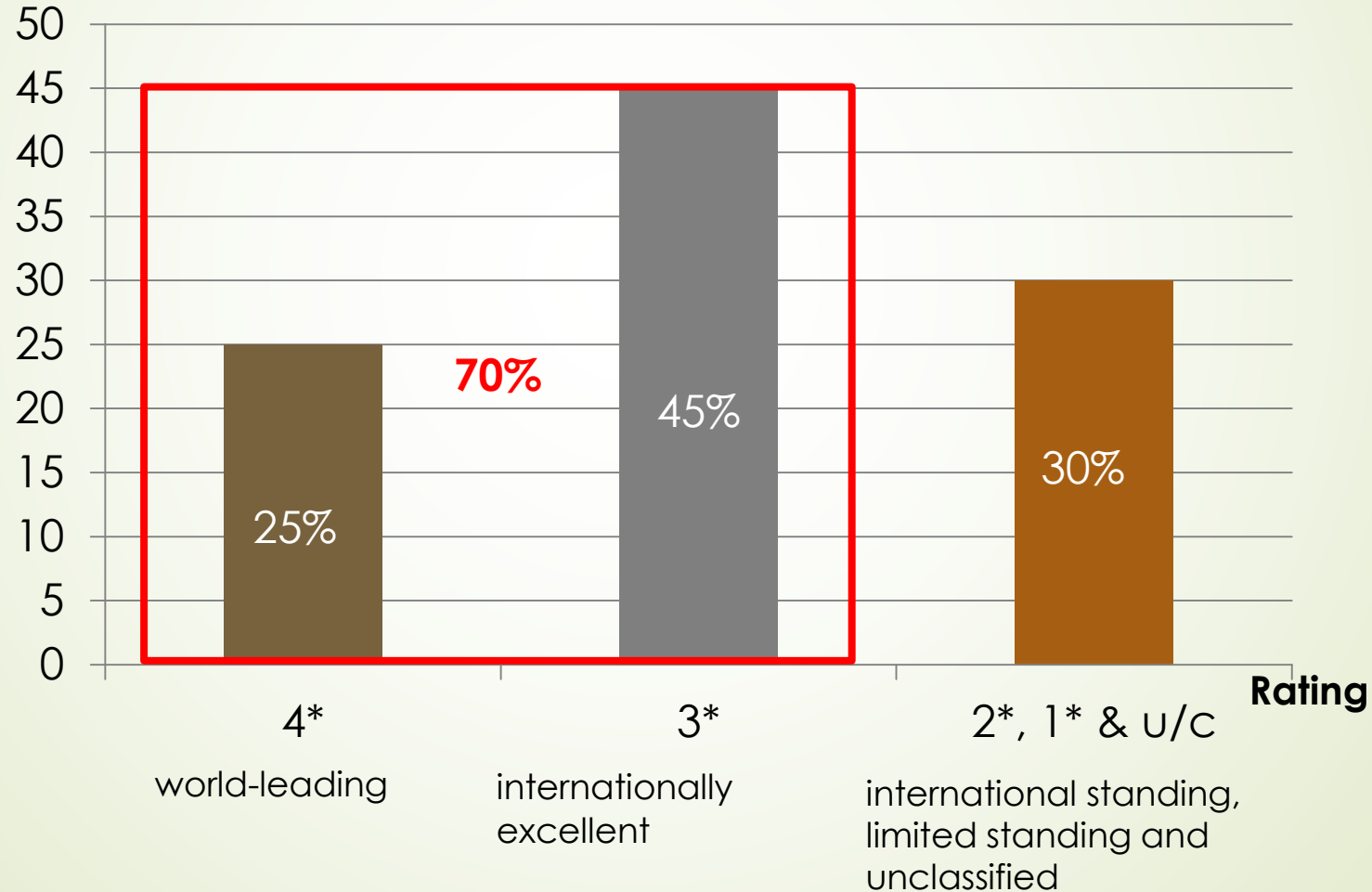
A5.   RAE Overview – Overall Profiles by Panel

8

Panel

Panel	4*	3*	2*	1*	u/c
Biology	24	38			
Health Sci.	18	44			
Physical Sci.	31	54			
EEE	28	50			
CS/IT	40	50			
Engineering	34	55			
Built Env.	20	51			
Law	26	53			
B&E	32	38			
Social Sci.	17	40			
Humanities	22	44			
CAPAD	19	40			
Education	19	40			
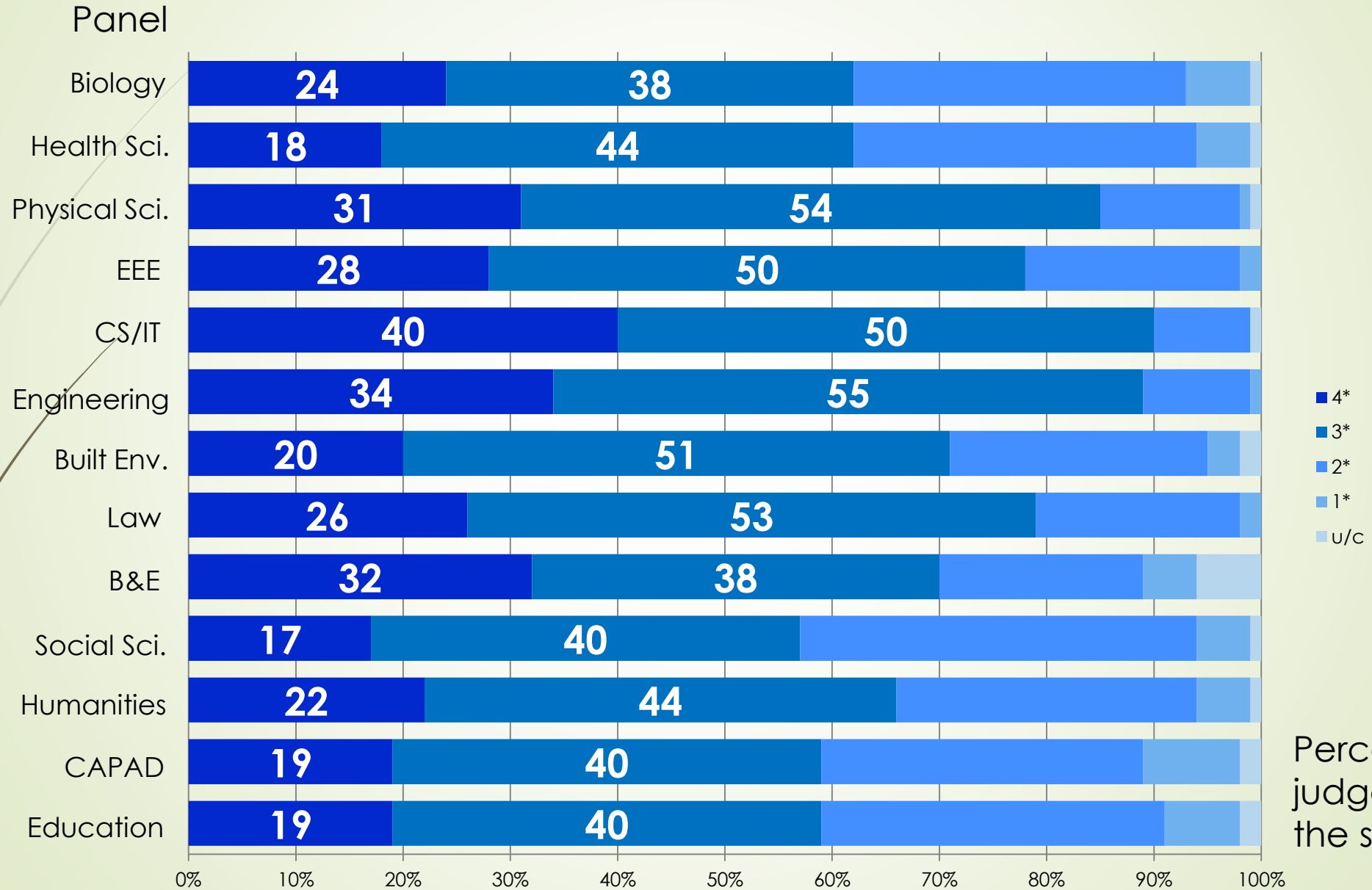
Percentage judged to meet the standard of:

A6. RAE Overview – Overall Sub-profiles by Panel

(A) Sector-wide **Output** Sub-profile
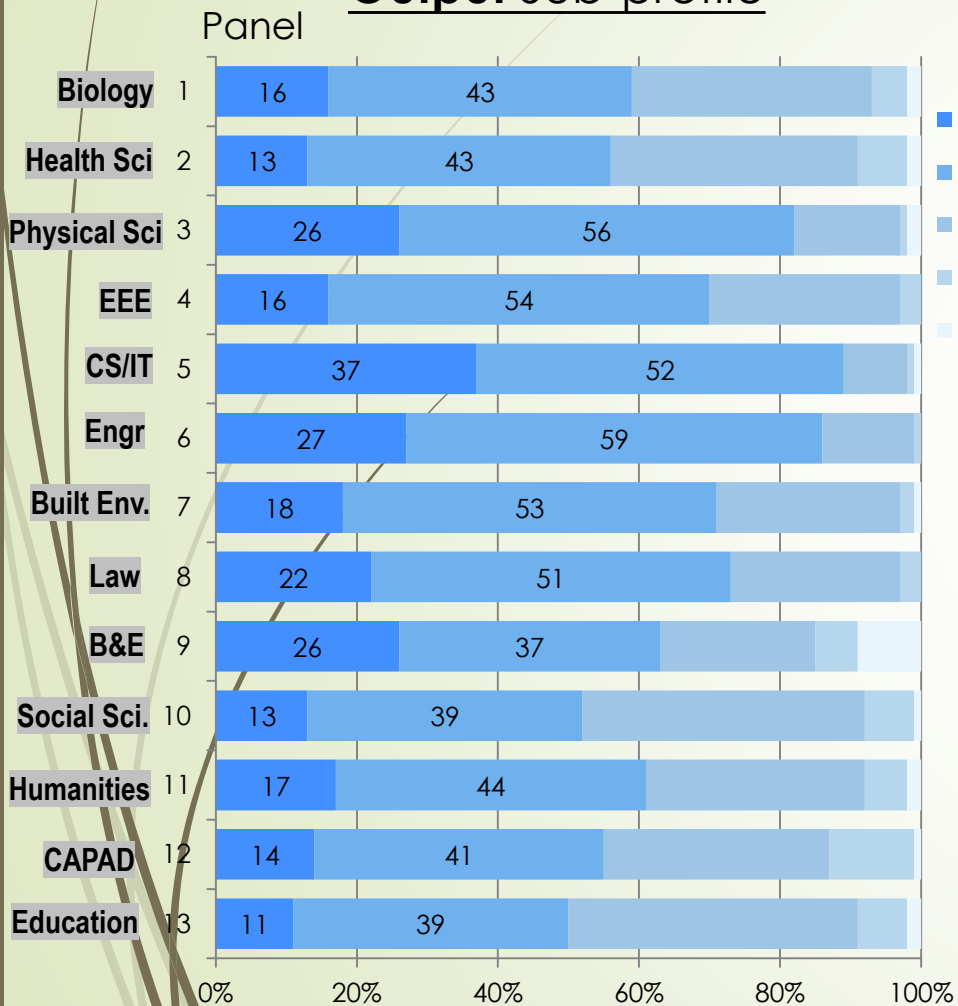
(B) Sector-wide **Impact** Sub-profile
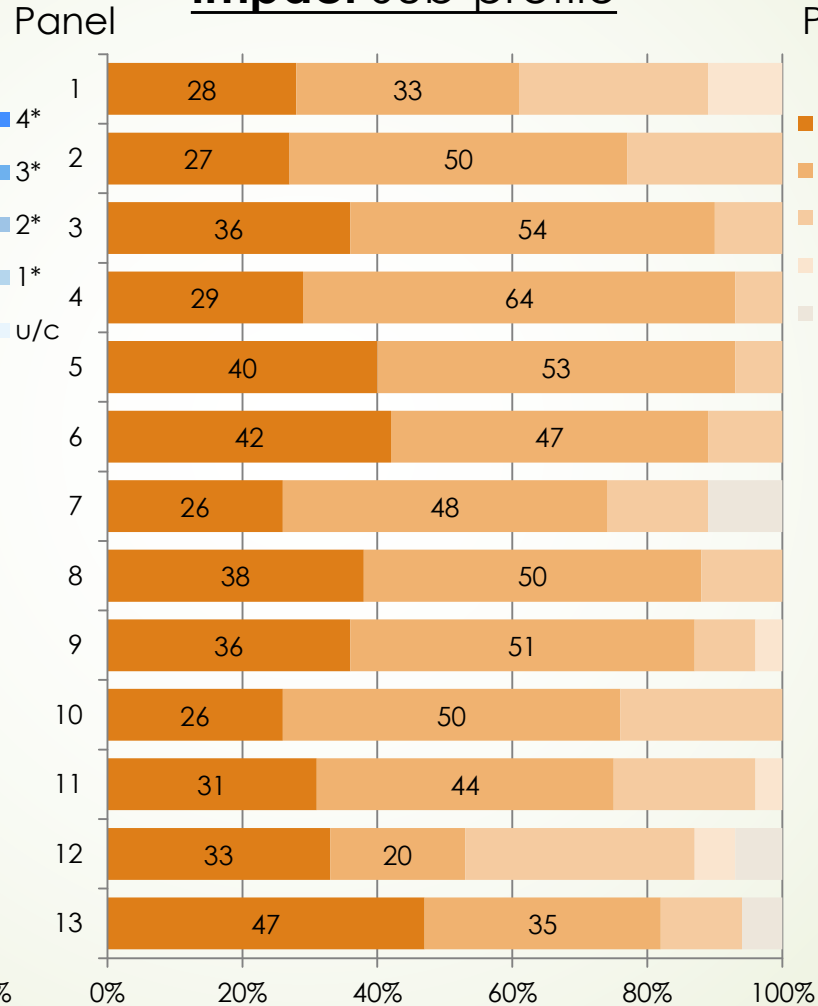
(C) Sector-wide **Environment** Sub-profile
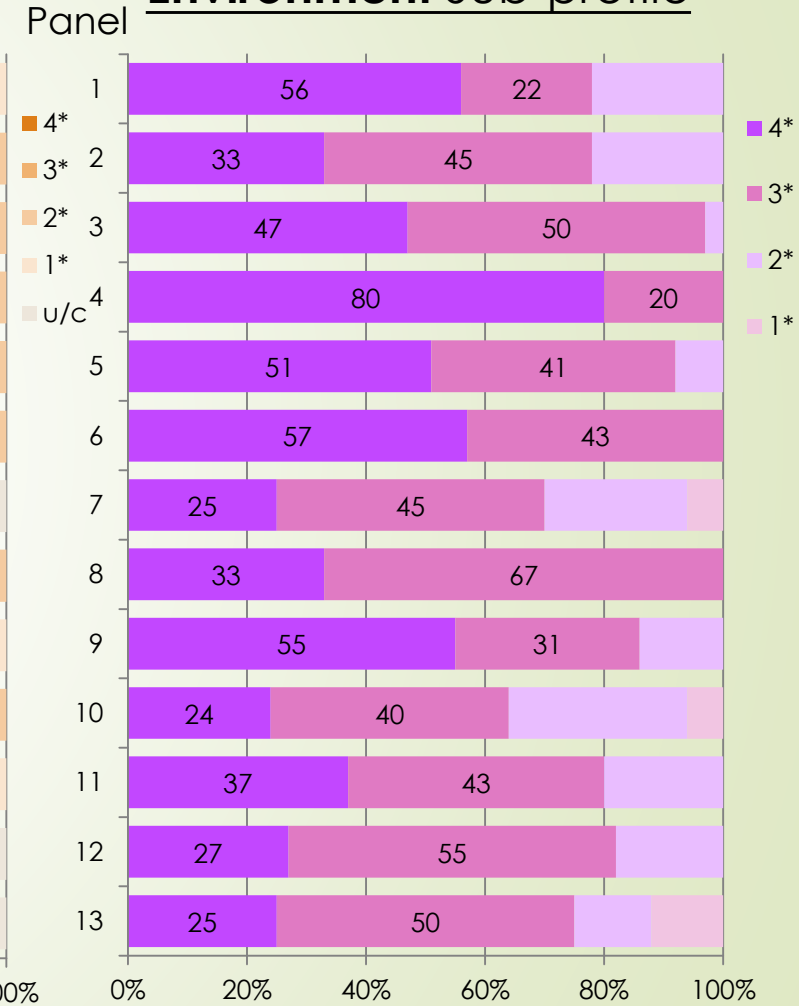
B1. An overview on Research Impact
A reminder - Why introduced Impact to RAE 2020?

Objectives of UGC policy on the pursuit of research (as stated in the RAE 2020 Guidance Notes):

a) to participate in the global endeavour to extend human understanding thus keeping the knowledge base in the universities current; and

b) to encourage research tied to the interests and needs of the community.

to recognise the impact arising from the universities' research as a whole

to incentivise research of social and economic relevance

decision in 2016 to add **Impact**

to produce evidence of the benefits of research

to support accountability for public investment in research

B2. What is meant by Impact?

Put simply: The use of knowledge obtained through research to affect the world beyond academia, e.g. in industry, health, the environment or society more generally

More formally: The demonstrable contributions, beneficial effects, valuable changes or advantages that research qualitatively brings to the economy, society, culture, public policy or services, health, the environment or quality of life locally, regionally or internationally

beyond academia

CONTRIBUTION

+

could be positive or constructive effects on any of the above, or reductions or prevention of harm, risk, cost or other negative effects

IMPACT

B3. Feasibility – Value?

- How feasible is it to assess impact?
- What value would this development have?

UK REF 2014

- possible to make a reasonable assessment of impact, based on **verifiable evidence**
- impact element had **positive value, extending beyond the RAE itself**

Independent Stern Review

Building on Success and Learning from Experience:
An Independent Review of the Research Excellence Framework (Stern Review, 2016), paras. 15 & 18.
(https://www.gov.uk/government/publications/research-excellence-framework-review)

the new Impact element:
- 'contributed to an evolving culture of wider engagement, thereby **enhancing delivery of the benefits arising from research**, as captured through the impact case studies'
- '**yielded valuable insights** into institutions' wider social and economic activities and achievements… it can help foster institutional strategy to encourage **greater societal engagement** by researchers and act as a platform for marketing and internal learning'

B4. The Evidence Submitted - a reminder

UoA basis:
an *impact overview statement*

impacts enabled in
1 Oct 2013 - 30 Sept 2019,
underpinned by research in
1 Jan 2000 - 30 Sept 2019

one or more (depending on UoA size) *case studies* to ***illustrate the impact achieved***, *not* give a *comprehensive* account of where all their research had led

B5. The Evidence Submitted - a reminder

Therefore:
Submissions **not necessarily representative** of all impact activity

They had to Include:

a) information on the underpinning research

b) a detailed narrative explaining the "pathway to impact":
i) how the research led to the impact
ii) what the unit did to enable this process
iii) the beneficiaries and nature of the impact
iv) evidence illustrating the extent of the claimed impact

c) external sources that could corroborate the claims (e.g. appropriate people in industry, public sector bodies, charities)

B6. Assessment Criteria

REACH

- the extent and/or breadth of beneficiaries of the impact

- the degree to which the impact enabled, enriched, influenced, informed or changed the products, services, performance, practices, policies or understanding of commerce, industry or other organisations, governments, communities or individuals

SIGNIFICANCE

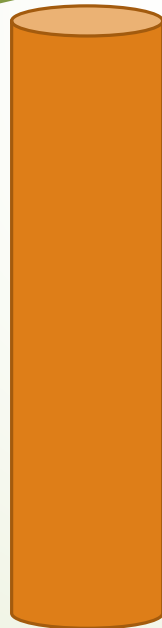## Analogy of 'Reach' and 'Significance'

Panels considered **Reach & Significance *as a whole*, not separately**
- to reflect huge potential variability in the nature of impacts

Significance

Reach

Imagine there are two cylinders:

- despite the difference in shape, their volume ('impact') may be the same, implying similar overall impact

- different volumes, though, might be taken to imply different levels of overall impact

B8. Key Features of Assessment Process

Location of impact did not matter:
It might, e.g. be solely in HK, a specific community/sector within HK;
or in another region/place; or widely international/global

'Reach' judged in terms of **appropriate** ambition for the impact in question.
- How far had the impact achieved maximum reach within its potential domain of applicability (e.g. population, geographical boundary, audience)?

A convincing **narrative**
- showing how some research undertaken within the UoA had underpinned a worthwhile impact in the wider world

- What had **changed** in the wider world?
- A clear **pathway** between initial research & the impact
- How the submitting unit had **contributed** to that outcome
- Verifiable supporting **evidence**

Activity alone (e.g. giving talks, or securing patents) was **not impact**.
Something had to be shown to have changed in the wider world.

B9. The Submissions

Distribution of Impact Cases

Panel	University								Total
	CityU	HKBU	LU	CUHK	EdUHK	PolyU	HKUST	HKU	**Total**
1 - Biology	3	1		5		1	3	5	**18**
2 - Health Sciences		2		10		5		13	**30**
3 - Physical Sciences	8	4		8	2	5	7	8	**42**
4 - EEE	3			3		3	3	2	**14**
5 - Computer Science / IT	3	1		3	1	2	3	2	**15**
6 - Engineering	5			2		5	4	3	**19**
7 - Built Environment	4			1		6	2	6	**19**
8 – Law	2			2				4	**8**
9 - Business & Economics	9	6	5	8		12	8	7	**55**
10 - Social Sciences	7	6	4	9	6	3	2	9	**46**
11 - Humanities	4	6	6	10	5	5	3	9	**48**
12 - CAPAD	2	3	1	2	2	3		2	**15**
13 - Education	1	2		4	5			4	**16**
Total	**51**	**31**	**16**	**67**	**21**	**50**	**35**	**74**	**345**

C1. What the submissions showed

Far-reaching and active

of the engagement of all 8 UGC-funded universities with the society & economy of HK & beyond *(https://www.ugc.edu.hk/eng/ugc/activity/research/rae/2020/impactsubmissions.html)*

~ 89% claimed impact within HK

HIGH QUALITY

Very high quality

- **In total, 80% rated Outstanding or of Considerable Quality**
- **4* and 3* impacts found at every university**
- **Every university has obtained 4* rating in some of its submissions**

REACH

~ 76% claimed impact beyond HK

- These cases overwhelmingly in Mainland China
- But many (as well, or instead) across Asia more broadly, and/or globally

Again: Submissions **not necessarily representative** of all impact activity

C2. School and Community Outreach

- Striking impression of **energy and commitment to reach out** into schools, the community & society in general, especially towards less advantaged groups.
- Often just mentioned in passing. But well worth registering.

To give a sense:

i) a new approach to assessing marine pollution underpinned work to conserve horseshoe crabs, also led to outreach programme that **provided crabs to over 2 700 school students, with guidance over rearing for 6 months, and participation in annual group wild releases**

ii) camera pointing system for Chinese lunar landers; images from near *and far* sides of the Moon; billions of viewers globally, **much media coverage in HK & beyond, numerous talks, & an event at the HK Science Museum**

iii) research into quality control of Traditional Chinese Medicines (TCM) enabled improved **government regulation & safety testing, & assisted their internationalisation**, but also led to provision of internationally available **online databases on TCM** (over 5M visitors); **popular book series** (various languages); **TV series** (international audiences); facilitating establishment of **dedicated museum** (150K visitors/week)

C3. What were the Main Areas of Impact

2 largest impact areas – cases submitted to almost every panel

Public Policy (governmental & related bodies at all levels & in any region/place)

Business (covering new products, processes & practices)

Other large impact areas - covering the spectrum of panels but in slightly lower numbers
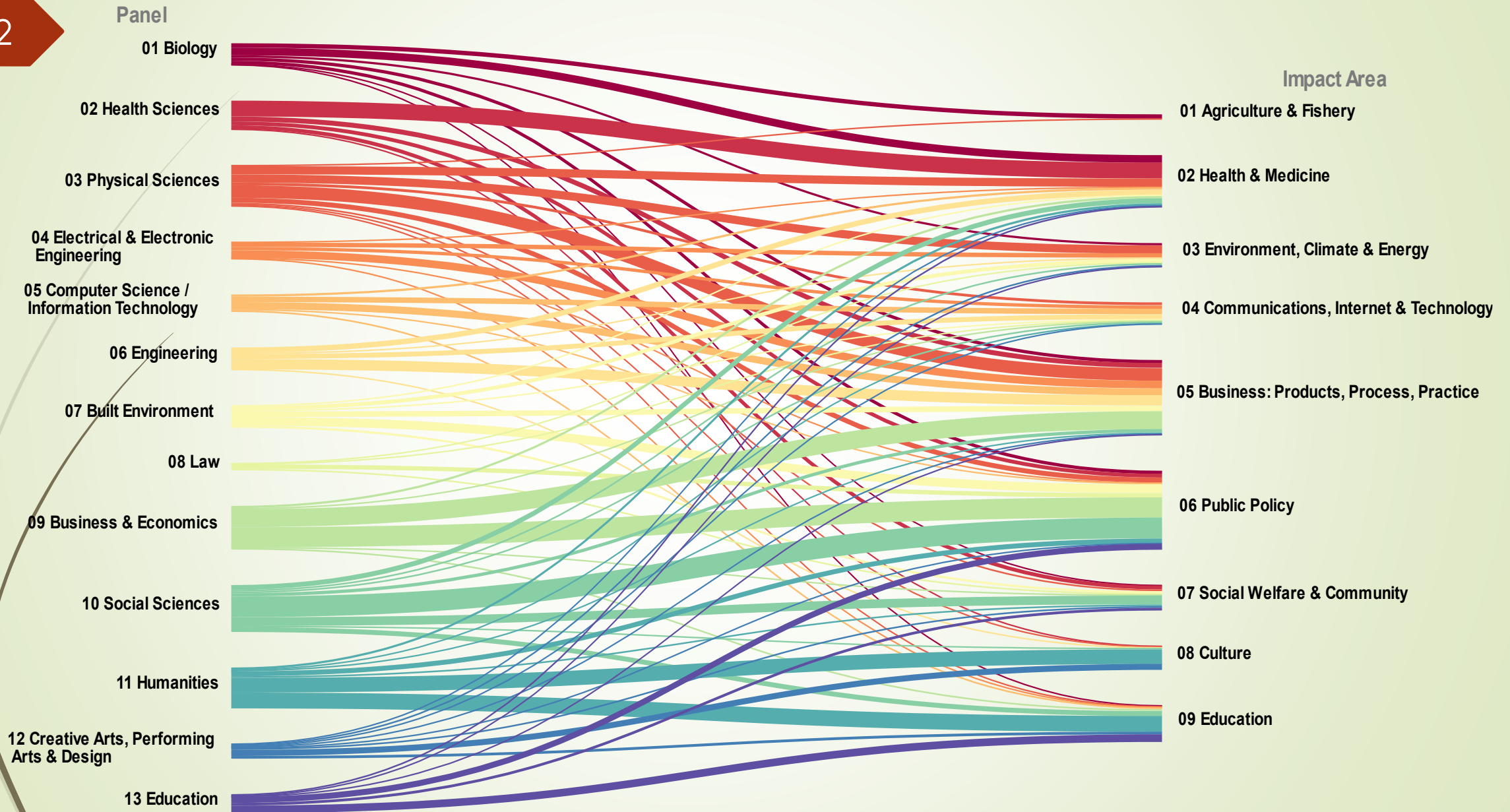
Health Services & the practice of **Medicine**

Education (all levels and modes)

- All panels displayed one or a few <u>distinct areas</u> of focus, as might be expected from the nature of the activities in each field, <u>coupled with</u> evidence of less concentrated engagement with a much <u>wider range</u> of impact areas.
- *Again, this is based on the illustrative cases submitted, so is not necessarily representative of the overall portfolios of the submitting UoAs*

C4. Alluvial Diagram linking Panels to Impact Areas

C5. "Hot spots" illustrating Distribution of Impact Areas by Panel

Note: The size of a circle reflects the number of impact case studies relevant to an impact area for the corresponding panel.

C6. Panels' Focus of Impact

Panel (areas covered)	Focus of Impact
1 Biology (environmental biology, biotechnology, agriculture & food science, veterinary studies)	- strong focus in Health & Medicine - area with greatest focus on Agriculture & Fisheries
2 Health Sciences (clinical medicine & dentistry, nursing, optometry, rehabilitation sciences, other health care professions)	- very strong focus on health & medicine - significant impacts in public policy, social welfare & community development, & new business products
3 Physical Sciences (physics, astronomy, materials science & technology, chemistry, earth sciences & other physical sciences, including environmental science)	- strong focus on new business products & processes, health & medicine (e.g. devices, analytical or display techniques, prosthetic materials) & environment, climate change & energy - impacted across the full range of areas, notably public policy & new communications/'Tech' areas

C7. Panels' Focus of Impact *(cont'd)*

	Panel (areas covered)	Focus of Impact
4	Electrical and Electronic Engineering	- distinct foci in new business products & processes, & then in environment & energy matters, & new communications/'Tech' sectors - activity in several other impact areas
5	Computer Science/ Information Technology	- mainly focused on new business products & processes, & communications/'Tech' sectors - some impact also in a few other areas
6	Engineering (mechanical, production, textile, aerospace, chemical, biomedical, environmental, nautical, marine)	- main focus in new business products & processes, then in health & medicine, & communications

C8. Panels' Focus of Impact *(cont'd)*

	Panel (areas covered)	Focus of Impact
7	Built Environment (civil engineering, building technology, architecture, planning & surveying)	- largest area of focus was public policy - followed by new business products and processes, and then environment etc, followed by social welfare/community, health & medicine, and communications/'Tech'
8	Law	- main focus on public policy - followed by Social Welfare/Community & environment
9	Business and Economics	- strong foci on business products, processes & practices, and public policy - much less pronounced volumes of impact in health, education & communications/'Tech'

Panel (areas covered)	Focus of Impact
10 Social Sciences (psychology, political science, geography, sociology & anthropology, social work & social policy, communications & media studies)	- very strong focus on public policy - followed by social welfare/community, then health, education, business practice, environment, communications/'Tech' & culture
11 Humanities (Chinese language & literature, English language & literature, translation, linguistics & language studies, history, area studies, philosophy, and religious studies)	- very strong foci in education & culture (the dominant contributor to this last) - with lesser contributions to public policy, health, social welfare/community, new products/processes/ practices & communications/'Tech'

C10. Panels' Focus of Impact *(cont'd)*

Panel (areas covered)	Focus of Impact
12 Creative Arts, Performing Arts & Design	- strongest focus in Culture - followed by education, then social welfare/community & environment - some impact in most other areas
13 Education (physical education, education)	- strongest foci in education & public policy, - significant contributions in social welfare, then health, business, & environment

- While each panel had one or two main foci of impact, most panels also saw work that reached most or all impact areas.

- Almost all impact areas were impacted upon from most or all panel submissions.

D1. How to Improve Impact?

They offered comments on how universities could improve their performance in future

Panels recognised this was the first RAE in HK to include impact.

Suggestions are both in the **generation** of impacts (and developing a culture of impact) and in the **presentation** of cases to a future RAE.

D2. Improving Impact Performance and Culture

Panels **recognised** that:
- individual universities were at different stages of development
  - ➢ in their approach to impact
  - ➢ in the resources that they had deployed to support both research & impact

In some universities, it was clear that impact was both well understood & well embedded in the thinking of UoAs, whereas others had further to go.

One Panel **observed** that:

Impact is not a destination, it is a process that keeps evolving.

- as such, needs to become an established element in the expectations for research

Panels opined that the universities needs to ensure that impact continues to be understood in an expansive way, and does not inadvertently get reduced to a narrow 'socio-economic' perspective.

D3. Suggestions for Improvements
(apply differently to individual universities/UoAs)

extend Reach

by engaging more with **international** research organisations, and/or by engaging with major international programmes, thus encouraging a more global outlook

promote a more extensive culture of collaborative research & consultancy with local businesses & government, but also with companies & governments beyond HK & China, & of '**co-production**' with users & beneficiaries more generally. Close & enduring relationships are key.

Some universities could provide more **systematic support** (clear policies & strategies to assure impact, & incentives for researchers to strive for impact).

For some, there needs to be a '**culture shift**' towards encouraging, supporting & rewarding impact.

In some disciplines, could usefully do more to developing **research infrastructure** with a view to improving the quality and impact of research.

e.g. stronger clinical trials units would enable more rigorous randomised control trials, leading to better research translation in both Chinese and 'Western' medicine (similar point made about Dentistry)

Don't emphasise publication citations to the neglect of wider impact

D4. Improvements to Presentation of Impact Case Studies

Reasons for not awarding the highest grades:

a) Some case studies

i) struggled to demonstrate impact on society, economy or environment **beyond knowledge dissemination**

ii) **did not demonstrate the pathways** between the underpinning research and impacts claimed

iii) **overclaimed** without adequate corroborating beneficiaries

b) evidence provided was of outputs /outcomes of **research**, rather than **impacts** of the project in terms of outcomes for the claimed beneficiaries

c) **testimonials** neither evaluated nor provided sufficient evidence of impact

d) the **strongest** case studies
- set out clear impact claims & beneficiaries,
- supplied clearly linked underpinning research & clear concrete corroborating evidence

e) the **weaker** case studies
- tended to describe the research itself (rather than its impact),
- were not clear who the beneficiaries might be, and
- privileged assertion over evidence

f) where the research **environment** included a **mentoring & leadership structure**, there was a clear understanding of the characteristics of research impact.
- others were still maturing their understanding
- some cases showed signs of an absence of advice and internal screening

D5. Finally…

research in the 8 UGC-funded universities in HK comes out very impressively from RAE 2020

despite COVID-19, the exercise was conducted rigorously with the best efforts of all participating parties

the results can be relied on confidently

the novel element of impact was generally well managed across all UoAs

with further embedding of the 'culture of impact', the value (broadly understood) of HK's universities can only continue to rise

the results show impressive examples of impact in a wide range of impact areas, within and beyond HK and from all universities, together with a culture of strong commitment to outreach to schools and communities

the published case studies offer considerable scope to 'showcase' the value of university research in HK