

University Grants Committee

Research Assessment Exercise 2020

Draft Guidance Notes

Introduction

This document provides guidance on the procedures and information required for making submissions to the Research Assessment Exercise (RAE) 2020. The document is also accessible on the University Grants Committee (UGC) website at <http://www.ugc.edu.hk/eng/ugc/activity/research/rae/rae2020.html>.

Distribution

Each UGC-funded university should disseminate this document to every member of its academic staff, and to every member of its administrative staff responsible for research policy and support, in order that the aims, principles and methodology of the RAE are fully understood. Universities may ask their staff members to access this document from the UGC website.

Enquiries

All enquiries should be routed through respective RAE coordinating offices of universities.

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I. EXECUTIVE SUMMARY

1.1 The Research Assessment Exercise (RAE) is part of the University Grants Committee (UGC)'s commitment to assessing the performance of UGC-funded universities, and is intended to encourage world-class research and drive excellence. The RAE 2020 will assess research outputs, impact and environment, using international benchmarks to delineate universities' areas of relative strengths and identify areas and opportunities for development. The RAE 2020 results will be used to inform the distribution of part of the research portion of the UGC Block Grant to universities in a publicly accountable way.

1.2 The RAE 2020 will continue to be an expert review exercise assessing universities' submissions, including research outputs, impact and environment, during the period from 1 October 2013 to 30 September 2019. The RAE 2020 makes reference to the arrangements in the RAE 2014 in respect of staff eligibility, panel formation, submission and assessment of research outputs, and handling of RAE results. The exercise measures the research quality of universities by unit of assessment, not individual staff. Thirteen RAE panels covering 41 units of assessment will be formed to conduct the assessments.

1.3 Universities will be invited to provide data on respective staff, research outputs, impact and environment corresponding to respective units of assessment. The census date for reported data is 30 September 2019. Universities' submissions for the RAE 2020 will be due in December 2019 (see paragraph 12.2 below). The RAE panels will assess the submissions in 2020.

1.4 Moreover, the RAE 2020 has the following key features distinct from the RAE 2014 –

- (a) new elements of research assessment on impact and environment, with the former capturing underpinning research during the period from 1 January 2000 to 30 September 2019; and the latter incorporating grants and esteem in the RAE 2014 as well as resources, people and infrastructure that support research;
- (b) a system of 41 units of assessment is adopted in place of 68 cost centres in the RAE 2014;
- (c) increased panel size by 20%, including local and non-local international scholars/experts, research end-users and professionals in respective fields and with scope to nominate an “inter-disciplinary champion” in respective panel;
- (d) special consideration/exemption may be granted by the UGC on exceptional or compassionate ground to eligible academic staff who have been absent for a prolonged period, including those on leave for health, parental or other compassionate reasons, on a case by case basis;

- (e) overview statements in the impact and environment submissions replace the requirement of cost centre's research strategy statement in the RAE 2014;
- (f) revised definitions of quality levels separately for the assessment of research outputs, impact and environment;
- (g) assessment criteria for the three elements of assessment as follows –
 - research outputs in terms of originality, significance and rigour;
 - impact in terms of reach and significance;
 - environment in terms of vitality and sustainability; and
- (h) results in form of overall quality profiles and sub-profiles of individual elements of assessment by unit of assessment and by panel at both university's level and sector-wide level will be released for public information, while individual universities will receive their own RAE results in respect of research outputs at research area level under confidential cover.

1.5 The RAE results are planned for announcement in early 2021 and will inform the UGC's allocation of research funding to reward, support and encourage more excellent research conducted by the eight UGC-funded universities. Funding allocation will be formulated after the completion of the RAE 2020 and will be executed in a fair and publicly accountable manner, taking into account sustainability and stability of institutional funding.

II. PURPOSE AND PRINCIPLES OF THE RAE

(A) Background

2.1 Since 1993, the UGC has adopted a zero-based funding model which allocates funding to meet the objectives that each university is expected to accomplish during the funding period, and according to the quality of its recent performance.

2.2 UGC funding for each university¹ is made up of three main elements: provision for teaching (about 75%); provision for research (about 23%); and provision for professional activity (about 2%). It is the UGC's intention that public funds in support of research should reward excellence as reflected by performance, so that sufficient funding will be provided for effective pursuit of world class research. There is therefore a need to assess research performance in some way to determine the funding level.

2.3 The RAE is thus part of the UGC's performance-based assessment process. It aims to assess the quality of research at each of the UGC-funded universities by unit of assessment (rather than by individual staff members) as one of

¹ The "existing pot of money" for the three years of undergraduate study and other levels of study.

the key factors for allocating part of the research portion of the institutional recurrent grant in a publicly accountable way. In essence, the RAE measures the research quality within a university in comparison with a comparable discipline in other universities (e.g. History with History, not History with Physics), using international benchmarks. While the RAE will inform the distribution of part of the research portion of the institutional recurrent Block Grant amongst universities, each university has full discretion to allocate such funding within the university.

2.4 So far, five RAEs have taken place in 1993, 1996, 1999, 2006 and 2014. In the first RAE, a quality threshold which was not overly stringent was used. The second and third RAEs were built on the basis of the previous RAEs, but giving more recognition to the call for more diversity. The threshold standard was raised in the RAE 2006 to quality level of excellence appropriate to the discipline in Hong Kong and showing evidence of international excellence. Similar to the RAE 2006, the RAE 2014 benchmarked against international standards with sharpened measurement of research quality, especially at the top end.

2.5 In retrospect, the RAE has been effective as a means of –

- (a) promoting research excellence;
- (b) inducing improvement in research;
- (c) informing funding; and
- (d) upholding public accountability.

(B) UGC's Policy on the RAE

2.6 The pursuit of research in the UGC-funded universities has two objectives –

- (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.

2.7 In September 2016, the UGC considered the future of research assessment in Hong Kong. With a view to incentivising the conduct of research of local relevance with high economic and social benefits, while recognising the impact brought about by universities' research, the UGC approved, amongst others, that the next RAE in 2020 would include research impact and environment as new elements of assessment. This is in line with a recommendation on the administration of recurrent grants for universities in the Director of Audit's Report No. 67, and an initiative announced in the 2017 Policy Address that research impact should be taken into account in the allocation of recurrent grants to the universities.

2.8 Although the RAE is based on, amongst others, individual research outputs, the UGC wishes to stress that it is not intended to be an assessment of individuals' research performance. Rather, it aims to assess universities' research

performance by unit of assessment. A subject RAE panel will produce a quality profile for each unit of assessment. Results of individual units of assessment in the RAE 2020 will be published without disclosing the identities of individual academic staff members.

2.9 To avoid doubt, it must be stated that the aim of the RAE is not to produce a league table of the UGC-funded universities. In fact, the quality profiles of units of assessment cannot be converted into a simple linear scale. Nevertheless, the quality profiles of the various units of assessment of a university will delineate its areas of relative strength. Universities should not use the inferred information for internal evaluation of the performance of the researchers concerned, because staff appraisal must involve dimensions other than research, however broadly defined. Even for research alone, methodologies that are appropriate for assessment in the aggregate for funding purposes may not be appropriate for the assessment of the performance of individuals for purposes of personnel decisions.

2.10 The UGC wishes to strongly emphasise that the RAE does not imply a disproportionate interest in research to the possible detriment of teaching quality. Both teaching and research are important and inter-related elements in higher education. Indeed, the bulk of the recurrent grants allocated to universities is and should continue to be attributed to teaching. Nevertheless, it is necessary for the UGC to adopt different approaches to assess the funding requirements for teaching and research in view of the different nature of these activities.

(C) Objectives and Principles

2.11 In September 2017, the UGC decided on the Framework for the RAE 2020 taking into account comments and feedback from universities in the consultation. The Framework sets out the parameters and key definitions for the exercise. Against this background, the objectives of the RAE 2020 are to –

- (a) assess the research quality of UGC-funded universities to provide assurance of their research performance using international standards;
- (b) identify excellent research across the spectrum of submissions made by universities in order to drive excellence and encourage world-class research;
- (c) produce assessment outcomes to inform the distribution of part of the Research Portion of the UGC Block Grant in a publicly accountable manner, and provide direction to develop/enhance the research funding schemes administered by the UGC/Research Grants Council (RGC);
- (d) provide accountability for public investment in research and produce evidence of the benefits of this investment;
- (e) provide robust benchmarking information and establish reputational yardsticks for use within the UGC sector and for public information; and

- (f) delineate universities' areas of relative strength and identify emerging research areas and opportunities for development.

2.12 The principles that guide the conduct of the RAE 2020 are –

- (a) **International standards** – The RAE is a criterion-referenced exercise against quality levels as defined by international standards of research excellence. To maintain the credibility of the assessment process, international experts and members with discipline-specific expertise and knowledge of local conditions will be engaged;
- (b) **Fairness** – The RAE adopts a single framework which underpins the submission and assessment process across all disciplines, with common rules and procedures, standard definitions, and broad generic criteria. The quality of each submission will be judged on its own merit and not in terms of its category, medium or language. All types of research will be treated equally;
- (c) **Consistency** – The assessment founded upon rigorous expert review will apply the same quality standards across and within panels. Panels' professional judgement should be consistent within the overall framework of assessment, and complemented by calibration and development of panel-specific assessment criteria and working methods with respect to the differences in the nature of research across the disciplinary spectrum;
- (d) **Inclusiveness** – It is important to maintain an inclusive view on the scope of research (see paragraph 2.13 below). The RAE should include elements that appropriately measure the quality of a broad range of research in the sector, impact of research in a wider socio-economic context, and research environment taking into account the universities' strategy, resources and infrastructure that support research;
- (e) **Differentiation** – The RAE measures the research quality of universities by unit of assessment, not individual staff, in a comparable discipline. The measurement should be sharpened to differentiate excellence at the top end, and to delineate universities' relative research strengths and areas for further improvement;
- (f) **Efficiency** – The methodology and implementation of the RAE should be as effective and efficient as possible with a view to minimising the costs, both to the universities and the Government, and burden of the exercise while delivering a robust and defensible process;
- (g) **Transparency** – The credibility of the RAE should be reinforced by transparency in the process through which decisions are made. Relevant stakeholders will be duly consulted and informed throughout the exercise. In line with the principle of public accountability, the operational details, such as the assessment

methodology and criteria, and the results will be published for public access; and

- (h) **Validity and Reliability** – The exercise should aim to reach standards of validity and reliability expected by the Hong Kong academic and research community.

(D) Scope of Research

2.13 The UGC is of the view that research is not an isolated activity; rather it should support and illuminate teaching and learning. The UGC considers it important to maintain an inclusive view in defining the scope of research for the purposes of assessment of research activities. In this regard, the broadened meaning of scholarship as defined by the Carnegie Foundation continues to be a guiding reference for the RAE 2020, that is, the discovery of knowledge, the integration of knowledge, the application of knowledge and the sharing of knowledge through teaching are regarded as different forms of scholarship on par with each other, so that high quality research in all forms of scholarship including inter-disciplinary and collaborative research will be encouraged and assessed as equally important across a broad front. This will help address any perceived bias in favour of particular type(s) of research.

2.14 In the context of the RAE 2020, research is defined as the process leading to new knowledge, insights, methodologies, solutions and/or inventions. It may involve systematic investigation, use of existing materials, synthesis, analysis, creation of artefacts or concepts, design, performance, and/or innovation.

2.15 A brief definition of the four kinds of scholarship, adapted from the two Carnegie Foundation’s Special Reports entitled “Scholarship Reconsidered: Priorities of the Professoriate” and “Scholarship Assessed: Evaluation of the Professoriate” is at **Appendix A**.

(E) University’s Research Strategy Statement

2.16 Following the practice in previous RAEs, each university will be required to submit a Research Strategy Statement to reflect its research philosophy, vision and priorities in relation to its role and stage of development, and the distribution of research efforts across disciplines.

2.17 The Research Strategy Statement should state and justify the university’s selected research focus areas, its existing strengths and standard, as well as its overall long-term research strategy. A template for preparing the Research Strategy Statement is at **Appendix B**. The declared research strategy will not be assessed but will provide a context for the RAE panels’ assessment of the university and of respective units of assessment. It is expected that the RAE submissions will be consistent with the strategy at the university and unit of assessment levels.

2.18 The UGC highly values and appreciates wide diversity within the sector. The different roles, missions, discipline profiles and histories of different universities are part of the context of the universities. It should be emphasised that the RAE evaluates the quality of universities’ submissions based on their merits according to international standards. Differences among submitting universities/units in terms of

staff size, resources and histories will not form part of the assessment. Rather, due regard to the differences should be given when interpreting the RAE results. It is worth to mention that an academic department or a research unit may undergo internal restructuring or renaming over time with a university. Unless the activity that the restructured department/unit represents was not significantly present in the university previously, it should not be regarded as a new unit when interpreting the RAE results.

III. ELEMENTS AND UNITS OF ASSESSMENT

(A) Elements of Assessment

3.1 The RAE 2020 consists of three elements of assessment covering a period of six years from 1 October 2013 to 30 September 2019. The respective weighting of the three elements of assessment are as follows –

- (a) Research outputs – 70%
- (b) Impact – 15%
- (c) Environment – 15%

3.2 The census date for reported data is 30 September 2019.

(B) Units of Assessment

3.3 Assessment of universities' submissions will be made on a unit of assessment basis. The list of "Units of Assessment" for the RAE 2020 is at **Appendix C**.

3.4 Since the RAE covers the whole range of disciplines, with different types of research submissions, the units of assessment are grouped and placed under separate panels for assessment. The unit of assessment forms the basis of the data for assessment. The grouping of the units of assessment with respective RAE panels is also listed in **Appendix C**.

(C) Assessment Panels

3.5 Each RAE panel will consist of mainly international non-local academics and some local academics in the relevant disciplines, and also local "research end-users" and professionally qualified people from business, government, industry and the arts. Members will be appointed on an **ad personam** basis and will be specifically required to refrain from representing the interests of their own institutions. The standards will thus ultimately be informed and the judgments made by peer review of expert panels and not by the UGC.

3.6 To ensure that individual submissions including non-traditional items and inter-disciplinary research receive adequate attention, sub-group(s)/sub-panel(s) under each panel with suitable membership (including members drawn from outside academia) may be set up, and/or at least one member in each RAE panel may be nominated as the "inter-disciplinary champion" with specific role to ensure thorough

and appropriate handling of any inter-disciplinary submissions, including any separate evaluation that may be required.

3.7 The UGC will strive to ensure broad comparability across disciplines, but it will be up to each panel, with its subject expertise and knowledge of local circumstances, to translate the general definitions into more precise benchmarks appropriate to each discipline or group of disciplines. The panels will also be expected to interpret the guidelines with due regard to the nature of those subjects that may, by their nature, necessarily have a strong regional focus.

IV. ELIGIBLE ACADEMIC STAFF IN EACH UNIT OF ASSESSMENT

(A) Staff Eligibility Criteria

4.1 The UGC considers that the sustainability of universities' research capacity is one of the key factors that determines the long-term research development of the higher education sector. In this regard, the UGC has decided that academic staff in each unit of assessment must meet the following criteria in order to be eligible for submitting research outputs for the RAE 2020 –

- (a) holding a full-time paid appointment at a UGC-funded university for a continuous period of at least 36 months covering the census date, i.e. 30 September 2019, provided that the employment start date was no later than 1 September 2017; and
- (b) wholly funded by the university proper² for degree or higher degree work and are within staff grades of “Professor” to “Assistant Lecturer” as defined for the purpose of the Common Data Collection Format (CDCF) (see **Appendix D**).

(B) Assignment of Eligible Academic Staff to Units of Assessment

4.2 Universities are required to submit the following lists of academic staff to the UGC Secretariat by 2 December 2019 –

- (a) a list of all academic staff who meet the criteria as set out in paragraph 4.1 (a) and (b) regardless of whether they intend to submit research items for assessment, and/or whether they are active in research. All eligible academic staff of a university will be taken into account in arriving at the university's results in the RAE 2020; and
- (b) a separate list of any full-time academic staff wholly funded by the university proper² for degree or higher degree work within Staff Grades of “A” to “I” as defined at **Appendix D** (as at the census date of 30 September 2019) who are not reported in the list in (a) above. Universities are required to provide explanations for the staff

² Excluding schools/arms of the continuing education and professional training and other analogous organisations.

members on this list (e.g. why they do not meet the eligibility criteria for the RAE 2020) and information on the staff's track record in applying for RGC grants.

4.3 Universities are required to assign each of their eligible academic staff (including those staff on joint appointment by two or more departments in the same university) to a research area and hence the corresponding unit of assessment as listed out at **Appendix E**. For the purpose of making a submission by a unit of assessment, a university should assign at least three eligible academic staff to the concerned unit of assessment. Submissions of an eligible staff under a unit of assessment will primarily be assessed by the subject RAE panel as set out in **Appendix C**. Where appropriate, submissions will be referred to other unit(s) of assessment with the relevant expertise for assessment to ensure that cross-disciplinary research will receive adequate attention and be evaluated by members with suitable expertise (see paragraph 5.2 below).

4.4 Inclusion of staff should only make reference to their job categories and the above eligibility criteria, and not to whether they are active in research. Justification has to be provided in respect of the following –

- (a) any staff carrying titles that would superficially suggest inclusion in Staff Grades “A” to “I” as defined at **Appendix D** (e.g. “Professor”, “Assistant Lecturer”) who are nevertheless not included in the list of eligible academic staff; or
- (b) staff carrying titles that are significantly different from the standard ones for Staff Grades “A” to “I” as defined at **Appendix D** (e.g. “research officer”, “director”) who are nevertheless included in the list of eligible academic staff.

Universities' assignment of eligible academic staff to respective units of assessment can be subject to re-assignment by the UGC in case of an anomaly, such as the assignment of certain staff members to a unit of assessment and yet a major part or even all of their research outputs are in the field of other unit(s) of assessment or RAE panel(s). The re-assignment will be based on the recommendations of relevant RAE panel(s) and clarifications made by universities concerned, if any. The re-assignment made will be final in forming the RAE results and no appeal on this will be considered.

4.5 An academic staff member who meets all the eligibility criteria as set out in paragraph 4.1 above should be counted as an eligible academic staff regardless of any paid or unpaid leave he/she has taken during the assessment period. In exceptional cases, special consideration/exemption may be granted by the UGC if an eligible academic staff has been absent for a prolonged period on a case by case basis, under the scope as set out below –

- (a) the staff member concerned must be an eligible academic staff who was/has been absent for a prolonged period (as specified in (b) below) during the assessment period, i.e. from 1 October 2013 to 30 September 2019;

- (b) the period of absence should last (i) continuously for no less than 70 calendar days; or (ii) accumulatively for no less than 70 days in total, in at most three split periods with in-between breaks of each up to a maximum of seven days;
- (c) the absence significantly constrained the staff member's ability to produce four research outputs during the assessment period;
- (d) the prolonged leave of absence must not be taken on vocational grounds (e.g. sabbatical, taking up public service or institutional administration); and
- (e) the prolonged leave of absence could be on medical (e.g. sickness or injury), parental (e.g. pregnancy), or compassionate (e.g. taking care of a sick family member) grounds or other compelling and exceptional personal circumstances judged acceptable by the UGC.

4.6 Universities may request for special consideration/exemption for individual staff members in writing to the UGC by 31 July 2019. Request for each case supported by the respective Head of University should include case details, justifications and documentary proof addressing to the conditions in (a) to (e) above, as appropriate. The UGC will decide on each case and inform relevant universities of its decision by end October 2019. Late request will not be considered. The UGC's decision will be final and no appeal will normally be considered.

V. SUBMISSION OF RESEARCH OUTPUTS FOR ASSESSMENT

(A) What to Submit

5.1 Universities are invited to submit materials about research outputs in respect of eligible staff in each unit of assessment. Such submission should reach the UGC Secretariat by 16 December 2019.

5.2 The research submissions will normally be assessed by the RAE panel that is designated for the relevant unit of assessment as set out at **Appendix C**. All research output(s) in respect of each eligible staff member will be submitted to his/her assigned unit of assessment. Where a research output is inter-disciplinary in nature, the submitting university will need to flag this and indicate the primary field and secondary field of the output for relevant panel's consideration. In the event that an output is deemed to fall into the expertise of other unit(s) of assessment (under the same or different panel), the subject panel will make referral to other unit(s) of assessment with the relevant expertise for assessment. The final judgment on cross-panel referral should rest with the Convenor of the panel to which the output is submitted. The final score of the output will be logged into the unit of assessment to which it is submitted or re-assigned (see paragraph 4.4 above).

5.3 Each eligible staff should have a **maximum of four** research outputs meeting the definition in paragraphs 5.7-5.10 below within the assessment period from 1 October 2013 to 30 September 2019 for submission by the university. In case of an individual output bearing multiple publication dates, the date on which it is

firstly published or made publicly available, be it online or printed, should be counted. If an output was published or made publicly available online prior to printed publication, the online publication date should be counted.

5.4 The UGC recognises that research, even as broadly defined in this exercise, only represents part of a university’s activities, and understands that there may be valid reasons why some valuable and respected members of staff may not, for the assessment period in question, contribute to the university’s research outputs, such as staff could be heavily involved in public service, or in institutional administration. Notwithstanding that they are outside the scope of exceptional cases in paragraph 4.5 above, individual university is free to decide, in consultation with the staff concerned, not to make a submission, and no adverse record should or will be attached to any individual in respect of whom such a decision is taken. Nevertheless, non-submission of any research outputs in respect of each eligible staff member will be deemed to have four “missing” items (see paragraph 6.1 below).

5.5 **Universities can choose to submit fewer than four research outputs or the number of outputs as specified in paragraph 5.6 below per eligible staff.** In such a case, the missing item(s) will be deemed as “unclassified” in the assessment (see paragraph 6.1 below).

(B) New Researchers

5.6 New researchers present a special case since they may not have had time to produce significant or publishable outputs according to the RAE definition. Therefore, all eligible staff who first took up a full-time academic appointment (in Hong Kong or elsewhere) on or after 1 August 2015 will be given special consideration. Whereas an academic, other than a new researcher or a staff member for whom special consideration/exemption is granted by the UGC, submitting fewer than four research outputs will have any missing output deemed as “unclassified”, a new researcher may reduce the number of outputs without the reduced item(s) being deemed as “unclassified” according to the following scales. However, a new researcher can choose to submit up to four research outputs if he/she so wishes.

| Duration of appointment prior to the census date | Date of appointment # | Number of outputs to be submitted |
|---|--|--|
| 39 to 50 months | Between 1 August 2015 and 31 July 2016 inclusive | 3 or 4 |
| 27 to 38 months | Between 1 August 2016 and 31 July 2017 inclusive | 2 to 4 |
| Less than 26 months | On or after 1 August 2017 | 1 to 4 |

“Date of appointment” refers to the date the academic first took up a full-time academic appointment in Hong Kong or elsewhere in staff grades “A” to “T” in Hong Kong as defined at **Appendix D**, or an appointment not below assistant professorship or equivalent outside Hong Kong.

(C) Definition of Research Output

5.7 All research outputs submitted for assessment must meet all of the following criteria –

- (a) the output contains an element of new insights or innovation;
- (b) the output and its process contribute to scholarship or transfer of knowledge, generating impact to academia or society at large; and
- (c) the output is publicly accessible or effectively shared in the profession.

5.8 Provided that all the above criteria are fully met, it does not matter whether or not –

- (a) the research activities leading to the output items submitted for assessment are funded by the UGC. There is no differentiation of funding sources for research outputs in the evaluation; or
- (b) the output items were produced in or outside Hong Kong and/or whether the eligible staff concerned were employed by the submitting universities at the time of publication or production of the outputs.

5.9 The following cases are considered to fall within acceptable research outputs as defined above –

- (a) any publication, patent awarded or published patent applications, artefact, etc, provided it –
 - (i) was published or made publicly available in other form within the assessment period; or
 - (ii) is not yet published, but officially accepted for publication (without any prior condition for its publication) within the assessment period as set out in paragraph 5.3, and supported by a letter of acceptance; or
- (b) other forms of output that was published or made publicly accessible or effectively shared within the profession, e.g. performance recording, video tape, computer software programme, architectural drawings, or any creative work that can be evaluated for merit and an assessment obtained.

5.10 Proprietary research that does not result in output that is accessible to the public and the profession is not accepted as an output for assessment. However, output items of exhibitions and demonstrations relating to proprietary research which: (i) are accessible to the public or the profession, (ii) are non-traditional output for assessment, and (iii) contain enough information for evaluation, may be submitted for assessment. PhD dissertations are not accepted as outputs for assessment.

5.11 Individual panels would decide, by exercising their professional judgement and having regard to the definition of research output, whether a submitted item, be it a review article, translation or textbook, would be accepted on the basis of

the above criteria. A list of output types to be adopted for data submission is at **Appendix F**.

5.12 To avoid doubt, the UGC wishes to stress that output items need **not** be restricted to papers in journals, and **all output items will be assessed without regard to the medium or language of publication**. In order to facilitate the assessment process, universities are required to alert the UGC in their submissions if any output item is non-English so that appropriate assistance can be identified in good time.

5.13 To minimise the financial and administrative burden in clearing copyright, manuscripts of the final accepted version of research outputs (see paragraph 5.9 (a) (ii) above) may be submitted for assessment if this is allowed by the copyright owner, but it is not appropriate to submit the version before peer review, as this may differ considerably from the published version.

(D) Double-Weighting of Research Outputs

5.14 Universities may request that outputs of extended scale and scope be double-weighted (i.e. be counted as two outputs) in the assessment. No single output may be counted as more than double-weighted. Given that a maximum of four outputs may be submitted in respect of each eligible staff member, no more than two outputs in respect of an individual staff member should be double-weighted. When requesting double-weight, the university must reduce the number of outputs in respect of the individual staff member by one, but may submit a “reserve” output for each double-weighting request. The panels will decide whether to double-weight each output so requested. Where the panel does not accept the case for double-weighting, it will count the submitted output as a single output, and grade the “reserve” output as well. If no reserve output is submitted, the missing item will be deemed as “unclassified”.

5.15 There is no presumption that double-weighted outputs will be assessed at a higher quality. The following procedure/criteria are relevant –

- (a) the university requesting the double-weighting of a research output should justify the request in a statement not more than 100 words as to why the output merits double-weighting, e.g. how the research output (e.g. its scale or scope) required research effort equivalent to that required to produce two or more single outputs;
- (b) journal articles, book chapters or conference papers are not normally permitted to be double-weighted, whereas single-authored monographs may be considered, for example; and
- (c) co-authored items may in principle be identified and double-weighted by one or more of their authors, bearing in mind that the double-weighting request should apply to the effort of the author of the submitting university. However, please see the rule in paragraph 5.16 on multiple submission of a co-authored item by the same university.

(E) Co-authorship

5.16 A co-authored (or jointly-produced) research output submitted by different universities may be accepted and counted as one output for each of the universities as long as the co-author of each submitting university has made a substantial contribution to the co-authored output. Submission of a co-authored research output in respect of two or more academics within the same institution (irrespective of whether or not they are from one or more units of assessment) will however be counted as one output under the submitting university. If a co-authored research output is submitted by a university under the name of more than one academic within the university, the university needs to flag this and specify the academic (i.e. one of the co-authors) under whose name the output is submitted for rating, so that the relevant panel will rate it once, whereas the submission of the same item under the other academic(s)'s name will be deemed as "unclassified". If two or more panels are involved, the panels will collectively decide how to rate such a co-authored item from the same university.

(F) Information Required for Submission on Research Output

5.17 In respect of each output item, universities are required to provide access to the full set of the output to be assessed by panel members and external reviewers. In addition, the following information would need to be provided –

- (a) data on each output item (e.g. title, publication date, authorship, type, indicators for inter-disciplinary and/or non-English submission, etc);
- (b) keywords and an abstract of the output in English;
- (c) in the case of double-weighting request as described in paragraphs 5.14 and 5.15, a statement up to 100 words;
- (d) in the case of non-traditional outputs as described in paragraph 5.9 (b), the submitting university must provide additional information up to 150 words on (i) novelty of the work; (ii) the deliverables; and (iii) the dissemination method. Particular attention should be drawn to the following –
 - for submissions relating to performing arts, such as drama, music composition, stage performance or a piece of creative work, they should include recordings which need to be made available to the panel members and external reviewers; and
 - for submissions in the areas of design, buildings, multi-media, or visual arts, photographs of the originals must include dimensions and good reproduction; and
- (e) where the panels consider appropriate, documentary evidence to demonstrate the academic impact of the research outputs. Specifically, whether metrics/citation data are to be used to inform the peer review process will be decided by each of the RAE panels. If a panel wishes to use metrics to inform its decision, it will advise

universities on the rating system and quantifiable parameters. Otherwise, no metric/citation data should be included in the submission.

5.18 Panels will provide further guidance on the research outputs expected for submission. If a RAE panel requires any additional information, such request will be relayed to the university(ies) concerned through the UGC Secretariat for further arrangement.

VI. EVALUATION GUIDELINES ON RESEARCH OUTPUTS

6.1 Research outputs will be assessed in terms of their originality, significance and rigour with reference to international standards and be graded into five categories –

- (a) 4 star (4*): world leading in terms of originality, significance and rigour;
- (b) 3 star (3*): internationally excellent in terms of originality, significance and rigour;
- (c) 2 star (2*): international standing in terms of originality, significance and rigour;
- (d) 1 star (1*): research outputs of limited originality, significance and rigour; and
- (e) unclassified (u/c): not reaching the standard of 1 star; or not regarded as research outputs in the RAE 2020; or missing item in the submission.

6.2 The five categorisations are broadly defined as follows –

- (a) a panel will grade a research output as four star “world leading” in terms of originality, significance and rigour if the panel sees evidence of, or potential for, some of the following characteristics:
 - agenda setting / primary or essential point of reference;
 - great novelty in thinking, concepts or results, or outstandingly creative;
 - developing or instrumental in developing new paradigms or fundamental new concepts for research;
 - research that is leading or at the forefront of the research area, or having major / profound influence.
- (b) a panel will grade a research output as three star “internationally excellent” in terms of originality, significance and rigour if the

output falls short of the highest standard of excellence, but the panel sees evidence of, or potential for some of the following characteristics:

- important point of reference or makes important contributions likely to have a lasting influence;
 - significant influence.
- (c) a panel will grade a research output as two star “international standing” in terms of originality, significance and rigour if the panel sees evidence of, or potential for some of the following characteristics:
- a recognised point of reference or of some influence;
 - provides useful or valuable knowledge / influence;
 - incremental advances in knowledge / thinking / practices / paradigms.
- (d) a panel will grade a research output as one star “limited originality, significance and rigour” if the panel sees some evidence of, or potential for some of the following characteristics:
- useful contribution of minor influence.
- (e) a panel will grade a research output as “unclassified” if it falls below the quality levels in (a) to (d) above; does not meet the definition of research used for the RAE 2020; or a missing item in the submission.

6.3 To minimise any possible divergence in judgment with regard to the use of international standards, all RAE subject panels will be asked to make reference to the following amplification–

International excellence **Evaluation should be made with regard to the quality, rather than the publication venue of the published item, pitching at the best international norms and the standards of rigour and scholarship expected internationally in respective disciplines or sub-disciplines.**

6.4 In principle, the quality of each item will be judged on its own merits and **not** in terms of its publication category (e.g. a journal paper is not necessarily of higher or lower merit than a book chapter), medium or language of publication. Further, the panels will be instructed **not** to adopt a mechanical approach during the assessment.

6.5 While the quality of individual output items should carry weight in the assessment, outputs should not be judged mechanically as per their category or

medium of publication. Panels will be advised to assess the substance of individual output instead of giving mechanical gradings according to the medium of publication.

6.6 Panels will be requested to examine each item in detail for assessment. Panels may decide to use metrics or citation data to inform their assessment. However, such metrics and data will not be used in any algorithmic or deterministic way for the evaluation of research quality. Panels will be advised to take note of the limitations of metrics and citation data, in particular their variability within as well as between disciplines, and the need to consider that some excellent work takes time to demonstrate its full achievements.

6.7 Research outputs will be captured and assessed in terms of academic strength and quality benchmarking against international standards. Research outputs with social relevance should be submitted for evaluation under the element of research impact.

VII. SUBMISSION OF RESEARCH IMPACT FOR ASSESSMENT

(A) What to Submit

7.1 Universities are invited to make submission about impact of research on unit of assessment basis. The impacts must have been enabled by the submitting university, during the assessment period from 1 October 2013 to 30 September 2019, and must be underpinned by research undertaken at, or significantly supported by, the submitting university during the period from 1 January 2000 to 30 September 2019. Such submission should reach the UGC Secretariat by 16 December 2019.

7.2 Universities with three or more eligible academic staff in a unit of assessment are expected to make impact submission for that unit. In case of nil submission or submission below the requirement, the missing submission or the missing part of it will be deemed as “unclassified” and the respective panel will take this into account in the overall rating of the unit concerned (see paragraph 7.7 below).

(B) Definition of Impact

7.3 For the purpose of the RAE 2020, impact is defined as 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 whether locally, regionally or internationally; and that are beyond the academia. Impact in this context includes, but is not limited to –

- (a) positive effects on, constructive changes or benefits to the activity, attitude, awareness, behaviour, capacity, opportunity, performance, policy, practice, process or understanding, of an audience, beneficiary, community, constituency, organisation or individuals; or
- (b) the reduction or prevention of harm, risk, cost or other negative effects.

Respective panels will give examples and elucidations on the range of impacts under

their disciplinary ambit in the panel-specific criteria and working methods.

7.4 Academic impact of research, i.e. the contribution that research brings to academic advances across and within disciplines, is valuable, but will be assessed through other elements such as outputs or environment in the exercise. As the impact element concerns impact beyond the academia, impact is not in any case meant to be a reflection of the quality of the initial research outputs. Measures such as journal impact factor or citation indices are relevant to academic impact, and should be handled, where panels decide to use metrics/citation data, in the assessment of research outputs. For the purpose of research assessment, the scope of impact as a distinct element –

- (a) excludes impacts on research or the advancement of academic knowledge within the higher education sector;
- (b) excludes impacts on students, teaching or other activities within the submitting university; and
- (c) includes other impacts on teaching or students where they extend significantly beyond the submitting university (e.g. impact relating to language teaching in primary schools), or on other fields (e.g. impact of text mining technologies in linguistics or computer science research in the medical or commercial field).

7.5 The impacts must be generated or substantially supported by the submitting university, and may occur in any geographical location whether locally, regionally, nationally or internationally. While impacts could be at different stages of development, the impacts to be assessed should occur in the assessment period.

7.6 The requirement that impacts must be underpinned by research undertaken at, or significantly supported by, the submitting university means that the research made a distinct and material contribution to the impact taking/taken place, such that the impact would not have occurred or would have been significantly reduced without the contribution of that research. The underpinning research must be within the scope of the relevant unit of assessment at the submitting university, carried out during the period from 1 January 2000 to 30 September 2019. The quality of underpinning research should be equivalent to at least attaining 2 star (2*), i.e. of international standing. Impacts underpinned by research of non-eligible academic staff (e.g. part-time researchers and staff appointed after 1 September 2017) may be selected by universities in the submission. It does not matter if the researchers concerned are not eligible academic staff of the submitting university or no longer employed by the university.

(C) Information Required for Submission on Research Impact

7.7 In respect of each impact submission, universities are required to provide information as specified below, in order to present the impact of the submitting unit, in which the underpinning research has been conducted –

- (a) one impact overview statement describing the submitting unit's approach during the assessment period from 1 October 2013 to 30 September 2019, to enabling impact from its research;
- (b) a template for preparing the impact overview statement is at **Appendix G**, and the prescribed maximum length of each impact overview statement is set out below –

| Number of eligible academic staff (headcount) in the unit of assessment | Page limit (A4 size) for each impact overview statement |
|--|--|
| 3 – 45 | 2 |
| 46 or more | 3 |

- (c) impact case studies describing specific examples of impacts achieved during the assessment period by the submitting university, underpinned by research, research activity or a body of work (with quality as equivalent to at least attaining 2 star (2*), i.e. of international standing), undertaken at, or significantly supported by, the submitting university within the period from 1 January 2000 to 30 September 2019 (see paragraph 8.1 below);
- (d) a template for preparing the impact case study is at **Appendix H**, and the prescribed number of impact case studies required in each unit of submission is set out below –

| Number of eligible academic staff (headcount) in the unit of assessment | Number of case study(ies) required for submission to the unit of assessment | Page limit (A4 size) for each impact case study |
|--|--|--|
| 3 – 15 | 1 | 4 |
| 16 – 30 | 2 | 4 |
| 31 – 45 | 3 | 4 |
| 46 or more | 4, plus 1 further case study per additional 40 staff (headcount) | 4 |

7.8 The impact overview statement is intended to provide more holistic and contextualised information about the wider range of activities within the submitting unit and its capacity for impact. It should include specific details on the (i) context for the individual case study(ies), with focus on the submitting unit and possibly its relation or interaction with the university's overall impact strategy or resources; (ii) the submitting unit's approach to impact during the assessment period; (iii) its strategy and plans, or the development of such, for supporting impact; and (iv) how the impact case studies relate to the submitting unit's approach to impact.

7.9 Universities are only required to give examples of evidence of impact in their submission, instead of a comprehensive account of where all their research has

led. The impact case study(ies)³ should be the strongest example(s) selected to present the impacts that are generated or substantially supported by the submitting unit. While an impact case study may not comprehensively represent the spread of research activities and dynamics within the submitting unit, its content should be self-contained and self-explanatory, without recourse to inference or reference to external materials. Appropriate facts and evidence should be provided in each case study for the impact claimed.

7.10 Each impact case study should contain –

- (a) a brief summary of the impact in the case study;
- (b) descriptions of the knowledge, insights, methodologies, solutions and/or inventions brought about by research that underpinned the impact, an outline of the underpinning research, when it was undertaken and the key researchers concerned;
- (c) references to key outputs from the underpinning research, including name of author(s), title of output, year and location of publication⁴, and evidence of the quality of the research, as requested by respective panels in the panel-specific criteria and working methods;
- (d) a detailed narrative explaining on how research led to or underpinned the impact, the beneficiaries and the nature of the impact, when the impact occurs/occurred, evidence (e.g. indicators) illustrating the extent of the impact, and how the submitting unit made contributions to the impact in the assessment period from 1 October 2013 to 30 September 2019; and
- (e) sources external to the submitting university that could provide corroboration to support the statements and claims in the impact case study, and details on how the sources can be accessed for audit purposes.

7.11 Individual panels will provide further guidance on the kinds of information and evidence expected in the impact overview statement and impact case studies, as appropriate.

VIII. EVALUATION GUIDELINES ON RESEARCH IMPACT

8.1 On the basis of the above information, research impacts will be assessed in terms of their reach and significance, regardless of the geographic location in which they occurred. The criteria of “reach and significance” will be understood as –

³ Examples of impact submissions and case studies in other jurisdictions may be accessed online such as <<http://results.ref.ac.uk/Results/SelectUoa>> from the United Kingdom.

⁴ Separately, universities are required to provide full version of the key outputs referenced in each impact case study and submit information on the outputs as specified in paragraph 5.17 (a)-(b) above for access by the panels.

- (a) “reach” is the extent and/or breadth of beneficiaries of the impact; whereas
- (b) “significance” is the degree to which the impact has enabled, enriched, influenced, informed or changed the products, services, performance, practices, policies or understanding of commerce, industry or other organisations, governments, communities or individuals.

The focus of assessment is the impact achieved by the submitting unit, not the impact of individuals or individual research outputs, although they may contribute to the evidence of the submitting unit’s impact. Panels will consider the evidence of the quality of individual research underpinning the impact cases and where necessary will review the outputs concerned to ensure that the quality of the research is of at least 2 star (2*), i.e. of international standing. A case study will be regarded as not eligible and deemed as “unclassified” if the respective panel considers that the underpinning research outputs are not up to the required standard. Panels will exercise their expert judgement in assessing the quality of each impact submission, and will not judge in terms of the type of research underpinning the impact cases. Submissions will be assessed having regard to disciplinary differences.

8.2 Panels will assess the reach and significance of impacts on the economy, society and/or culture that were underpinned by research conducted in, or significantly supported by, the submitting unit/university, as well as the submitting unit’s approach to enabling impact from its research. In assessing the impact described within a case study, the panel will form an overall view about its reach and significance taken as a whole, rather than assess reach and significance separately. In assessing the impact overview statement, the panel will consider the extent to which the unit’s approach described in the overview statement is conducive to achieving impact of reach and significance.

8.3 Taking the impact overview statement and case study(ies) as a whole, panels will exercise their expert judgement and give a collective rating based on the merits of each impact submission. A panel may choose to give a profile rating using the following five categories as appropriate. The rating will be based on the following five categories –

- (a) 4 star (4*): outstanding impacts in terms of their reach and significance;
- (b) 3 star (3*): considerable impacts in terms of their reach and significance;
- (c) 2 star (2*): some impacts in terms of their reach and significance;
- (d) 1 star (1*): limited impacts in terms of their reach and significance; and
- (e) unclassified (u/c): the impact is of either no reach or no significance; or the impact was not eligible; or the impact was not underpinned by research produced by the submitting unit; or nil submission.

8.4 Panels will provide further elaboration on the assessment criteria in respect of the disciplines in their ambit, as well as specification, if any, on the categories of quality levels for the assessment of impact.

IX. SUBMISSION OF RESEARCH ENVIRONMENT FOR ASSESSMENT

(A) What to Submit

9.1 Universities are invited to make submission about the research environment relating to the assessment period from 1 October 2013 to 30 September 2019 on unit of assessment basis. Such submission should reach the UGC Secretariat by 16 December 2019.

9.2 A research environment submission may relate to a single coherent faculty, and equally to multiple departments, where the scale may vary or research focus be inter-disciplinary. Universities may as well depict the commonalities and dynamics among faculties and departments within the submitting unit, and show how a good research environment is provided in the submission. As scale alone does not inevitably entail a good environment, universities will have to show what they do to ensure a good environment regardless of their scale (whether large or small).

9.3 Universities with three or more eligible academic staff in a unit of assessment are expected to make submission in respect of the environment element for that unit. In case of nil submission or submission below the requirement, the missing submission or the missing part of it will be deemed as “unclassified” and the respective panel will take this into account in the overall rating of the unit concerned (see paragraph 9.6 below).

(B) Definition of Environment

9.4 For the purpose of the RAE 2020, research environment refers to the strategy, resources (e.g. grants obtained, people) and infrastructure that support research giving rise to collaborations, esteem and contributions to the discipline or research base.

9.5 Under this definition –

- (a) “grants obtained” refers to research income and grants received, including funds from the university central allocation and external funding bodies, be they competitive or non-competitive grants and donations;
- (b) “people” covers (i) staff contributing to research, including research-active academic staff, research support staff e.g. research assistants, and visiting, adjunct or part-time research staff; and (ii) research postgraduate students;
- (c) “infrastructure” includes facilities (e.g. accommodation and equipment) for carrying out research;

- (d) “collaborations” refers to research collaborations, including local or international research collaborations, with individual academics, industry and other institutions. Collaborative arrangements, partnerships, networks and joint research projects, intra-university or inter-disciplinary research collaborations may be included; and
- (e) “esteem” refers to recognition conferred by a body outside the university. It should demonstrate the distinguished achievement of individual researchers, groups or the unit as a whole. Esteem may include, but is not limited to research-based awards, honours, or prizes.

(C) Information Required for Submission on Research Environment

9.6 For each submission on research environment, universities are required to provide information and data as specified below –

- (a) one environment overview statement describing the submitting unit’s research strategy; its support for research staff and students; its research income, infrastructure and facilities; its research collaborations, esteem and wider contributions to the discipline or research base during the assessment period, i.e. from 1 October 2013 to 30 September 2019;
- (b) a template for preparing the environment overview statement is at **Appendix I**, and the prescribed maximum length of each environment overview statement is set out below –

| Number of eligible academic staff (headcount) in the unit of assessment | Page limit (A4 size) for each environment overview statement |
|--|---|
| 3 – 15 | 4 |
| 16 – 30 | 6 |
| 31 – 45 | 8 |
| 46 or more | 10 |

- (c) data on staff, graduates of research postgraduate programmes and research grants/contracts from different sources of funding etc. during the assessment period, i.e. from 1 October 2013 to 30 September 2019; and
- (d) a template for preparing the environment data is at **Appendix J**.

9.7 The environment overview statement should include a brief overview describing the organisation and structure of the submitting unit, so as to provide a context for the submission. The part on research strategy should provide evidence about the achievement of strategic aims for research during the assessment period, as well as details of future strategic plan for research and how the unit’s research strategy articulates with the university’s overall research strategy. The part on people should include the unit’s strategy on staffing and staff development in respect of

research, as well as evidence of the quality of training and supervision of research students. Reference should be made to paragraphs 9.5 and 9.6 (a) in completing the other parts of the statement.

9.8 The data in conjunction with the environment overview statement should cover: (i) staff employed by the university proper, be they wholly funded or partially funded by General Funds⁵ or wholly self-financed, by staff category; (ii) graduates of research postgraduate programmes, be they UGC-funded or non-UGC-funded; and (iii) on-going research grants/contracts, by source of funding and by role of university in terms of the funding received, in each of the years from 2013/14 to 2018/19. Where a grant/contract is held across more than one unit/institution, it should be divided between submissions in different units/universities according to the way the grant/contract income has been used. Similarly, research projects with multiple sources of funding should have the grant income reported under respective funding source categories.⁶

9.9 Individual panels will provide further guidance on the kinds of information and evidence expected in the environment overview statement, as appropriate.

X. EVALUATION GUIDELINES ON RESEARCH ENVIRONMENT

10.1 On the basis of the above information, research environment will be assessed in terms of vitality and sustainability, including its contribution to the vitality and sustainability of the wider discipline or research base. The criteria of “vitality and sustainability” will be understood as –

- (a) “vitality” refers to the extent to which a unit provides an encouraging and facilitating environment for research and supports a research culture characterised by intellectual vigour, innovation and positive contribution within respective discipline(s) and profession; and
- (b) “sustainability” refers to the extent to which the research environment is capable of continuing to support and develop the research activities of the submitting unit and discipline(s). Panels will consider the environment data within the context of the information provided in the environment overview statement, and within the context of the disciplines concerned.

10.2 Panels may decide on whether to assess each environment submission as a whole, or to attach weighting to individual aspects within the environment element in their assessment. Panels will spell out how they would propose to address the details of the weighting in their panel specific criteria and working methods.

⁵ General Funds comprise the total income received by the university, except that from specific funds (which include income received for specific or designated purposes, examples of which are earmarked grants and RGC research grants). General Funds include income from the UGC block grant, tuition fees, interest and investment income, donations for general purpose, etc.

⁶ Examples of environment submissions in other jurisdictions may be accessed online such as <<http://results.ref.ac.uk/Results/SelectUoa>> from the United Kingdom.

10.3 Irrespective of whether the assessment is made on the environment submission as a whole or by aggregating assessments of individual aspects within the environment element, panels will give a rating using one or more of the following five categories as appropriate. The rating will be based on the following five categories:

- (a) 4 star (4*): an environment that is conducive to producing research of world-leading quality, in terms of its vitality and sustainability;
- (b) 3 star (3*): an environment that is conducive to producing research of internationally excellent quality, in terms of its vitality and sustainability;
- (c) 2 star (2*): an environment that is conducive to producing research of internationally recognised quality, in terms of its vitality and sustainability;
- (d) 1 star (1*): an environment that is conducive to producing research of limited quality, in terms of its vitality and sustainability; and
- (e) unclassified (u/c): an environment that is not conducive to producing research of 1 star quality; or nil submission.

10.4 Panels will provide further elaboration on the assessment criteria as well as specification, if any, on the categories of quality levels for the assessment of environment in respective fields under respective purview.

XI. ASSESSMENT RESULTS

(A) Construction of Quality Profiles

11.1 As indicated earlier, the primary purpose of the RAE is to assess the research performance of the UGC-funded universities by unit of assessment; it is not intended to evaluate individual staff. Panels will produce sub-profiles for the three elements of assessment – research outputs, impact and environment. The three sub-profiles of a unit of assessment will be aggregated to form the overall quality profile for the unit of assessment. A worked example is at **Appendix K**.

11.2 The overall quality profile shows the proportion of research activity in the submission judged to meet the definitions of starred levels, as follows –

- (a) 4 star (4*): world leading;
- (b) 3 star (3*): internationally excellent;
- (c) 2 star (2*): international standing;
- (d) 1 star (1*): limited standing; and
- (e) unclassified (u/c)

(B) Publication of RAE Information and Results

11.3 In line with the principle of transparency, results of the RAE 2020 will be released as follows –

- (a) operational details of the process, such as panel membership, evaluation methodology and the meeting schedules of panels, will be published for general information;
- (b) results in the form of overall quality profiles and sub-profiles of individual elements of assessment will be published by unit of assessment and by panel at both individual university level and sector-wide level;
- (c) same set of results as mentioned in (b) will be released to universities and the public;
- (d) in addition to the published results, each university will receive their own RAE results confidentially in respect of research outputs at research area level (except for those research area(s) consisting of less than three eligible staff of the university, or where, in providing the RAE results, the research output results of any of the individual eligible staff of the university may be revealed indirectly); and
- (e) some reading guides will be developed to help the public and the press understand the statistics.

11.4 The results, together with other relevant factors, will inform the UGC's distribution of part of the research funding of the Block Grant for universities until the results for any future RAE are available. The funding allocation will be on the basis that high quality research according to international standard will be adequately funded so that more world class research will be conducted by UGC-funded universities. In addition, funding will be allocated in a fair and publicly accountable manner, taking into account sustainability and stability of institutional funding.

XII. NEXT STAGE

(A) Consultation and Survey on Submission Intentions

12.1 Universities will be further consulted when the general panel guidelines and panel-specific criteria and working methods are developed in the first half of 2018. To facilitate panel formation with a view to matching the panel expertise with the submissions as far as possible, universities will be invited to indicate their submission intentions and provide estimations in finer details, e.g. estimated number of submissions and eligible staff, main areas/keywords of their research submissions, and estimated volume of submissions in languages other than English, under each unit of assessment, tentatively by the third quarter of 2018.

(B) Submission Timetable for the RAE 2020

12.2 To summarise, universities are requested to submit the following materials and data in accordance with the dates shown below –

| | |
|-------------------------|--|
| 31 July 2019 | <ul style="list-style-type: none">• Request(s) for special consideration/exemption for individual staff members as per paragraphs 4.5-4.6 |
| 2 December 2019 | <ul style="list-style-type: none">• A list of all eligible academic staff for each unit of assessment as per paragraph 4.2 (a)• A list of full-time academic staff wholly funded by the university proper for degree or higher degree work within Staff Grades of “A” to “I” at <u>Appendix D</u> (as at the census date of 30 September 2019) who are not reported in the list of eligible academic staff as per paragraph 4.2 (b) |
| 16 December 2019 | <ul style="list-style-type: none">• Research Strategy Statement of the university as per paragraph 2.17 and <u>Appendix B</u>• Full version of research outputs and information required on research outputs as per section V• Information required on research impact including impact overview statement and impact case study(ies) as per section VII, <u>Appendices G and H</u>• Information required on research environment including environment overview statement and related data as per section X, <u>Appendices I and J</u> |

(C) Form of Submission

12.3 Materials and data for submission to the RAE 2020 should be forwarded to the UGC Secretariat in a manner to be separately prescribed by the UGC. The submissions will be in electronic format in principle. Details on the arrangement for submissions in physical formats will be worked out with the universities in due course. In view of the large volume of submissions involved, **universities are requested to ensure that the submissions are accurate and complete, clearly labeled, and all copies, whether electronic or printed, are of good, readable quality. All universities’ submissions are subject to audit.** The Secretariat is

undertaking work regarding the establishment of an electronic system for the RAE 2020, and will issue operational guidelines with regard to the handling of RAE submissions in different formats.

* * * * *

UGC Secretariat
November 2017

Scholarship as defined by the Carnegie Foundation

In *Scholarship Reconsidered: Priorities of the Professoriate*¹, the Carnegie Foundation argues that scholarship should have a broader and more efficacious meaning that would go beyond just teaching and research. The discovery of knowledge through research, the integration of knowledge, the application of knowledge and the sharing of knowledge through teaching should be treated as different forms of scholarship on a par with each other.

The Four Scholarships

2. The Carnegie Foundation considers that there is a more inclusive view of what it means to be a scholar – a recognition that knowledge is acquired through research, synthesis, practice, and teaching. Scholarship should comprise four separate, yet overlapping functions: They are the scholarship of discovery; the scholarship of integration; the scholarship of application; and the scholarship of teaching.

(a) Scholarship of Discovery

The scholarship of discovery, at its best, contributes not only to the stock of human knowledge but also to the intellectual climate of an institution. It is a scholarly investigation, closest to what is meant when academics speak of “research”, that confronts the unknown and creates new knowledge. It is not just the outcomes, but also the process, and especially the passion, that gives meaning to the effort.

(b) Scholarship of Integration

It is a serious, disciplined work that seeks to interpret, draw together and bring new insight to bear on original research. This type of scholarship is closely related to that of discovery. Such work is increasingly important as traditional disciplinary categories prove confining, forcing new topologies of knowledge. This scholarship also means interpretation, fitting one’s own research – or the research of others – into larger intellectual patterns. A variety of scholarly trends – inter-disciplinary, interpretive, integrative – are examples of scholarship of integration.

(c) Scholarship of Application

It is a dynamic process of creating new intellectual understandings arising out of theory and practice. The term itself may be misleading if it suggests that knowledge is first “discovered” and then “applied”. The process is in fact more dynamic; new intellectual understanding can arise out of vital interaction between theory and practice and one renews the other.

(d) Scholarship of Teaching

It is a process that transforms and extends knowledge while transmitting an intelligible account of knowledge to the learners. As a form of

¹ A Special Report of the Carnegie Foundation for the Advancement of Teaching, by Ernest L Boyer, 1990.

scholarship, teaching encompasses a wide range of activities beyond classroom instruction.

Assessment of Scholarship

3. The broadening of the definition of scholarship helps ensure that scholarly work in areas both within and outside discovery can be appropriately recognized and rewarded, yet it does not seek to open the floodgate by treating anything as scholarship. This leads to the question of how the work should be documented and the criteria that should be used to assess its quality.

4. Academics feel relatively confident about their ability to assess specialized research, but they are less certain about what qualities to look for in other kinds of scholarship, and how to document and reward that work. In *Scholarship Assessed: Evaluation of the Professoriate*², the authors suggest that the four kinds of scholarly activities, regardless of how variable their products, must be evaluated according to a common set of criteria (which they refer as “quality standards of excellence”) that captures and acknowledges what they share as scholarly acts. The criteria are:

- clear goals;
- adequate preparation;
- appropriate methods;
- significant results;
- effective presentation; and
- reflective critique.

5. The authors also suggest a list of questions (see below) for each criterion to be considered when assessing a scholar’s achievements in a particular category of scholarship. In return, scholars should also take into account these guiding questions when preparing their work for evaluation:

- (a) For clear goals, the possible questions include whether the scholar states the basic purposes of his or her work clearly; whether the objectives are realistic and achievable; and whether he or she identifies important questions in the field.
- (b) For adequate preparation, the possible questions include whether the scholar shows an understanding of existing scholarship in the field; whether the necessary skills are brought to his or her work; and whether the necessary resources are brought together to move the project forward.
- (c) For appropriate methods, the possible questions include whether the scholar uses methods appropriate to the goals; whether they apply methods effectively; and whether they are ready to modify procedures in response to changing circumstances.

² A Special Report of the Carnegie Foundation for the Advancement of Teaching, by Charles E Glassick, Mary Taylor Huber, and Gene I. Maeroff, 1997

- (d) For significant results, the possible questions include whether the scholar actually achieves the goals he or she was aiming for; whether the scholar's work adds consequentially to the field; and whether the scholar's work opens additional areas for further exploration.
- (e) For effective presentation, the possible questions include whether the scholar uses a suitable style and effective organization to present his or her work; whether they use appropriate forums for communicating work to intended audiences; and whether the scholar presents his or her message in all of these forms with clarity and integrity.
- (f) For reflective critique, the possible questions include whether the scholar critically evaluates his or her own work; and whether they bring an appropriate breadth of evidence to their critique. For instance, do they talk to other people, to their peers, to their students, to their clients, and does the scholar use evaluation to improve the quality of their future work?

6. If a particular piece of work is going to be evaluated as scholarship, an important and critical audience of the scholar is his or her peers. In other words, the work would not be considered as a form of scholarship until it has been documented and could be exchanged in a generalisable way so that people beyond the very local context can learn from, can critique and can build on that knowledge. For example, an interesting piece of teaching material used in a class can at most be considered a scholarly work, as it is only presented in a private encounter between a teacher and a group of students. It will not be considered a work of scholarship of teaching unless it is systematically documented and disseminated to peers of the relevant field for wider debate and exchanges. In short, the six criteria set out in paragraph 5 above will form the basis on which the respective panels would evaluate the output in a particular category of scholarship. In order to be evaluated, outputs should be properly documented to produce evidence and the panels will seek to measure the impact on the basis of benchmark to be operationalised later.

7. To summarise, the quality dimensions proposed above allow sufficient flexibility for the same set of criteria to be applied judiciously to different types of projects from different disciplinary traditions, while enabling one to keep in view the qualities that discovery, integration, application and teaching share as scholarly activities.

**Research Assessment Exercise 2020
Research Strategy Statement¹**

University:

I. University's existing research policy

In view of my university's role statement at Attachment 1² and stage of development of my university, the current research policy of my university is as follows:

II. Research funding sources

My university derives funding for research from the following sources, and the breakdown by funding source as a percentage total of overall funding is as follows:

III. Distribution of research efforts

Based on my university's research strategy, the research focus areas and the distribution of research activities across research areas is as follows:

(Where appropriate) Distribution across disciplines is as follows:

IV. Research strengths and overall research strategy

In the RAE 2014, my university's quality profiles by cost centre (or unit of assessment) are set out at Attachment 2.

University's existing strengths and standard:

In the long run, the overall research strategy of the university is:

Signature: _____

Name: _____

Post: _____

University: _____

Date: _____

(to be signed by the Head/Deputy
Head of the University*)

* Please delete as appropriate.

¹ Maximum length and prescribed page format for submission: two A4 pages, excluding specified attachments in one A4 page each; 12 point size in Times New Roman, single-line spacing, 2 cm margin all round.

² University to attach its role statement as drawn up with the UGC.

Research Strategy Statement – Attachment 1
Role Statement³

University:

.....

Research Strategy Statement – Attachment 2
Quality Profiles in RAE 2014³

University:

| Cost Centre (code and name) | | Number of eligible staff | Percentage of research activity judged to meet the standard of : | | | | |
|--------------------------------|-------|--------------------------------|---|-----|-----|-----|-----|
| | | | 4* | 3* | 2* | 1* | u/c |
| ... | | ... | ... | ... | ... | ... | ... |
| ... | | ... | ... | ... | ... | ... | ... |
| ... | | ... | ... | ... | ... | ... | ... |

.....

³ Maximum length and prescribed format: one A4 page per attachment, 2 cm margin all round.

Research Assessment Exercise 2020
List of Units of Assessment

| Panel (code & name) | Unit of Assessment (code & name) |
|---|---|
| 1 Biology | 1 biological sciences (incl. environmental biology, biotechnology, agriculture & food science, veterinary studies) |
| | 2 pre-clinical studies |
| 2 Health Sciences | 3 clinical medicine |
| | 4 clinical dentistry |
| | 5 nursing, optometry, rehabilitation sciences and other health care professions |
| | 6 Chinese medicine |
| 3 Physical Sciences | 7 physics & astronomy |
| | 8 materials science and materials technology |
| | 9 chemistry |
| | 10 earth sciences (incl. oceanography, meteorology) and other physical sciences (incl. environmental science) |
| | 11 mathematics and statistics |
| 4 Electrical & Electronic Engineering | 12 electrical & electronic engineering |
| 5 Computer Science / Information Technology | 13 computer studies/science (incl. information technology) |
| 6 Engineering | 14 mechanical engineering, production engineering (incl. manufacturing & industrial engineering), textile technology and aerospace engineering |
| | 15 chemical engineering, biomedical engineering, other technologies (incl. environmental engineering & nautical studies) and marine engineering |
| 7 Built Environment | 16 civil engineering (incl. construction engineering & management) and building technology |
| | 17 architecture |
| | 18 planning and surveying (land and other) |
| 8 Law | 19 law |
| 9 Business & Economics | 20 accountancy |
| | 21 economics and finance |
| | 22 business |
| | 23 hotel management & tourism |
| 10 Social Sciences | 24 psychology |
| | 25 political science (incl. public policy & administration & international relations) |
| | 26 geography |
| | 27 sociology & anthropology |
| | 28 social work and social policy |
| | 29 communications & media studies |

| Panel (code & name) | Unit of Assessment (code & name) |
|--|---|
| 11 Humanities | 30 Chinese language & literature |
| | 31 English language & literature |
| | 32 translation |
| | 33 linguistics & language studies |
| | 34 history |
| | 35 area studies (e.g. Japanese studies, European studies, etc.), cultural studies and other arts/humanities |
| | 36 philosophy |
| | 37 religious studies |
| 12 Creative Arts, Performing Arts & Design | 38 visual arts, design, creative media, other creative arts and creative writing |
| | 39 music and performing arts |
| 13 Education | 40 physical education, sport, recreation & physical activities |
| | 41 education (incl. curriculum & instruction, education administration & policy and other education) |

**Description of Academic Staff Grades
“A” to “I”**

Academic, Senior

- A. Professor
- B. Reader
- C. Senior Lecturer (U)
- D. Principal Lecturer (P)

Academic, Junior

- F. Senior Lecturer (P)
- G. Lecturer (U)
- H. Lecturer (P)
- I. Assistant Lecturer

Mapping of Units of Assessment in RAE 2020 with Research Areas in RAE 2014

| Unit of Assessment in RAE 2020 (code & name) | Research Area in RAE 2014 (code & name) |
|---|---|
| 1 biological sciences (incl. environmental biology, biotechnology, agriculture & food science, veterinary studies) | 1a clinical veterinary studies |
| | 1b biological sciences |
| | 1c other biological sciences (incl. environmental biology) |
| | 1d agriculture & food science |
| | 1e biotechnology |
| 2 pre-clinical studies | 2a pre-clinical studies |
| 3 clinical medicine | 3a clinical medicine |
| 4 clinical dentistry | 4a clinical dentistry |
| 5 nursing, optometry, rehabilitation sciences and other health care professions | 5a nursing |
| | 5b other health care professions |
| | 5c optometry |
| | 5d rehabilitation sciences |
| 6 Chinese medicine | 6a Chinese medicine |
| 7 physics & astronomy | 7a physics & astronomy |
| 8 materials science and materials technology | 8a materials science |
| | 8b materials technology |
| 9 chemistry | 9a chemistry |
| 10 earth sciences (incl. oceanography, meteorology) and other physical sciences (incl. environmental science) | 10a earth sciences (incl. oceanography, meteorology) |
| | 10b other physical sciences (incl. environmental science) |
| 11 mathematics and statistics | 11a mathematics & statistics |
| 12 electrical & electronic engineering | 12a electrical engineering |
| | 12b electronic engineering |
| 13 computer studies/science (incl. information technology) | 13a computer studies/science (incl. information technology) |
| 14 mechanical engineering, production engineering (incl. manufacturing & industrial engineering), textile technology and aerospace engineering | 14a mechanical engineering |
| | 14b production engineering (incl. manufacturing & industrial engineering) |
| | 14c textile technology |
| 15 chemical engineering, biomedical engineering, other technologies (incl. environmental engineering & nautical studies) and marine engineering | 15a chemical engineering |
| | 15b marine engineering |
| | 15c other technologies (incl. environmental engineering & nautical studies) |
| | 15d biomedical engineering |
| 16 civil engineering (incl. construction engineering & management) and building technology | 16a civil engineering (incl. construction engineering & management) |
| | 16b building technology |
| 17 architecture | 17a architecture |

| Unit of Assessment in RAE 2020 (code & name) | Research Area in RAE 2014 (code & name) |
|---|--|
| 18 planning and surveying (land and other) | 18a planning |
| | 18b surveying, land |
| | 18c surveying, other |
| 19 law | 19a law |
| 20 accountancy | 20a accountancy |
| 21 economics and finance | 21a economics |
| | 21b finance |
| 22 business | 22a business |
| 23 hotel management & tourism | 23a hotel management & tourism |
| 24 psychology | 24a psychology |
| 25 political science (incl. public policy & administration & international relations) | 25a political science (incl. public policy & administration & international relations) |
| 26 geography | 26a geography |
| 27 sociology & anthropology | 27a sociology & anthropology |
| 28 social work and social policy | 28a social work |
| | 28b other social studies |
| 29 communications & media studies | 29a communications & media studies |
| 30 Chinese language & literature | 30a Chinese language & literature |
| 31 English language & literature | 31a English language & literature |
| 32 translation | 32a translation |
| 33 linguistics & language studies | 33a linguistics & language studies |
| 34 history | 34a history |
| 35 area studies (e.g. Japanese studies, European studies, etc.), cultural studies and other arts/humanities | 35a other arts/humanities |
| | 35b area studies (e.g. Japanese studies, European studies, etc.) |
| | 35c cultural studies |
| 36 philosophy | 36a philosophy |
| 37 religious studies | 37a religious studies |
| 38 visual arts, design, creative media, other creative arts and creative writing | 38a visual arts |
| | 38b other creative arts |
| | 38c design |
| | 38d creative media |
| 39 music and performing arts | 39a performing arts |
| | 39b music |
| 40 physical education, sport, recreation & physical activities | 40a physical education & sports science |
| 41 education (incl. curriculum & instruction, education administration & policy and other education) | 41a curriculum & instruction |
| | 41b education administration & policy |
| | 41c other education |

Research Assessment Exercise 2020
Research Output Types

- A. Authored book
- B. Edited book
- C. Chapter in book
- D. Journal Article
- E. Conference contribution
- F. Patent awarded/published patent application
- G. Software
- H. Performance (e.g. stage performance)
- I. Composition (e.g. music composition)
- J. Design
- K. Artefact
- L. Exhibition
- M. Single coherent work published in two or more parts
- N. Other

Research Assessment Exercise 2020
Impact Case Study¹

University:

Unit of Assessment (UoA):

Title of case study:

- (1) **Summary of the impact** (indicative maximum 100 words)

- (2) **Underpinning research** (indicative maximum 500 words)

- (3) **References to the research** (indicative maximum of six references)

- (4) **Details of the impact** (indicative maximum 750 words)

- (5) **Sources to corroborate the impact** (indicative maximum of 10 references)

¹ Maximum length: four A4 size pages; and prescribed format: 12 point size in Times New Roman, single-line spacing, 2 cm margin all around.

**Research Assessment Exercise 2020
Environment Overview Statement¹**

University:

Unit of Assessment (UoA):

Total number of eligible staff of the university in the UoA:

- (1) Overview**

- (2) Research strategy**

- (3) People, including (i) staffing strategy and staff development; and (ii) research students**

- (4) Income e.g. grants received**

- (5) Infrastructure and facilities**

- (6) Collaborations**

- (7) Esteem**

- (8) Contribution to the discipline or research base**

¹ Maximum length and page format for submissions are prescribed below –

| (a) | Number of eligible academic staff (headcount) in the UoA | Page limit (A4 size) for each environment overview statement |
|-----|---|---|
| | 3 – 15 | 4 |
| | 16 – 30 | 6 |
| | 31 – 45 | 8 |
| | 46 or more | 10 |

(b) 12 point size in Times New Roman, single-line spacing, 2 cm margin all around.

Research Assessment Exercise 2020
Environment Data

University:

Unit of Assessment (UoA):

(A) Staff Employed by the University Proper¹ of the UGC-funded University

| (full time equivalent) | 2013/14 (as at 31.10.2013) | 2014/15 (as at 31.10.2014) | 2015/16 (as at 31.10.2015) | 2016/17 (as at 31.10.2016) | 2017/18 (as at 31.10.2017) | 2018/19 (as at 31.10.2018) |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Wholly Funded by General Funds² | | | | | | |
| Academic staff primarily undertaking work at degree or higher level | | | | | | |
| Academic staff not primarily undertaking work at degree or higher level | | | | | | |
| Academic supporting staff and technical research staff | | | | | | |
| Administrative, technical and other staff | | | | | | |
| Partially Funded by General Funds² or Wholly Self-financed | | | | | | |
| Academic staff primarily undertaking work at degree or higher level | | | | | | |
| Academic staff not primarily undertaking work at degree or higher level | | | | | | |
| Academic supporting staff and technical research staff | | | | | | |
| Administrative, technical and other staff | | | | | | |
| Total | | | | | | |

(Note: Based on the list of eligible academic staff and associated data submitted by the university, the panels will separately be provided with a profile of eligible academic staff of the unit of assessment by rank and experience of eligible appointment at the submitting institution.)

¹ Excluding schools/arms of continuing education and professional training and other analogous outfits.

² General Funds comprise the total income received by the university, except that from specific funds (which include income received for specific or designated purposes, examples of which are earmarked grants and RGC research grants). General Funds include income from the UGC block grant, tuition fees, interest and investment income, donations for general purpose, etc

(B) Graduates of Research Postgraduate (RPg) Programmes

| (headcount) | 1.9.2013 – 31.8.2014 | 1.9.2014 – 31.8.2015 | 1.9.2015 – 31.8.2016 | 1.9.2016 – 31.8.2017 | 1.9.2017 – 31.8.2018 | 1.9.2018 – 31.8.2019 |
|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| UGC-funded Programmes | | | | | | |
| Graduates of RPg programmes – doctoral degree | | | | | | |
| Graduates of RPg programmes – master’s degree | | | | | | |
| Non-UGC-funded Programmes | | | | | | |
| Graduates of RPg programmes – doctoral degree | | | | | | |
| Graduates of RPg programmes – master’s degree | | | | | | |

(C) On-going Research Grants/Contracts**(i) By Source of Funding**

| (HK\$ million) | 1.7.2013 – 30.6.2014 | 1.7.2014 – 30.6.2015 | 1.7.2015 – 30.6.2016 | 1.7.2016 – 30.6.2017 | 1.7.2017 – 30.6.2018 | 1.7.2018 – 30.6.2019 |
|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Research Grants | | | | | | |
| Funded by UGC/RGC | | | | | | |
| HKSAR Government and Government-related organisations ³ | | | | | | |
| HK private funds | | | | | | |
| Non-HK ⁴ | | | | | | |
| Research Contracts | | | | | | |
| HKSAR Government and Government-related organisations ³ | | | | | | |
| HK private funds | | | | | | |
| Non-HK ⁴ | | | | | | |

(ii) By Role of University

| (aggregate %) | 1.7.2013 – 30.6.2014 | 1.7.2014 – 30.6.2015 | 1.7.2015 – 30.6.2016 | 1.7.2016 – 30.6.2017 | 1.7.2017 – 30.6.2018 | 1.7.2018 – 30.6.2019 |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Research Grants/Contracts | | | | | | |
| Coordinating | | | | | | |
| Participating for joint research or others | | | | | | |

³ Such as the Innovation and Technology Fund (ITF), Health and Medical Research Fund (HMRF), Environment and Conservation Fund (ECF), Quality Education Fund (QEF), etc.

⁴ Including research grants/contracts from sources outside Hong Kong which are under the control of the submitting university, i.e. the university concerned has the authority to approve the use of funds for the research grants/contracts, while funds may not necessarily be transferred to the university for use in Hong Kong. Examples include the National Natural Science Foundation (NSFC) of China, European Commission, National Institutes of Health (NIH) in the United States of America, etc.

**Research Assessment Exercise 2020
Building of Quality Profiles by Unit of Assessment**

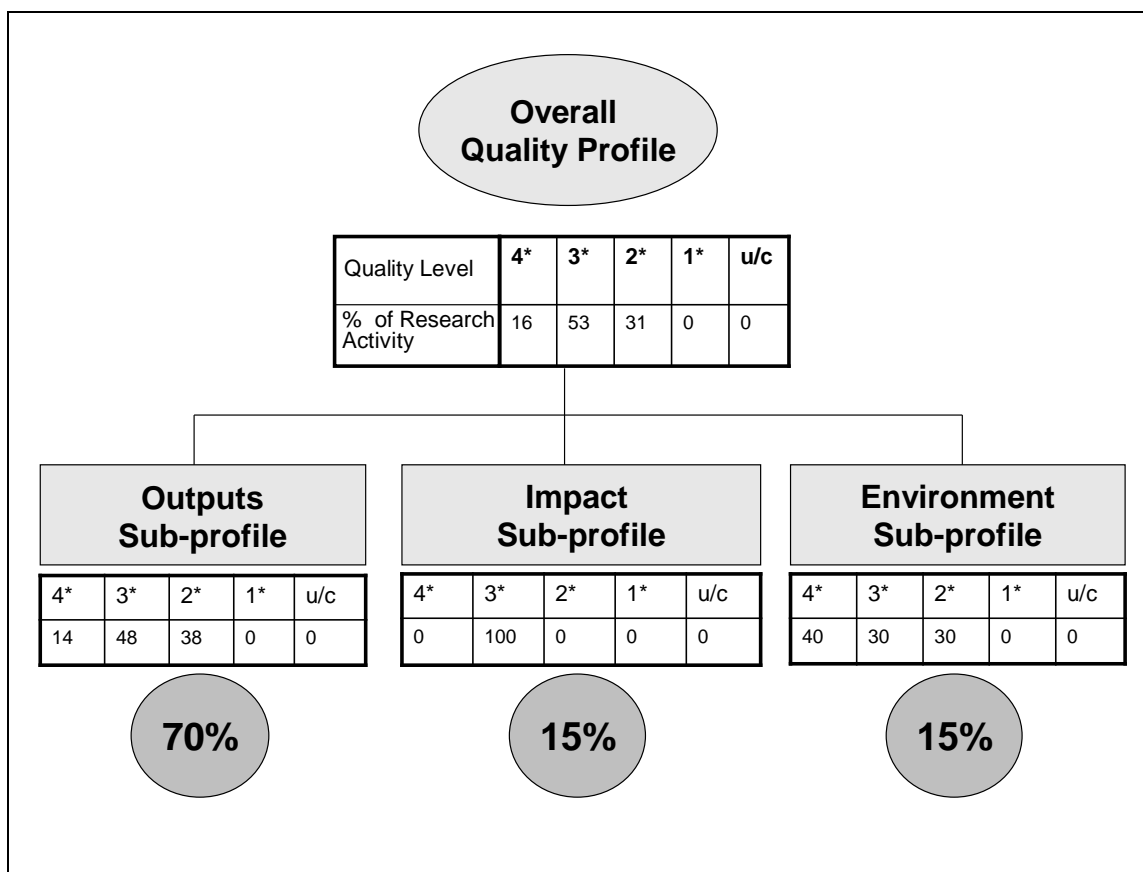
1. The overall quality profile will show the proportion of research activity in a unit of assessment judged to meet the definitions at each starred level. The overall quality profile will be published in steps of 1 per cent. The following table shows the overall quality profiles of two universities under the same unit of assessment.

| Unit of Assessment (UoA) A | Number of eligible staff | Percentage of research activity judged to meet the standard of : | | | | |
|----------------------------|--------------------------|--|--------|--------|--------|--------------|
| | | 4 star | 3 star | 2 star | 1 star | unclassified |
| University X | 40 | 18 | 41 | 25 | 16 | 0 |
| University Y | 60 | 12 | 32 | 45 | 10 | 1 |

2. An RAE Panel will produce an overall quality profile by assessing three elements of a unit of assessment’s submission – research outputs, impact and environment – to produce a sub-profile for each element. The three sub-profiles will be aggregated to form the overall quality profile for the unit of assessment, with each element weighted as follows –

- Outputs: 70 per cent
- Impact: 15 per cent
- Environment: 15 per cent.

Figure 1: Building a quality profile: a worked example



Rounding

3. The sub-profiles will be combined using the weights in paragraph 2 of this appendix. A cumulative rounding process will then be applied to the combined profile, to produce an overall quality profile. This methodology will ensure that the overall quality profile for any submission will always sum to 100 per cent.

4. Using the example in Figure 1, first calculate the initial overall profile, that is, the sum of the weighted sub-profiles for outputs, impact and environment.

| | Starred levels | | | | |
|------------------------|----------------|------|------|----|-----|
| | 4* | 3* | 2* | 1* | u/c |
| Outputs | 14 | 48 | 38 | 0 | 0 |
| Impact | 0 | 100 | 0 | 0 | 0 |
| Environment | 40 | 30 | 30 | 0 | 0 |
| Weighted | | | | | |
| 70% | 9.8 | 33.6 | 26.6 | 0 | 0 |
| 15% | 0 | 15.0 | 0 | 0 | 0 |
| 15% | 6.0 | 4.5 | 4.5 | 0 | 0 |
| Initial profile | 15.8 | 53.1 | 31.1 | 0 | 0 |

5. Cumulative rounding works in three stages –

(a) The initial profile is –

| 4* | 3* | 2* | 1* | u/c |
|------|------|------|----|-----|
| 15.8 | 53.1 | 31.1 | 0 | 0 |

(b) Stage 1: Calculate the cumulative totals (for example the cumulative total at 3* or better is $53.1 + 15.8 = 68.9$).

| 4* | 3* or better | 2* or better | 1* or better | u/c or better |
|------|--------------|--------------|--------------|---------------|
| 15.8 | 68.9 | 100 | 100 | 100 |

(c) Stage 2: Round these to the nearest 1 per cent (rounding up if the percentage ends in exactly 0.5).

| 4* | 3* or better | 2* or better | 1* or better | u/c or better |
|----|--------------|--------------|--------------|---------------|
| 16 | 69 | 100 | 100 | 100 |

(d) Stage 3: Find the differences between successive cells to give the rounded profile. So, for example, the percentage allocated to 2* is the difference between the cumulative total at 2* or better, minus the cumulative total at 3* or better.

| 4* | 3* | 2* | 1* | u/c |
|----|----|----|----|-----|
| 16 | 53 | 31 | 0 | 0 |