

Sheffield Hallam University

FIRST DRAFT OF THE REF

Guidance documents for impact case studies

September 2018

*Please note, these pages have been extracted from the REF2021 draft guidance, published July 2018.
The original documents are available at the following links:*

Draft guidance on submission

https://www.ref.ac.uk/media/1016/draft-guidance-on-submissions-ref-2018_1.pdf

Consultation on the draft panel criteria and working methods

https://www.ref.ac.uk/media/1013/consultation-on-the-draft-panel-criteria-and-working-methods-ref-2018_02.pdf

Guidance for standardising quantitative indicators of impact within REF case studies

<https://www.ref.ac.uk/media/1018/guidance-for-standardising-quantitative-indicators-of-impact.pdf>

REF 2021 DRAFT GUIDANCE ON SUBMISSIONS

REF 2018/01

JULY 2018

IMPACT SECTIONS ONLY

Please note, these pages have been extracted from the Draft guidance on submission. They relate to the submission of impact case studies. The full document is available here:

https://www.ref.ac.uk/media/ref,2021/downloads/Draft%20Guidance%20on%20submissions%20REF%202018_1.pdf

Part 3 Section 3: Impact (REF3)

Definition of impact for the REF

291. For the purposes of the REF, impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia.

292. Impact **includes**, but is not limited to, an effect on, change or benefit to:

- the activity, attitude, awareness, behaviour, capacity, opportunity, performance, policy, practice, process or understanding
- of an audience, beneficiary, community, constituency, organisation or individuals
- in any geographic location whether locally, regionally, nationally or internationally.

293. Impact **includes** the reduction or prevention of harm, risk, cost or other negative effects.

294. For the purposes of the impact element of the REF:

- a. Academic impacts on research or the advancement of academic knowledge (whether in the UK or internationally) are **excluded**. (The submitted unit's

contribution to academic research and knowledge is assessed within the 'outputs' and 'environment' elements of REF.)

- b. Impacts on students, teaching or other activities both within and beyond the submitting HEI are **included**. The 'Panel criteria' (paragraphs 290 to 291) sets out the panels' expectations for impact in this area.

295. Impacts will be assessed in terms of their 'reach and significance' regardless of the geographic location in which they occurred, whether locally, regionally, nationally or internationally. The UK funding bodies expect that many impacts will contribute to the economy, society and culture within the UK, but equally value the international contribution of UK research.

296. The 'Panel criteria' provides further guidance in relation to how the panels will assess the case studies against the criteria of reach and significance and the kinds of impact that the panels would anticipate from research across the UOAs; this guidance is not restrictive, and any impact that meets the general definition at Annex C will be eligible.

Submission requirements for impact

297. The REF aims to assess the impact of excellent research undertaken within each submitted unit. This will be evidenced by specific examples of impacts that have been underpinned by research undertaken within the unit over a period of time. The focus of the assessment is the impact of the submitted unit's research, not the impact of individuals or individual research outputs, although they may contribute to the evidence of the submitted unit's impact.

298. Each submission must include **impact case studies (REF3)** describing specific impacts that have occurred during the assessment period (1 August 2013 to 31 July 2020) that were underpinned by excellent research undertaken in the submitted unit. The underpinning research must have been produced by the submitting HEI during the period 1 January 2000 to 31 December 2020¹⁸.

299. Panels will assess all the evidence provided in the submitted case studies (REF3), and will form an impact sub-profile for each submission. Panels will apply their expert judgement based on all the information provided in the impact case studies, before confirming the impact sub-profiles.

300. When writing case studies, submitting units should refer to the guidelines for presenting quantitative data set out in the 'Guidelines for standardising quantitative indicators of impact within REF case studies' (available at www.ref.ac.uk, under

¹⁸ The end of the period for the underpinning research (31 December 2020) extends beyond the end of the period for the impact (31 July 2020). This is to align with the end of the publication period for outputs, and recognises that research may have had impact prior to the publication of the outputs.

Guidance). These guidelines have been developed to enable more consistent presentation of quantitative evidence in case studies, both to better inform the panels' assessment and to enable more effective analysis of the case studies post-REF 2021 by the funding bodies and other stakeholders.

Impact case studies that include confidential information

301. The following arrangements are in place to enable institutions to submit case studies that include confidential information, with the agreement of the relevant organisation(s):

- a. All panel members, assessors, observers and the panel secretariat are bound by confidentiality arrangements. The current confidentiality and data security arrangements are included in the 'Panel criteria'. Panel members' obligations during the assessment phase will be expanded on, to include specific arrangements for their treatment of confidential or sensitive information in submissions. These expanded arrangements will be published in advance of the submission deadline.
- b. Where there are main or sub-panel members or assessors who HEIs believe would have a conflict of interest in assessing specific case studies, HEIs can identify these when making submissions, and the case studies will not be made available to such individuals.
- c. When making submissions, HEIs can identify specific case studies that either should not be published at all due to their confidential nature, or that should be redacted prior to publication. HEIs will need to provide redacted versions suitable for publication by 29 January 2021. Submitted case studies identified as 'not for publication' or the elements for 'redaction' will be destroyed by the REF team once no longer required for assessment purposes.
- d. To protect panel members from potentially inappropriate exposure to intellectual property, sub-panel chairs may identify specific panel members who should not have access to, or should have access only to the redacted versions of, specific case studies that include commercially sensitive information.

302. In addition to the general arrangements set out in paragraph 301 above, there may be specific instances where research has had impacts of a sensitive nature where the material to be included in a case study could only be made available for assessment to individuals with national security vetting clearance. This may relate to the underpinning research, the nature of the impact, or both. The following arrangements apply, to enable the submission of such specific cases:

- a. The submitting HEI must request advance permission from the REF director to submit such case studies, by providing outline information about the broad nature of the research and/or impact, the level of sensitivity of the intended

material, and the level of clearance required of individuals to whom the full case study could be made available. These requests must be made by December 2019.

b. Permission will be granted to submit such case studies where the REF director considers, having consulted the relevant panel chairs, that:

i. the confidentiality arrangements outlined at paragraph 301 above are insufficient to enable the institution to submit the case study in the normal way for assessment by the panel **and**

ii. it is practicable to identify existing panellists or appoint additional assessors who have the appropriate clearance and expertise, and do not have direct conflicts of interest, to assess the material. Additional assessors would only be appointed for this purpose on the basis that they would also play a full role as assessors, taking part in the sub-panel's calibration exercise and assessing a range of material relevant to their expertise.

c. Where permission is granted, arrangements will be made for the HEI to make the case study available securely to the appropriate panel members/assessors. Only the outline information will be made available to the panel and no details about these case studies will be published.

d. HEIs should allow sufficient time for such case studies to go through the relevant organisation's internal release processes.

Number of case studies in a submission

303. The number of case studies required in each submission will be determined by the number (FTE) of Category A submitted staff returned in the submission, as set out in Table 3. If a submission includes fewer than the required number of case studies, a grade of unclassified will be awarded to each required case study that is not submitted. Submissions may not include more than the required number of case studies.

Table 3: Number of case studies required in submissions

Number of Category A submitted staff submitted (FTE)	Required number of case studies
Up to 19.99	2
20 to 34.99	3
35 to 49.99	4
50 to 64.99	5
65 to 79.99	6

80 to 94.99	7
95 to 109.99	8
110 to 159.99	9
160 or more	10, plus one further case study per additional 50 FTE

304. Submissions will **not** be expected to provide impact case studies that are representative of the spread of research activity across the whole submitted unit. Institutions should select the strongest examples of impact that are underpinned by the submitted unit's excellent research, and should explain within the environment template (REF5b) how the selected case studies relate to the submitted unit's approach to enabling impact from its research.

Eligibility definitions for case studies

305. Each case study must provide details of a specific impact that:

- a. meets the definition of impact for the REF in Annex C
- b. occurred during the period 1 August 2013 to 31 July 2020 (see paragraph 306)
- c. was underpinned by excellent research produced by the submitting unit in the period 1 January 2000 to 31 December 2020 (see paragraphs 311 to 313).

306. Case studies must describe impacts that occurred specifically within the period 1 August 2013 to 31 July 2020. The impacts may have been at any stage of development or maturity during this period, so long as some effect, change or benefit meeting the definition of impact at Annex C took place during that period. This may include, for example, impacts at an early stage, or impacts that may have started prior to 1 August 2013 but continued into the period 1 August 2013 to 31 July 2020. Case studies will be assessed in terms of the reach and significance of the impact that occurred only during the period 1 August 2013 to 31 July 2020, and not in terms of any impact prior to this period or potential future or anticipated impact after this period.

307. More than one submitted unit (within the same HEI or in different HEIs) may include the same impact within their respective case studies, so long as **each** submitted unit produced excellent research that made a distinct and material contribution to the impact.

Impact case studies continued from REF 2014

308. All impact case studies submitted in REF 2021 must meet the same eligibility criteria, including the length of the window for underpinning research and the

assessment period for the impact described (see paragraph 305). Where they meet this eligibility criteria, case studies continued from examples submitted in 2014 will be eligible for submission in REF 2021

309. Submitting units will be required to identify continued case studies in the case study template. This information will be made available to sub-panels and will be used by the funding bodies in post-assessment evaluations. The 'Panel criteria' (paragraphs 281 to 284) sets out further information about the main panels' expectations in relation to receiving continued case studies.

310. Case studies will be considered to be continued if:

- a. the body of underpinning research is the same as described in a 2014 case study. This should not be understood solely in relation to the referenced outputs, but means that the continued case study does not describe any new research having taken place since the previous case study that has made a distinct and material contribution to the impact **and**
- b. there is significant overlap in the impact described, so that the impact types and beneficiaries are broadly the same as described in the 2014 case study.

Underpinning research

311. To be eligible for assessment as an impact, the impact described in a case study must have been underpinned by excellent research produced by the submitting unit, during the period 1 January 2000 to 31 December 2020 (see footnote 18). Underpinning research may be a body of work produced over a number of years or may be the output(s) of a particular project. It may be produced by one or more individuals.

312. Each case study must describe the underpinning research, include references to one or more key research outputs, provide evidence of the quality of that research, and explain how that research underpinned or contributed to the impact. Further guidance on the information required in case studies is at Annex G. The following definitions apply:

- a. 'Research produced by the submitting unit in the period 1 January 2000 to 31 December 2020' means that staff carried out research within the scope of the relevant UOA descriptor, while working in the submitting HEI (even if those staff have since left). This research must be evidenced by outputs referenced in the case study, published between 1 January 2000 and 31 December 2020, while working in the submitting HEI. The staff may, but need not, have been selected for a previous RAE or REF 2014. The research outputs may, but need not, have been submitted to a previous RAE or REF 2014.

- i. Research by staff 'working in the submitting HEI' may include research undertaken by staff who would be considered 'Category C', on the basis that their research was clearly focused in the submitting HEI. The individuals need not be working in the submitting HEI on the census date but must have been at the time they carried out the underpinning research.
- ii. Research undertaken solely by research students is **not** considered as having been carried out by staff while working in the submitting HEI.
- iii. If staff employed by the submitting HEI on the census date conducted all of the research underpinning an impact before joining the institution, the submitting HEI may not submit the impact of this research. (In this case, the institution where the staff conducted the research may submit the impact.)

b. 'Excellent research' means that the quality of the research is at least equivalent to two star: 'quality that is recognised internationally in terms of originality, significance and rigour'. Each case study must include references to one or more research outputs that best illustrate the research underpinning the impact and were produced by the submitting HEI, and evidence of the quality of the research as requested in the 'Panel criteria'. Panels will consider the evidence of research quality, and may review outputs referenced in a case study. A panel will grade a case study as unclassified if it judges that the underpinning research as a whole was not of at least two-star quality.

c. 'Underpinned by' means that the research made a distinct and material contribution to the impact taking place, such that the impact would not have occurred or would have been significantly reduced without the contribution of that research. The relationship between research and impact can be indirect or non-linear. Each case study must explain how (through what means) the research led to or contributed to the impact, and include appropriate sources of information external to the HEI to corroborate these claims (see Annex G). Where the panel judges that the submitted unit's research did not make a distinct and material contribution to the impact, the case study will be graded as unclassified.

313. Where a submitting HEI is the result of a merger between former HEIs, the submitting HEI can submit impacts from the research undertaken by the former, now merged, HEIs.

314. Where a submitting HEI has taken over a research unit – whether from another HEI or from elsewhere – the submitting HEI can submit impacts from research that was undertaken by the absorbed unit before it became part of the submitting HEI, with prior agreement from the relevant UK funding body.

315. Prior agreement must be sought by providing details of the nature of the research unit and of when and how it became part of the submitting HEI, to info@ref.ac.uk, no

later than 30 June 2020. The REF team will liaise with the relevant funding body and communicate the decision to the HEI.

316. In each case, the funding bodies will take into consideration whether a distinct unit was absorbed by the submitting HEI in its entirety, and the extent to which there has been genuine structural change.

317. For clarity, these arrangements do not apply to impacts from research carried out by individuals before they joined the submitting HEI. See paragraph 312.a.iii.

318. There are many ways in which research may have underpinned impact, including but not limited to:

- a. Research that contributed directly or indirectly to an impact. For example, a submitted unit's research may have informed research in another submitted unit (whether in the same or another HEI), which in turn led to an impact. In this case, both submitted units may show that their research made a distinct and material contribution to the impact.
- b. Bodies of work produced over a number of years, or in the output(s) of a particular project, conducted by one or more individuals, teams or groups, within one or more submitted units that led to or underpinned an impact. More than one submitted unit (within the same HEI or in different HEIs) may include the same impact within their respective case studies, so long as each submitted unit produced excellent research that made a distinct and material contribution to the impact.
- c. Impacts on, for example, public awareness, attitudes, understanding or behaviour that arose from engaging the public with research. In these cases, the submitting unit must show that the engagement activity was, at least in part, based on the submitted unit's research and drew materially and distinctly upon it. Further guidance and examples are set out in the 'Panel criteria', Annex A.
- d. Researchers that impacted on others through the provision of professional advice or expert testimony. In such a case, the submitting unit must show that the researcher's appointment to their advisory role, or the specific advice given, was at least in part based on the submitted unit's research and drew materially and distinctly upon it.
- e. Research that led to impact through its deliberate exploitation by the HEI or through its exploitation by others. The submitting HEI need not have been involved in exploiting the research, but must show that its research made a distinct and material contribution to the impact.

319. Institutions must submit impact case studies in the appropriate UOAs. Impacts from research undertaken at the submitting HEI may be submitted either in the REF UOA that relates to the underpinning research, or, if this differs, to the REF UOA that relates to the staff who conducted the research.

Case study data requirements (form REF3)

320. Submitting units are required to submit case studies using a generic template. The template, annotated with guidance, is at Annex G. The template has been developed following REF 2014 with the addition of the following required fields to enable submitting units in all UOAs to provide key information about the eligibility of the case study:

- institution
- unit of assessment
- title of case study
- period when the underpinning research was undertaken
- names and roles of staff conducting the underpinning research from the submitting unit ('role' at time when the underpinning research was conducted)
- period when staff involved in the underpinning research were employed by the submitting HEI
- period when the impact occurred
- whether the case study is continued from a case study submitted in 2014.

321. The remaining sections of the template will allow HEIs to clearly explain and demonstrate the impact of their research through a narrative that includes indicators and evidence as appropriate to the case being made, and in a format that is suitable for panels to assess them.

322. Where applicable, submitting units are required to complete the following additional contextual data fields:

- name(s) of funder(s)
- name(s) of funding programme(s)
- grant number(s)
- amount of grant (in GBP (Sterling))
- ORCID for each named researcher
- name(s) of formal partner(s)
- country/countries where the impact occurred.

The information provided in these fields will facilitate the use and analysis of case studies following the end of the exercise, rather than in the assessment process itself, and the data will not be routinely provided to the panels.

323. Institutions are required to provide to the REF team the corroborating evidence for submitted impact case studies by 29 January 2021. We will collect, store and process all personal data submitted by HEIs to the REF in accordance with current data protection legislation – the General Data Protection Regulation (EU) 2016/679 and the Data Protection Act 2018. The evidence will be held by the REF team on the secure submission system and will not be routinely provided to the sub-panels. Where requested, information will be shared via a secure system with panel chairs, members, assessors, panel secretariat and observers, who are all bound by confidentiality arrangements. The information will be used to corroborate the claims made in the impact case studies and will not be anonymised. Personal data will be retained until the end of the assessment period and will be destroyed in December 2021.

324. The onus is on submitting units to provide appropriate evidence within each case study of the particular impact claimed. The REF panels provide guidance in the 'Panel criteria' about the kinds of evidence and indicators of impact they would consider appropriate to research in their respective UOAs, but this guidance is not exhaustive.

325. If the corroborating evidence is a pre-existing document not available in English, the HEI should return the document in its original language and state what language it is in. The REF team will use the expertise of specialist advisers with the relevant language skills, if corroboration through these sources is required.

326. Corroborating contacts should be given only for people who the REF team can communicate with in English.

327. The information provided in an impact case study may be presented in any form the institution considers to be appropriate. This may include tables and non-text content, so long as the guidance on maximum page limits and minimum font size, line spacing and margin widths are adhered to.

328. Institutions may include URLs in REF3 only for the purpose of verifying or corroborating claims made in the submission. Panels will not follow URLs to access additional evidence or information to supplement the submission.

Annex C: Definitions of research and impact for the REF

Definition of research for the REF

1. For the purposes of the REF, research is defined as a process of investigation leading to new insights, effectively shared.
2. It **includes** work of direct relevance to the needs of commerce, industry, culture, society, and to the public and voluntary sectors; scholarship²¹; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It **excludes** routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also **excludes** the development of teaching materials that do not embody original research.
3. It **includes** research that is published, disseminated or made publicly available in the form of assessable research outputs, and confidential reports (as defined at paragraph 251).

Definition of impact for the REF

4. For the purposes of the REF, impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia (as set out in paragraph 7).
5. Impact **includes**, but is not limited to, an effect on, change or benefit to:
 - the activity, attitude, awareness, behaviour, capacity, opportunity, performance, policy, practice, process or understanding
 - of an audience, beneficiary, community, constituency, organisation or individuals
 - in any geographic location whether locally, regionally, nationally or internationally.
6. Impact **includes** the reduction or prevention of harm, risk, cost or other negative effects.
7. For the purposes of the impact element of the REF:

²¹ Scholarship for the REF is defined as the creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases.

- a. Impacts on research or the advancement of academic knowledge within the HE sector (whether in the UK or internationally) are **excluded**. (The submitted unit's contribution to academic research and knowledge is assessed within the 'outputs' and 'environment' elements of REF.)
- b. Impacts on students, teaching or other activities both within and beyond the submitting HEI are **included** (see the 'Panel criteria', paragraphs 290 to 291).

Annex G: Impact case study template and guidance

1. This annex provides the template for impact case studies, annotated with guidance about the information required in each of its sections. This should be read alongside the definitions and eligibility criteria for impact case studies in Part 3, Section 3 of the main document, and alongside the panel criteria. The case study template for use in preparing submissions will be provided in Word, along with templates for REF5a and REF5b, on the REF submission system.
2. Each case study should include sufficiently clear and detailed information to enable panels to make judgements based on the information it contains, without making inferences, gathering additional material, following up references or relying on members' prior knowledge. References to other sources of information will be used for verification purposes only, not as a means for panels to gather further information to inform judgements.
3. The information fields in Section A are mandatory and will be made available to panels.
4. The additional contextual data fields are mandatory, where applicable. They will be entered separately and will **not** be routinely provided to panels. They will not count towards the page limit.
5. Each completed case study template will be limited to **five pages** in length (see Annex F). Within the annotated template below, indicative guidance is provided about the expected maximum length limit of each section, but institutions will have flexibility to exceed these so long as the case study as a whole remains no longer than **five pages** and the guidance on formatting at Annex F is adhered to.
6. When presenting numeric data, submitting units are strongly encouraged to adhere to the guidelines set out in the 'Guidelines for standardising quantitative indicators of impact within REF case studies' (available at www.ref.ac.uk, under Guidance). This will enable more effective analysis of the data in post-assessment evaluations.

Section A The fields in this section are mandatory.
Institution:
Unit of Assessment:
Title of case study:
Period when the underpinning research was undertaken:
Period when staff involved in the underpinning research were employed by the submitting HEI:

Period when the impact occurred:
Is this case study continued from a case study submitted in 2014? Y/N The definition of continued case studies is provided in the guidance on submissions, paragraph 310.
Section B
1. Summary of the impact (indicative maximum 100 words) This section should briefly state what specific impact is being described in the case study.
2. Underpinning research (indicative maximum 500 words) This section should outline the key research insights or findings that underpinned the impact, and provide details of what research was undertaken, when, and by whom. This research may be a body of work produced over a number of years or may be the output(s) of a particular project. References to specific research outputs that embody the research described in this section, and evidence of its quality, should be provided in the next section. Details of the following should be provided in this section: <ul style="list-style-type: none"> • The nature of the research insights or findings which relate to the impact claimed in the case study. • An outline of what the underpinning research produced by the submitted unit was (this may relate to one or more research outputs, projects or programmes). • Dates of when it was carried out. • Names of the key researchers and what positions they held at the institution at the time of the research (where researchers joined or left the HEI during this time, these dates must also be stated). • Any relevant key contextual information about this area of research.
3. References to the research (indicative maximum of six references) This section should provide references to key outputs from the research described in the previous section, and evidence about the quality of the research. Underpinning research outputs may include the full range of types listed in the output glossary (Annex K) and are not limited to printed academic work. All forms of output cited as underpinning research will be considered equitably, with no distinction being made between the types of output referenced. Include the following details for each cited output: <ul style="list-style-type: none"> • author(s) • title • year of publication • type of output and other relevant details required to identify the output (for example, DOI, journal title and issue)

- details to enable the panel to gain access to the output, if required (for example, a DOI or URL), or stating that the output is listed in REF2 or can be supplied by the HEI on request.

All outputs cited in this section must be capable of being made available to panels. If they are not available in the public domain or listed in REF2, the HEI must be able to provide them if requested by the REF team.

Evidence of the quality of the research must also be provided in this section. Guidance on this is provided in the 'Panel criteria'. Where panels request details of key research grants or end of grant reports, the following should be provided:

- who the grant was awarded to
- the grant title
- sponsor
- period of the grant (with dates)
- value of the grant.

4. Details of the impact (indicative maximum 750 words)

This section should provide a narrative, with supporting evidence, to explain:

- how the research underpinned (made a distinct and material contribution to) the impact;
- the nature and extent of the impact.

The following should be provided:

- A clear explanation of the process or means through which the research led to, underpinned or made a contribution to the impact (for example, how it was disseminated, how it came to influence users or beneficiaries, or how it came to be exploited, taken up or applied).
- Where the submitted unit's research was part of a wider body of research that contributed to the impact (for example, where there has been research collaboration with other institutions), the case study should specify the particular contribution of the submitted unit's research and acknowledge other key research contributions.
- Details of the beneficiaries – who or what community, constituency or organisation has benefitted, been affected or impacted on.
- Details of the nature of the impact – how they have benefitted, been affected or impacted on.
- Evidence or indicators of the extent of the impact described, as appropriate to the case being made.
- Dates of when these impacts occurred.

5. Sources to corroborate the impact (indicative maximum of ten references)

This section should list sources external to the submitting HEI that could, if requested by panels, provide corroboration of specific claims made in the case study. Sources provided in this section should not be a substitute for providing clear evidence of impact in Section B4; the information in this section will be used for audit purposes only. The 'Panel criteria', Annex A, Table 1 provides an illustrative list of indicators of impact.

This section should list sufficient sources that could corroborate key claims made about the impact of the unit's research. These could include, as appropriate to the case study, the following external sources of corroboration (stating which claim each source provides corroboration for):

- Reports, reviews, web links or other documented sources of information in the public domain.
- Confidential reports or documents (if listed, these must be submitted to the REF team by 29 January 2021).
- Individual users/beneficiaries who could be contacted by the REF team to corroborate claims*.
- Factual statements already provided to the HEI by key users/beneficiaries, that corroborate specific claims made in the case study (if listed, these must be submitted to the REF team by 29 January 2021)*

* Where the sources are individuals who could be contacted or have provided factual statements to the HEI, the submitted case study should state only the organisation (and, if appropriate, the position) of the individuals concerned, and which claim(s) they can corroborate. Their personal details (name, position, contact details) must be entered separately on the REF submission system and not on REF3. Details of a maximum of five individuals may be entered for each case study; these data will not be published as part of the submission.

Additional contextual data

The fields in this section are mandatory, where applicable. The information will be used in post-assessment evaluations and will **not** be routinely provided to panels.

Name(s) of funder(s):

Name(s) of funding programme(s):

Grant number(s):

Amount of grant (in GBP):

ORCID for each named researcher:

Name(s) of formal partner(s):

Country/countries where the impact occurred:**

** Where the impact occurred specifically within one country that is part of the UK (for example, Wales), this country rather than 'UK' should be specified in the country/countries field.

REF 2021 CONSULTATION ON THE DRAFT PANEL CRITERIA AND WORKING METHODS

REF 2018/02

JULY 2018

IMPACT SECTIONS ONLY

Please note, these pages have been extracted from the Consultation on the draft panel criteria and working methods. They relate to the criteria for impact case studies. The full document is available here:

https://www.ref.ac.uk/media/ref,2021/downloads/Consultation%20on%20the%20draft%20panel%20criteria%20and%20working%20methods%20REF%202018_02.pdf

Section 3: Impact

Introduction

271. This section should be read alongside 'Guidance on submissions' Part 3, Section 3, which sets out the generic definition of impact for the REF, the requirements for submitting impact case studies, the associated eligibility guidelines, and the generic assessment criteria and level definitions. The sub-panels will assess impact in accordance with this framework.

272. The main and sub-panels have determined that no one model or relationship will be considered intrinsically preferable, and each impact case study will be assessed on its own merits.

273. In drawing up their assessment criteria and the advice to submitting institutions, the main panels strongly advise institutions that the guidance provided here, particularly regarding examples of impacts and evidence and/or indicators for those impacts, **should not be read as exhaustive, prescriptive or limiting**. They also recognise that the examples provided in Table 1 (Annex A) may

fit under headings other than those to which they have been presented. The main panels wish to encourage the submission of a broad range of types of impact, as evidence of the strength and diversity of the impact of research across all disciplines, and anticipate that extremely strong impact case studies will be submitted which do not relate to any of the examples provided in the guidance. The examples are offered to assist institutions, not to constrain them.

274. The panels also acknowledge that there are multiple and diverse pathways through which research achieves impact. Impact may be the result of individual or collective research (or a combination of these) within or between a range of organisations, within higher education and beyond, including collaboration beyond the UK. The associated impact may be achieved by a variety of possible models: from individuals, to inter-institutional groups, to groups including both academic and non-academic participants. The relationship between research and impact can be indirect or non-linear. The impact of research may be foreseen or unforeseen. It can emerge as an end product, but can also be demonstrated during the research process. Impact takes place through a wide variety of mechanisms. It may effect change or enrichment for local, national or international communities, groups or individuals. Consequently, public engagement may be an important feature of many case studies, as the mechanism by which the impact claimed has been achieved.

Impact criteria

275. The sub-panels will assess the 'reach and significance' of impacts on the economy, society and/or culture that were underpinned by excellent research conducted in the submitted unit, according to the generic criteria and level definitions. This section provides a descriptive account of how the sub-panels will interpret and apply the generic criteria for assessing impact.

276. **Reach** will be understood as the extent and/or diversity of the beneficiaries of the impact, as relevant to the nature of the impact.

277. **Significance** will be understood as the degree to which the impact has enabled, enriched, influenced, informed or changed the performance, policies, practices, products, services, understanding, awareness or well-being of the beneficiaries.

278. The sub-panels will make an overall judgement about the reach and significance of impacts, rather than assessing each criterion separately. While case studies need to demonstrate both reach and significance, the balance between them may vary at all quality levels. The sub-panels will exercise their judgement without privileging or disadvantaging either reach or significance.

279. Reach will be assessed in terms of the extent to which the potential constituencies, number or groups of beneficiaries have been affected; it will not be assessed in geographic terms, nor in terms of absolute numbers of beneficiaries. The criteria will be applied wherever the impact has been felt, regardless of geography or location, and whether in the UK or abroad.

280. HEIs may submit case studies describing impacts at any stage of development or maturity. However, the assessment will be solely on the impact achieved during the assessment period,

regardless of its stage of maturity. No account will be taken of anticipated or future potential impact, nor of impact that occurred outside the assessment period.

Continued impact case studies

281. As set out in the 'Guidance on submissions' (paragraphs 308 to 310), case studies continued from examples submitted in 2014 will be eligible for submission in REF 2021. All impact case studies submitted in REF 2021 must meet the same eligibility criteria, including the length of the window for underpinning research (1 January 2000 to 31 December 2020) and the assessment period (1 August 2013 to 31 July 2020) for the impact described. The main panels set out below their expectations in relation to receiving continued case studies in the assessment.

Main Panel A supplementary criteria – continued case studies

282. Main Panel A encourages the submission of new case studies, which will reflect the acknowledged vitality and vibrancy of the UK HEIs' biomedical, health and life sciences sector. In addition, those continued case studies that describe significant and developing impact within the current assessment period will be considered, recognising the long lead-in time for certain biomedical and life sciences impacts.

Main Panels B, C and D supplementary criteria – continued case studies

283. Main Panels B, C and D encourage submitting units to submit their strongest case studies irrespective of whether they are new examples or represent continuing impact from those submitted in REF 2014.

284. The sub-panels will assess each case study on merit and do not wish to receive information on how any continued case study relates to that submitted to REF 2014. If any such information is provided, the sub-panels will not take it into account during the assessment process.

Range of impacts

285. The main panels welcome case studies that describe any type(s) of impact which fulfil the definition of impact for REF (see 'Guidance on submissions', paragraphs 291 to 296). They acknowledge that impact may take many forms and occur in a wide range of spheres. They welcome case studies which describe impacts that have provided benefits to one or more areas of the economy, society, culture, public policy and services, health, production, environment, international development or quality of life. The panels will also welcome impacts that describe changes or benefits resulting from research that leads to a decision **not** to undertake a particular course of

action. Sub-panels recognise the value of co-produced impact and expect institutions to ensure case studies of this nature clearly acknowledge the work of partner organisations.

286. Impacts can be manifested in a wide variety of ways including, but **not** limited to: the many types of beneficiary (individuals, organisations, communities, industry, regions and other entities); impacts on products, processes, behaviours, policies, practices, understanding; and avoidance of harm or the waste of resources in the widest sense. Impact of any type may be local, regional, national or international, in any part of the world.

287. A single body of research work may underpin impact which provides benefits in more than one area. An impact case study may therefore describe more than one type of impact arising from such bodies of work; for example, a new drug can generate both health and economic impact, a new energy technology can generate both environmental and economic impact, and a new exhibition or performance can generate cultural, economic and social benefits.

288. Engaging the public with the submitting unit's research (for example, through citizen science, patient and public involvement in health, or through public and community engagement), is an activity that may lead to impact. Sub-panels will welcome, and assess equitably, case studies describing impacts achieved through public engagement, either as the main impact described or as one facet of a wider range of impacts. Panels expect that case studies based on public engagement will demonstrate both reach (e.g. through audience or participant figures) and significance, and will take both into account when assessing the impacts. Examples of impacts arising from public engagement can be found as part of Table 1 (Annex A).

289. Examples are provided in Table 1 (Annex A) as a guide to the range of potential impacts that may be eligible as case studies. The list is not exhaustive or exclusive, and does not rank examples in any way. In making use of this to assist with the preparation of submissions, HEIs should note that:

- a. The list of types and examples of impacts is **not** intended to be exhaustive, and some examples are relevant to more than one type of impact. Sub-panels wish to encourage HEIs to submit case studies describing any impacts that meet the generic definition in 'Guidance on submissions', paragraphs 291 to 296.
- b. HEIs are **not** expected to align submitted case studies specifically with the particular types of impact defined in the list.

290. Impacts on or through teaching within and beyond the submitting institution may be submitted and examples are included in Table 1 (Annex A). Where impact on teaching within the submitting unit's own institution is included in a case study, sub-panels will give consideration to the following:

- the *reach* of the impact, that is the extent or diversity of the communities affected by the change to teaching practice

- the *significance* of the impact, that is, the extent to which teaching practice was enriched, influenced or changed at the organisation(s) involved and/or the extent to which individuals experiencing changed teaching practice were enriched, influenced or changed.

291. Sub-panels expect that impact on teaching within the submitting unit's own institution may most convincingly form a component of a wider case study that also includes impacts beyond the institution.

Main Panel C supplementary criteria – public scrutiny

292. The main panel particularly acknowledges that there may be impacts arising from research within Main Panel C disciplines which take forms such as holding public or private bodies to account or subjecting proposed changes in society, public policy, business practices, and so on to public scrutiny. Such holding to account or public scrutiny may have had the effect of a proposed change not taking place; there may be circumstances in which this of itself is claimed as an impact. There may also be examples of research findings having been communicated to, but not necessarily acted upon, by the intended audience, but which nevertheless make a contribution to critical public debate around policy, social or business issues. The main panel also recognises that research findings may generate critique or dissent, which itself leads to impact(s). For example, research may find that a government approach to a particular social or economic issue is not delivering its objectives, which leads to the approach being questioned or modified.

Evidence of impact

293. Each case study must provide a clear and coherent narrative that includes an account of who or what audiences, constituencies, groups, organisations, places, publics, sectors and so on, have benefited, been influenced, or acted upon. The sub-panels will use their expert judgement regarding the integrity, coherence and clarity of the narrative of each case study, but will expect the key claims made in the narrative to be supported by evidence and indicators.

294. In assessing impact case studies, sub-panels will consider both the evidence linking excellent research and bodies of work within the submitting unit to the impact(s) claimed, recognising that this relationship can be indirect or non-linear, and the evidence of the reach and significance of the impact. Within their narrative account in the case study, submitting units should provide the indicators and evidence most appropriate to support the impact(s) claimed. Where using quantitative indicators, institutions should follow the guidance on their standardised presentation, available at www.ref.ac.uk, under Guidance.

295. Submitting units should focus on providing evidence of the impacts achieved, as distinct from evidence of dissemination and uptake, in order to demonstrate both the reach and significance of the impact(s) claimed (see paragraph 278). For example, attendance figures at an event may illustrate the pathway to a change in understanding or awareness and provide an indication of the reach of

the impact. However, on their own, they would not serve as evidence of the significance of the impact, which might be demonstrated, for example, through participant feedback or critical reviews.

296. Submitting units should ensure that, so far as possible, any evidence cited is independently verifiable. Verifiable sources for key evidence and indicators should be provided in section 5 of the impact case study template and the relevant evidence provided to the REF team as set out in the 'Guidance on submissions' Part 3, Section 3.

297. The main panels recognise that some evidence in case studies may be of a confidential or sensitive nature. The arrangements for submitting and assessing case studies that include such material are set out in 'Guidance on submissions', paragraphs 301 to 302.

298. The examples in Table 1 (Annex A) provide a guide to potential types of evidence or indicators that may be most relevant to each of the broad areas of impact described in Table 1. However, institutions should note that:

- This is not intended to be exhaustive.
- Some indicators may be relevant to more than one type of impact.
- Sub-panels will consider any relevant, verifiable evidence.

Main Panel A supplementary criteria – evidence of impact

299. The sub-panels will consider any appropriate evidence that is verifiable. Wherever possible, quantitative indicators should be included. Verifiable sources for key evidence and indicators should be provided in section 5 of the impact case study template. The sub-panels do not welcome testimonials offering individuals' opinions as evidence of impact; however, factual statements from external, non-academic organisations would be acceptable as sources to corroborate claims made in a case study.

Main Panel B supplementary criteria – evidence of impact

300. Evidence may take many different forms depending on type of impact(s) reported. The sub-panels welcome both evidence-based quantitative and qualitative indicators as appropriate.

301. Sub-panels recognise the varying degrees to which evidence and indicator information may be available to HEIs. Where testimony is cited, it should be made clear whether the source is a participant in the process of impact delivery (and the degree to which this is the case), or is a reporter on the process.

Main Panel C supplementary criteria – evidence of impact

302. The sub-panels anticipate that impact case studies will refer to a wide range of types of evidence, including qualitative, quantitative and tangible or material evidence, as appropriate. Individual case studies may draw on a variety of forms of evidence and indicators. The sub-panels do not wish to pre-judge forms of evidence. They encourage submitting units to use evidence most appropriate to the impact claimed. A diversity of evidence is welcome and no type of evidence is inherently preferred over another; judgements will be based on the extent to which the cited evidence provides a convincing link between the underpinning research or bodies of work and the impact claimed, and convincing evidence of the reach and significance of the impact.

Main Panel D supplementary criteria – evidence of impact

303. Sub-panels will not privilege any type of evidence above another, but will expect to see evidence focused on substantiating the impact(s) claimed. Where testimonials are used to this effect, sub-panels will consider the extent to which the testimonial demonstrates the significance of the claims.

304. Where corroborating evidence is reviewed as a consequence of audit, it will be used solely to verify the claims made about the impact. Additional information included in such evidence will not be used to supplement or strengthen the impact case study narrative.

Underpinning research

305. Sub-panels need to be assured that the impact claimed is based on research at least equivalent to two star, as defined in 'Guidance on submissions', Annex A. Submitting units are required to identify the underpinning research and provide in section 3 up to six key references to research produced by the submitting unit in the period 1 January 2000 to 31 December 2020 that underpins the impact described in the case study. The sub-panels will not expect each referenced item to meet the quality threshold, but will wish to be satisfied that the research as a whole was of at least two-star quality.

306. Underpinning research may be a body of work produced over a number of years or may be the output(s) of a particular project. It may be produced by one or more individuals. Underpinning research outputs may include the full range of types listed in the output glossary ('Guidance on submissions', Annex K) and are not limited to printed academic work. They may include, but are not limited to: new materials, devices, images, artefacts, products and buildings; confidential or technical reports; intellectual property, whether in patents or other forms; performances, exhibits or events;

work published in non-print media. All forms of output cited as underpinning research will be considered on an equal basis, with no distinction being made between the types of output referenced.

307. Provided the sub-panel is satisfied that the quality threshold has been met, the quality of the underpinning research will not be taken into consideration as part of the assessment of the reach and significance of the claimed impact.

308. Underpinning research referenced in a case study may also be included in a submission as an output (listed in REF2), without disadvantage. In these situations, the assessment of the impact case study will have no bearing on the assessment of the quality of the output. The assessment of the quality of the output may inform the assessment of the case study, only in terms of assuring the threshold for underpinning research quality.

309. The institution submitting a case study must have produced research which has made a distinct and material contribution to the impact described in the case study. Sub-panels will expect to see clear narrative evidence of this in the case study. The panels recognise that several groups, institutions or organisations may have made distinct research contributions to a given impact, and strongly advise submitting institutions to ensure that both their own contribution is specified clearly and that the contributions of others are acknowledged.

310. There will be many cases where a researcher has moved to a different institution during the period in which a body of research underpinning a case study was produced. Where this is the case, the submitting institution should make clear that the research undertaken during the period the researcher spent at that institution made a material and distinct contribution to the impact claimed.

Main Panels A and B supplementary criteria – indicators of quality for underpinning research

311. Case studies must include references to one or more key research outputs that identify the research produced by the submitted unit that underpinned the impact, and must provide evidence of the quality of the research. Case studies should include references to any REF-eligible output(s) as defined in the output glossary that will best enable the panels to determine that the two-star threshold has been met. They should include additional indicators, as appropriate, of the quality of the underpinning research, for example evidence of peer-reviewed funding. The sub-panels will use the information provided in case studies, and may review research and outputs referenced in section 3, in order to be assured that the quality threshold has been met.

Main Panels C and D supplementary criteria – indicators of quality for underpinning research

312. Submitting units must ensure that each case study fulfils the threshold criterion on research quality (see 'Guidance on submissions', paragraph 312.b). A sample of the research should be cited that is sufficient to identify clearly the body of work, or individual project that underpins the claimed impact.

313. Main Panels C and D wish to emphasise that the term 'underpinning' does not imply a specific temporal or directly causal relationship to the associated impact and recognise that in some cases the research associated with the impact may be carried out at the same time as the impact, and that the nature of the relationship between the research and the impact may be complex and non-linear.

314. Sub-panels do not expect to review the underpinning research output(s) as a matter of course to establish that the threshold has been met. The submitting institution should aim where possible to provide evidence of this quality level. Some of the indicators of such quality might be (but are not restricted to):

- research outputs which have been through a rigorous peer-review process
- end of grant reports referencing a high-quality grading
- favourable reviews of outputs from authoritative sources
- prestigious prizes or awards made to individual research outputs cited in the underpinning research
- evidence that an output is a reference point for further research beyond the original institution.

315. Not all indicators of quality will apply to all forms of research output. Only where sub-panels are not persuaded of the quality of the underpinning research from evidence such as that listed above will they review the item in question.

Preparing impact case studies

316. The sub-panels recommend that institutions refer to the following list of characteristics when preparing case studies:

- All the material required to make a judgement should be included in the case study template (REF3) – no further reading should be required. URLs should only be included for the

purpose of verifying or corroborating claims made in the submission. Panels will not follow URLs to access additional evidence or information to supplement the submission.

- There should be a clear definition of the beneficiaries, and what has changed as a result of the research.
- The narrative should be coherent, clearly explaining the relationship between the researchers, the underpinning research, the impact, and the nature of the changes or benefits arising (noting that narratives differ according to the areas of impact claimed).
- Indicators used should be relevant, contextualised and precise in support of the case study, and the evidence should be verifiable, focused and concise.
- There should be a brief explanation of what is original or distinctive about the research insights that contributed to the impact.
- Specific and appropriate sources of corroborating information, independent of the submitting HEI, should be supplied.
- Where the research was carried out in collaboration with other HEIs, or was part of a wider body of research, this should be acknowledged and the specific contribution to the impact of the submitting unit's research clearly described. In such cases, units (whether within or across HEIs) may provide common descriptions of the impact arising, where they so wish.

Annex A: Examples of impacts and indicators

1. Table 1 is intended to illustrate the wide variety of areas in which impact from research across the panels may be found to have a positive influence on the quality of life of individuals and communities locally, nationally and internationally. **These are indicative only**, and in practice much of the impact will cross boundaries between them or go beyond them. Case studies are not expected to be classified in this way by submitting units. A searchable database of impact case studies submitted to REF 2014 can be found here: <http://impact.ref.ac.uk/CaseStudies/Search1.aspx>.

2. The 'indicators' are listed independently of the 'types of impact' and are not intended to link to a specific impact example listed. The list provides illustrative examples of indicators of both reach and significance. The panels set out their approach to assessing impact against these criteria in Part 3, Section 3, paragraphs 276 to 279.

3. Examples of impact achieved **through** public engagement are integrated into the different areas of impact in Table 1. More detailed advice on achieving and evidencing impact through public engagement can be found on the website of the National Coordinating Centre for Public Engagement: <http://www.publicengagement.ac.uk/>.

4. Examples are also provided of impact evaluation frameworks used outside higher education. Impact partners may also have their own evaluation frameworks that could be drawn upon to evidence impact.

Table 1

Areas of impact	Types of impacts	Indicators of reach and significance
<p>Impacts on health, wellbeing and animal welfare</p> <p>Impacts where the beneficiaries are individuals and groups (both human and animals) whose health outcomes have been improved, whose quality of life has</p>	<ul style="list-style-type: none"> • Outcomes for patients or related groups have improved. • Public health or wellbeing has improved. 	<ul style="list-style-type: none"> • Measures of improved clinical outcomes, public behaviour or health services (lives saved, reduced infection rates). • Measures of improved wellbeing.

<p>been enhanced (or potential harm mitigated) or whose rights or interests have been protected or advocated through the application of enhanced healthcare for individuals or public health activities.</p>	<ul style="list-style-type: none"> • Quality of life in a developing country has been improved by new products or processes. • A new clinical or lifestyle intervention (for example, drug, diet, treatment or therapy) has been developed, trialled with patients, related or other groups (for example, prisoners, community samples), and definitive (positive or negative) outcome demonstrated. • Patient health outcomes have improved through, for example, the availability of new drug, treatment or therapy, diagnostic or medical technology, changes to patient care practices, or changes to clinical or healthcare guidelines. • A new diagnostic or clinical technology has been adopted. • Disease prevention or markers of health have been enhanced by research. • Misleading health claims identified by research are not included in food packaging. • Care and educational practices have changed. • Clinical, dietary or healthcare guidelines have changed. • Healthcare training guidelines have changed. 	<ul style="list-style-type: none"> • Evidence from clinical trials. • Measures of improved patient outcomes, public health or health services. • Documented changes to clinical and/or public health guidelines (documented references to research evidence in guidelines). • Evidence of enhancement of patient experience. • Evidence of take-up and use of new or improved products and processes that improve quality of life or animal welfare in developing countries. • Evidence of the number of animals no longer used in research (e.g. per test, drug or laboratory). • Documented changes to animal welfare codes or guidelines.
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	<ul style="list-style-type: none">• Decisions by a health service or regulatory authority (to take, or not to take action) have been informed by research.• Public health and quality of life has been enhanced through, for example, enhanced public awareness of a health risk, enhanced disease prevention or, in developing countries, improved water quality or access to healthcare.• The user experience has improved.• Increased patient involvement in shaping and implementing policy and practice.• Public awareness of a health risk or benefit has been raised.• The control of diseases has changed in developing countries.• Development or adoption of new indicators of health and wellbeing.• Development of policy and practice with regard to medical ethics, health services or social care provision.• Influence on CPD and training standards.• Influence or shaping of relevant legislation.	
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	<ul style="list-style-type: none"> • Influencing policy or practice leading to improved take-up or use of services. • Improved provision or access to services. • Animal health and welfare has been enhanced by research. • Use of animals in drug testing has been reduced or replaced. 	
<p>Impacts on creativity, culture and society</p> <p>Impacts where the beneficiaries may include individuals, groups of individuals, organisations or communities whose behaviours, creative practices, rights, duties and other activity have been influenced.</p>	<ul style="list-style-type: none"> • Collaboration with museum professionals results in enhancements to (cultural) heritage preservation and interpretation, including museum and gallery exhibitions. • Co-production of new cultural artefacts, including for example, films, novels and TV programmes. • Generating new ways of thinking that influence creative practice, its artistic quality or its audience reach. • Inspiring, co-creating and supporting new forms of artistic, literary, linguistic, social, economic, religious, and other expression. 	<p><i>Arts Council England offer guidance and toolkits for evaluating impact:</i></p> <ul style="list-style-type: none"> • https://www.artscouncil.org.uk/quality-metrics/quality-principles • https://www.artscouncil.org.uk/quality-metrics/quality-metrics • https://www.artscouncil.org.uk/measuring-outcomes/generic-learning-outcomes • https://www.artscouncil.org.uk/measuring-outcomes/generic-social-outcomes • Testimonials from creative practitioners, curators, media professionals. • Publication and sales figures both in the UK and overseas, audience or attendance

	<ul style="list-style-type: none"> • Research-led engagement with marginalised, under-engaged and/or diverse audiences leads to increased cultural participation. • Developing stimuli to cultural tourism and contributing to the quality of the tourist experience. • Improvements to legal and other frameworks for securing intellectual property rights. • Increased understanding of local traditions leads to enhanced cultural preservation in developing countries. 	<p>figures (including demographic data where relevant), broadcasting data and other forms of media, download figures, or database and website hits over a sustained period.</p> <ul style="list-style-type: none"> • Evaluative reviews in the media. • Citations in reviews outside academic literature. Independent citations in the media, including in online documents. • Tourism data, including audience figures and visitor numbers at exhibitions, events, performances. • Professional evaluations of exhibitions, performances or other outputs. • Audience/visitor/participant feedback (e.g. through surveys, interviews or focus groups).
<p>Impact on social welfare</p> <p>Impacts where the beneficiaries include individuals, groups of individuals, organisations or communities whose rights, duties, behaviours, opportunities, inclusion, quality of life and other activity have been influenced.</p>	<ul style="list-style-type: none"> • Improved social welfare, equality, social inclusion; improved access to justice and other opportunities (including employment and education). • Engagement with research has enhanced policy and practice for securing poverty alleviation. 	<p><i>A beginner's guide to evaluating social return on investment (SROI) can be found here:</i> http://www.socialvalueuk.org/resource/guidance-on-starting-out-on-sroi-2/.</p> <ul style="list-style-type: none"> • Documented evidence of changes to social policy.

	<ul style="list-style-type: none"> • Influential contributions to campaigns for social, economic political and/or legal change through engagement with civil society groups. • Changes to social policy have been informed by research. • Changes to social policy have led to improved social welfare, equality or social inclusion. • Research has contributed to community regeneration. • Improved social and educational inclusion of marginalised groups in developing countries. • More effective integration of refugees into host communities. • Enhanced understanding of victims' needs in reconciliation processes in post-conflict states. 	<ul style="list-style-type: none"> • Measures of improved social equality, welfare or inclusion. • Citations in campaign literature (e.g. leaflets). • Evidence of public debate in the media or other fora being influenced by the research. • Documented evidence of increased social inclusion (e.g. participation figures). • Testimonials from civil society groups and policymakers.
<p>Impacts on commerce and the economy</p> <p>Impacts where the beneficiaries may include businesses, either new or established, the NHS, private healthcare, agriculture or other types of organisation which undertake activity that may create wealth.</p>	<ul style="list-style-type: none"> • A spin-out or new business has been created, established its viability, or generated revenue or profits. • Contributing to innovation and entrepreneurial activity through the design and delivery of new products or services. 	<ul style="list-style-type: none"> • Evidence of improved cost-effectiveness. • Evidence of service change. • Sales of new products/services. • Business performance measures (for example, turnover/profits, trends in key technical performance measures underlying economic performance).

	<ul style="list-style-type: none"> • Decisions are made not to introduce a new process or product as a result of research. • Social enterprise initiatives have been created. • The costs of treatment or healthcare have changed as a result of research-led changes in practice. • Policies have been introduced which have had an impact on economic growth or incentivising productivity. • Gains in productivity have been realised as a result of research-led changes in practice. • Research helps to stimulate foreign direct investment (FDI). • The performance of an existing business has been improved through the introduction of new, or the improvement of existing, products, processes or services; the adoption of new, updated or enhanced technical standards and/or protocols; or the enhancement of strategy, operations or management practices. • Contributing to economic prosperity via the creative sector including publishing, music, theatre, museums and galleries, film and television, fashion, tourism, and computer games. 	<ul style="list-style-type: none"> • Employment figures. • Licences awarded and brought to market; market authorisation. • Demonstrable collaborations with industry (including knowledge transfer partnerships, and contracts). • Commercial adoption of a new technology, process, knowledge or concept. • Business performance measures, for example, sales, turnover, profits or employment associated with new or improved products, processes or services. • Jobs created or protected. • Investment funding raised from UK and/or non-UK agencies (venture capital/Business Angel, and so on) for start-up businesses and new activities of existing businesses. • Priority shifts in expenditure profiles or quantifiable reallocation of corporate, non-profit or public budgets. • Evidence of critical impact on particular projects, products and processes confirmed
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	<ul style="list-style-type: none"> • Performance has been improved, or new or changed technologies or processes adopted, in companies or other organisations through highly skilled people having taken up specialist roles that draw on their research, or through the provision of consultancy or training that draws on their research. • Potential future losses have been mitigated by improved methods of risk assessment and management in safety or security critical situations. • The strategy, operations or workplace practices of a business have changed. • Improved support for the development of 'small scale' technologies. • Improvements in legal frameworks, regulatory environment or governance of business entities. • Better access to finance opportunities. • Enhanced corporate social responsibility policies. • More effective dispute resolution. • Alternative economic models (such as fair trade) have been developed and adopted. 	<p>by independent authoritative evidence, which should be financial where possible.</p> <ul style="list-style-type: none"> • Evidence of research leading to avoidance of negative outcomes. • Quantitative data relating, for example, to cost-effectiveness or organisational performance. • Tourism data, including audience figures and visitor numbers at exhibitions, events, performances. • Evidence of closing identified skills gaps.
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<p>Impacts on public policy, law and services</p> <p>Impacts where the beneficiaries are usually government, non-governmental organisations (NGOs), charities and public sector organisations and society, either as a whole or groups of individuals in society, through the implementation or non-implementation of policies, systems or reforms.</p>	<ul style="list-style-type: none"> • Policy debate has been stimulated or informed by research evidence, which may have led to confirmation of policy, change in policy direction, implementation or withdrawal of policy. • Policy decisions or changes to legislation, regulations or guidelines have been informed by research evidence. • A policy has been implemented (including those realised through changes to legislation) or the delivery of a public service has changed. • In delivering a public service, a new technology or process has been adopted or an existing technology or process improved. • The quality, accessibility, acceptability or cost-effectiveness of a public service has been improved. • (Sections of) the public have benefited from public service improvements. • Risks to the security of nation states have been reduced. • The work of an NGO, charitable or other organisation has been influenced by the research. 	<ul style="list-style-type: none"> • Documented evidence of use in policy debate (for example, at a parliamentary Select Committee, material produced by NGOs). • Citation in a public discussion, consultation document or judgement. • Evidence of citation in policy, regulatory, strategy, practice or other documents. • Direct citations of research in parliamentary publications such as Hansard, committee reports, evidence submissions, or briefings. • Acknowledgements to researchers on webpages, in reports or briefings. • Evidence of influence on a debate in public policy and practice through membership of or distinctive contributions to expert panels and policy committees or advice to government (at local, national or international level). • Quantitative indicators or statistics on the numbers of attendees or participants at a research event, or website analytics for online briefings.
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	<ul style="list-style-type: none"> • Legislative change, development of legal principle or effect on legal practice. • Research is used by parliamentarians to develop proposals for new legislation through Private Members' Bills, or to assist scrutiny of legislation and inform amendments to other bills such as those introduced by Government. • Research recommendations are taken up by policy makers through membership of a government advisory committee. • Policymakers make use of research-based critical evidence synthesis in developing policy. • Government analysts adopt innovative methodological or approach-based advice from researchers. • Forms of regulation, dispute resolution or access to justice have been influenced. • Research is used to change current processes or services, or identify new services to be provided. • Research into the languages and cultures of minority linguistic, ethnic, religious, immigrant, cultures and communities used by government, NGOs, charities or private sector to understand and respond to their needs. 	<ul style="list-style-type: none"> • Qualitative feedback from participants or attendees at research events. • Data to show close working relationships with Members or staff, for example, the number of meetings held, minutes from these meetings, membership of working groups, co-authoring of publications. • Testimonials from Members, Committees or officials, where available. • Documented evidence of influence on guidelines, legislation, regulation, policy or standards. • Documented evidence of changes to public policy, legislation, regulations or guidelines. • Analysis by third-party organisations of parliamentary proceedings or processes, for example studies of the passage of particular pieces of legislation. • Documented evidence of changes to international development policies. • Evidence of use of process/technology. • Measures of improved public services, including, where appropriate, quantitative information; such information may relate for
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	<ul style="list-style-type: none"> • Research helps to highlight issues of concern to parliamentarians and contributes to new analysis of existing issues. • Research helps parliamentarians and staff to identify inquiry topics, shape the focus of inquiries, inform questioning of witnesses, and underpin recommendations. • Research equips parliamentarians, their staff, and legislative staff with new analytical or technical skills, or refreshes existing ones. • International policy development has been influenced by research. • Allocation and/or distribution of Official Development Assistance (ODA) has been influenced by research. • Policy and practice of international agencies or institutions have been influenced by research. • Research stimulates critical public debate that leads to the non-adoption of policy. 	<p>example to the quality, accessibility or cost-effectiveness of public services.</p> <ul style="list-style-type: none"> • Measures of improved inclusion, welfare or equality. • Satisfaction measures (for example, with services). • Formal partnership agreements or research collaboration with major institutions, NGOs and public bodies. Consultancies to public or other bodies that utilise research expertise. • Evidence of engagement with campaign and pressure groups and other civil organisations (including membership and activities of those organisations and campaigns) as a result of research. • Documented evidence of changes to international development policies. • Measures of improved international equality, food security, welfare or inclusion.
<p>Impacts on production</p> <p>Impacts where the beneficiaries are individuals (including groups of</p>	<ul style="list-style-type: none"> • Production, yields or quality have increased or level of waste has been reduced. 	<ul style="list-style-type: none"> • A new product has been recommended for use or adopted.

<p>individuals) whose production has been enhanced.</p>	<ul style="list-style-type: none"> • Research helps to create routes to international innovation and market impact. • Research leads to improvement in productivity and resource-use efficiency. • Decisions by regulatory authorities have been influenced by research. • Costs of production, including food, have been reduced. • Animal husbandry methods have changed. • Management practices in production businesses have changed. 	<ul style="list-style-type: none"> • Development of a new plant variety or crop protection product which has entered the appropriate national or international regulatory testing system. • Evidence of improved sustainability. • Documented changes to working guidelines. • Documented evidence of improved working practices and/or level of production.
<p>Impacts on practitioners and professional services</p> <p>Impacts where beneficiaries may include organisations or individuals, including service users, involved in the development and/or delivery of professional services and ethics.</p>	<ul style="list-style-type: none"> • Professional standards, guidelines or training have been influenced by research. • Professional methods, ideas or ethics have been influenced by research. • Professionals and organisations are able to adapt to changing cultural values as a result of research. • Contribution to continuing personal and professional development. 	<ul style="list-style-type: none"> • Documented change to professional standards or behaviour. • Evidence of adoption of best practice (for example, by educators or law enforcement personnel). • New or modified professional standards and codes of practice. • New or modified technical standards or protocols.

	<ul style="list-style-type: none"> • Practitioners/professionals/lawyers have used research findings in conducting their work. • Professional bodies and learned societies have used research to define best practice, formulate policy, or to lobby government or other stakeholders. • Workforce planning has been influenced by research. • Educational or pedagogical practices and methods have changed in primary, secondary, further or higher education, within or beyond the submitting unit. • Practices have changed, or new or improved processes have been adopted, in companies or other organisations, through the provision of training or consultancy. • The development of expert systems has been influenced in areas such as medicine, human resources, accounting, and financial services. • The quality, efficiency or productivity of a professional service has improved. • Expert and legal work or forensic methods have been informed by research. 	<ul style="list-style-type: none"> • Documented changes in knowledge, capability or behaviours of individuals benefiting from training. • Evidence of debate among practitioners, leading to developments in attitudes or behaviours. • Literature/web information from practitioners and advisers, including the research findings and how they are applied in practice. • Traceable reference to inclusion of research in national or international industry standards or authoritative guidance. • Traceable references by practitioners to research papers that describe their use and the impact of the research.
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	<ul style="list-style-type: none"> • Law enforcement and security practices have changed. • Cessation of practices shown by research to be ineffective. 	
<p>Impacts on the environment</p> <p>Impacts where the key beneficiaries are the natural, historical and/or built environment, together with societies, individuals or groups of individuals who benefit as a result.</p>	<ul style="list-style-type: none"> • The environment has been improved through the introduction of new product(s), process(es) or service(s); the improvement of existing product(s), process(es) or services; or the enhancement of strategy, operations or management practices. • New methods, models, monitoring or techniques have been developed that have led to changes or benefits. • Policy debate on climate change or the environment has been influenced by research. • Policy debate on the environment, environmental policy decisions or planning decisions have been stimulated or informed by research and research evidence. • Improved design or implementation of environmental policy or regulation. • The management or conservation of natural resources, including energy, water and food, has changed in a developing country. 	<ul style="list-style-type: none"> • Sales of new products, or improvements in existing products, that bring quantifiable environmental benefits. • Verifiable influence on particular projects or processes which bring environmental benefits. • Evidence of generic environmental impact across a sector, confirmed by independent authoritative evidence. • Traceable reference to inclusion of research into government policy papers, legislation and industry guidance. • Traceable reference to the influence of research in planning decision outcomes. • Sales of new products or improvements in existing products that bring quantifiable environmental benefits.

	<ul style="list-style-type: none"> • The management of an environmental risk or hazard has changed. • Changes in environmental or architectural design standards or general practice. • Influence on professional practice or codes. • Changes in practices or policies affecting biodiversity. • The operations of a business or public service have been changed to achieve environmental (green) objectives. • Direct intervention, based on research evidence, has led to a reduction in carbon dioxide or other environmentally damaging emissions. • Increased understanding of the environmental impact of a product or process means that it is not adopted by industry. 	<ul style="list-style-type: none"> • Traceable impacts on particular projects or processes which bring environmental benefits. • Evidence of generic environmental impact across a sector, confirmed by independent authoritative evidence. • Documented case-specific improvements to environment-related issues. • Traceable reference to inclusion of research into government policy papers, legislation and industry guidance. • Traceable reference to impact of research in planning decision outcomes.
<p>Impacts on understanding, learning and participation</p> <p>Impacts where the beneficiaries are individuals, communities and organisations whose awareness, understanding, participation or</p>	<ul style="list-style-type: none"> • Enhanced cultural understanding of issues and phenomena; shaping or informing public attitudes and values. • Public interest and engagement in research has been stimulated through, for example, the enhancement of science education in schools. 	<p><i>Many organisations use the Generic Learning Outcomes (GLO) to evaluate impacts on knowledge and understanding:</i></p> <p>https://www.artscouncil.org.uk/measuring-outcomes/generic-learning-outcomes.</p>

<p>engagement have been enhanced as a result of research.</p>	<ul style="list-style-type: none"> • The awareness, attitudes or understanding of (sections of) the public have been informed, and their ability to make informed decisions on issues improved, by engaging them with research. • Public or political debate has been shaped or informed by research; this may include activity that has challenged established norms, modes of thought or practices. • Contributing to processes of commemoration, memorialisation and reconciliation. • Contributing to a wider public understanding of basic standards of wellbeing and human rights conceptions. • Contributing to widening public access to and participation in the political process. • Professionals and organisations have adapted to changing cultural values. • Research has challenged conventional wisdom, stimulating debate among stakeholders. • Increased understanding of gender roles in developing countries has improved equality. • Changes to education or the school curriculum have been informed by research. 	<p><i>The Heritage Lottery Fund also offers guidance on evaluating participation and learning: https://www.hlf.org.uk/evaluation-guidance.</i></p> <ul style="list-style-type: none"> • Documented evidence that public understanding has been enhanced through active collaborative involvement in research. • Documented evidence of policy debate (for example, in Parliament, the media, material produced by NGOs). • Public debate in the media. • Documented shift in public attitude (for example, to sexual behaviour, or social factors in health). • Documented evidence of enhanced awareness of health risks and benefits by consumers. • Citation in a public discussion, consultation document or judgement. • Citation by journalists, broadcasters or social media. • Evidence of increased public uptake of scientific training, through public engagement.
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	<ul style="list-style-type: none"> • Influencing the design and delivery of curriculum and syllabi in schools, HEIs or other educational institutions. • Reduced gap in academic attainment for students with protected characteristics. 	<ul style="list-style-type: none"> • Information about the number and profile of people engaged and types of audience. • Evidence of secondary reach, for example from follow-up activity or media coverage. • Evidence of sustainability through, for example, a sustained or ongoing engagement with a group, a significant increase in participation in events or programmes or use of resources. • Evidence of engagement with campaign and pressure groups and other civil organisations (including membership and activities of those organisations and campaigns) as a result of research. • Measures of increased attainment and/or measures of improved engagement with science in non-HE education. • Evidence of use of education materials arising from the research.
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RAND EUROPE

Guidance for standardising quantitative indicators of impact within REF case studies

IMPACT SECTIONS ONLY

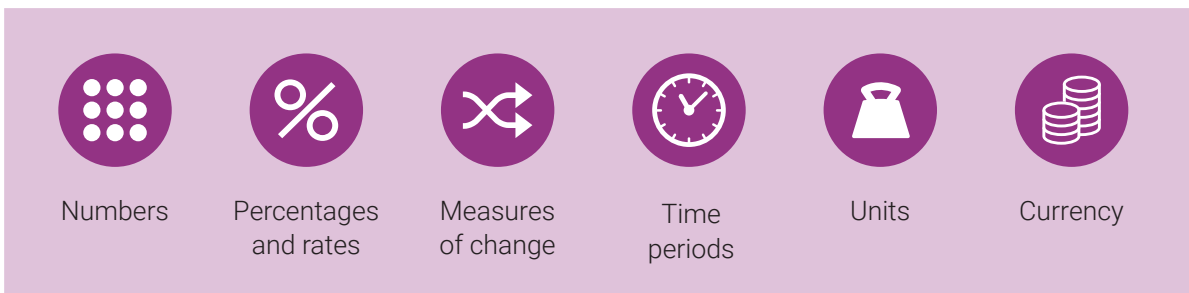
Please note, these pages have been extracted from the Guidance for standardising quantitative indicators of impact within REF case studies. The full document is available here:

<https://www.ref.ac.uk/media/ref,2021/downloads/Guidance%20for%20standardising%20quantitative%20indicators%20of%20impact.pdf>

2 Using a 'style guide' to standardise quantitative indicators of impact

As noted in Chapter 1, the study proposes guidance for two broad categories of standards. The first standardisation category is a 'style guide', which pertains to the way numerical data are written or presented in the impact case studies. The style guide consists of general stylistic items that can be standardised in order to make numerical indicators of impact – and specific formulations of these indicators – more discoverable in the case studies. It is envisaged that the style guide would apply across all the 'specific guidance' (which is discussed in Chapter 3). The style guide can be regarded as general guidance to facilitate a more standardised means of representing several items that are commonly used in conjunction with quantitative indicators of impact across the case studies. It is intended to be used where feasible, and not to set restrictions or requirements on what can be presented in the impact case studies. The style guide specifically covers the use of six areas as highlighted in the box below.

Box 1 Areas of standardisation covered by the 'style guide'



Source: RAND Europe analysis

Each of these areas is discussed in turn below. We provide a short description about each area followed by the suggested approach to standardisation along with examples of use where appropriate. As noted in Chapter 1 (Table 1.2), we used a set of criteria (i.e. rationale) to select the six areas of standardisation covered by the style guide and to develop the standards themselves. In Annex A (Table A.11), we provide some more specific details related to the rationale for selected areas of the proposed guidance.



2.1. Numbers

Description

Within the case studies, numbers are presented in a range of ways. They are written out numerically and as words (e.g. '4' and 'four'). For some numbers, there is wide variation in the way the number is represented (e.g. million is written as: '1,000,000', '1million', '1mil', '1m', and '1M')

There are a number of cases where approximate or estimated figures are used, using a range of terms to illustrate the lack of precision in the figure (e.g. 'use of ca 16200 mice', 'approximately 1000 tonnes', 'webmaster figures estimate c.25000 downloads', 'GVA of about £35.5 billion', 'circulation of roughly 600000 readers', 'audiences of around 250', 'provided funding in the region of £115000').¹⁵

Guidance for standardisation

- Use numerals when referring to quantitative indicators of impact (e.g. '4', '1,567', '2,000,000').
- Use commas for the thousands separator in numbers of 4 digits or more (e.g. '1,567', '2,000,000').
- Use precise figures where possible. If referring to a non-exact figure, use 'approximately [X]' (e.g. 'approximately 100 people', 'approximately GBP1,000,000').
- If decimal points are necessary, use 2 decimal points where possible (e.g. '0.29', '8.50', '2,000.88').¹⁶

15 Within the case studies, there are also a range of phrases used to describe approximate figures, which indicate uncertainty but in a certain direction, e.g. 'nearly 2,000 downloads', 'at least 310 visitors'. Due to the range of phrases, we are not suggesting standards for these.

16 There are instances, however, where it might be more appropriate to use more than two decimal points, e.g. 0.004m (i.e. 4mm).



2.2. Percentages and rates

Description

Percentages are often used to indicate the significance of impact. The proportion is written variably as: 'the percentage is', 'X percent', 'X per cent', 'X %'.

Specific types of rate are often reported within case studies. Some of the most common types include: mortality rate, survival rate, response rate, and success rate. While some case studies explicitly use the term 'rate' (e.g. 'mortality rate'), others imply rates without using the term (e.g. only using the term 'mortality').

Guidance for standardisation

- Use % immediately after the numerical value (e.g. '17%', 29.18%).
- Do not include a space between the numerical portion and %.
- If describing a particular type of rate, include the term 'rate' (e.g. 'mortality rate', 'survival rate', 'response rate').



2.3. Measures of change

Description

A number of case studies demonstrate impact by indicating the increase or decrease in a certain quantity or rate. These sentences are formulated in a variety of ways (e.g. 'the study showed a 19% reduction in vehicles and a 19% reduction in miles driven', 'this represents an additional 7 months of survival in full health', 'the numbers of HN students progressing to degrees have increased from 2761 in 2006/07 to 3857 in 2011/12', 'had resulted in a 33% lower average indoor radon concentration in new homes', 'This resulted in a 20 per cent increase in the legislated minimum wage for 21-year-olds', 'between 2010 and 2012 donepezil use increased by 41%').

Guidance for standardisation

- Use the following formulations as appropriate:
 - '...increase(s/d) from [X] to [Y]...' (e.g. 'increases from 5 to 6 months of survival')
 - '...increase of [X] ...' (e.g. 'increase of 70% per year')
 - '...decrease(s/d) from [X] to [Y]...' (e.g. 'decreased from 25% to 7% since 2014')
 - '...decrease of [X] ...' (e.g. 'decrease of 20mtCO₂e')



2.4. Time periods

Description

A range of time periods are used in the case studies, spanning from hourly to yearly, to longer periods. In addition, the time periods are described in a variety of different ways (e.g. 'in the last 5 years', 'since 2008', 'in the REF impact period', 'from 2007 to 2013', 'as at May 2013', 'throughout the period 2008-13', 'over a twelve month period', 'per month', 'per annum', 'pa', 'between Q3-2008 and Q2-2011', 'over the following two weeks', 'recently', 'soon').

Guidance for standardisation

- Use the following formulations as appropriate:
 - '... per [TIME PERIOD] ...' (e.g. 'per day', 'per month')
 - '... between [X] and [Y] ...' (e.g. 'between May and June 2013', 'between 2013 and 2017')
 - '... since [X] ...' (e.g. 'since 2012', 'since 18 August 2017')
- Include the year where appropriate.



2.5. Units

Description

A range of metric and imperial units are used within the case studies (e.g. 'gram', 'g', 'pound', 'lb', 'tonne', 'ton', 't', 'mile', 'mi', 'km', 'kilometre', 'metre', 'cm', 'ha', 'hectare', 'millilitres', 'ml', 'litres', 'liters', 'L').

Guidance for standardisation

- Where possible, to express the values of quantities, use SI units,¹⁷ or non-SI units that are accepted for use with the International System of Units.
- When used with a numerical value, position the value before the appropriate symbol (e.g. '10km', '50t').
 - For weight, use, for example, the following symbols: g (for gram), kg (for kilogram), t (for tonne)
 - For distance, use, for example, the following symbols: mm (for millimetre), cm (for centimetre), m (for metre), km (for kilometre)
 - For volume, use, for example, the following symbol: ml (for millilitre), l (for litre)
 - For area, use, for example, the following symbol: ha (for hectare)
- Do not include a space between the numerical portion of the measurement and the symbol.

17

SI stands for the International System of Units (the acronym incorporates the first part of the original French name, *Système International d'Unités*). Further information about SI units is available online (NPL 2018).



2.6. Currency

Description

A range of currencies are used throughout the case studies, including variations in notations (e.g. '£', 'GBP', 'pounds', '€', 'EUR', 'Euro', '\$', 'USD', 'dollars', 'A\$', 'AU\$', 'DKK', and 'Yen').

Guidance for standardisation

- Where currency is described, use the three-letter alphabetic currency code as specified in the ISO standard, ISO 4217:2015 (e.g. GBP, EUR, USD, AUD).¹⁸
- Do not include a space between the currency code and the number (e.g. 'GBP100', 'GBP8,170.48').
- Use GBP as the standard currency.
- If a currency other than GBP is used, provide the month and year in which the original figure was calculated in parentheses following the figure, using the format MM-YYYY (e.g. 'has contributed approximately USD19,000,000 (08-2013) gross value-added (GVA) to the region in shareholder return salaries and infrastructure spend').

18

ISO is the short form used for the International Organization for Standardization. The list of currency codes can be accessed from the ISO website (ISO 2015).

3 Using 'specific guidance' to standardise quantitative indicators of impact

In addition to the 'style guide' we have identified a second category of topics or areas for standardisation. These topics cover more specific and commonly occurring quantitative indicators that have been used as evidence of impact in the case studies. The standardisation of these topics could improve discoverability of quantitative indicators of impact within the case studies (e.g. by reducing the number of synonymous terms used) as well as their potential aggregation. They are intended to be used where feasible in the impact case studies, and not to set restrictions on what can be presented. Depending on the context and usage within the impact case studies, the 'style guide' standards could apply across this specific guidance. In particular, the specific guidance covers the use of five areas associated with quantitative indicators of impact as listed in the box below.

Box 2 Areas of standardisation covered by the 'specific guidance'



Source: RAND Europe analysis

Each of these areas is discussed in turn below. For every area, we provide a concise explanation about the indicator followed by the suggested approach to standardising the quantitative indicator. Where relevant, we also include examples of use. As mentioned in Chapter 1 (Table 1.2), we used a set of criteria (i.e. rationale) to select these specific areas of standardisation and to develop the standards themselves. In Annex A (Table A.11), we provide more specific details related to the rationale for selected areas of the proposed guidance.



3.1. Engagement

Description

In the case studies, researchers frequently provided a measure of the number of people they engaged with through various activities. There are a range of phrases used to describe these individuals, from more specific terms (e.g. 'parents', 'children', 'students', 'residents', 'implant users', 'staff', 'teacher trainers', 'workers'), to more general terms (e.g. 'people', 'visitors', 'individuals', 'users', 'attendees', 'listeners', 'spectators', 'audience').¹⁹

Guidance for standardisation

- Use specific terms where appropriate (e.g. 'parents', 'children', 'students').
- Use the formulation '... [X] people ([SPECIFIC INFORMATION]) ...' (e.g. 'viewed by 50 people (children aged 10 to 15 and their school teachers)', 'attended by approximately 2,500 people (junior doctors)').

19

There are also a number of references to numbers of 'organisations', e.g. 'schools', 'businesses', 'hospitals'. Due to the variety of types and differing nature, we are not suggesting any guidance for standardising these.



3.2. Mentions in non-academic documents and the media

Description

Across a number of case studies, numerical impact information is presented to signify the number of mentions or references of the underpinning research in non-academic documents and the media (including, for example, guidelines, policy documents, court judgements, case documents, strategy documents, magazines, newspapers). A range of synonymous terms were used to indicate citations in non-academic documents/the media (e.g. 'cited by', 'cited in', 'cited', 'cited at', 'mentioned', 'used in', 'featured').

In addition to mentions in non-academic documents and the media, impact case studies also included information on the circulation and readership of the publication.

Guidance for standardisation

- For mentions of non-academic documents, use: '... cited [X] times in ...' (e.g. 'cited 50 times in national policy documents').²⁰
- For mentions of the media (print and online), use: '... referenced [X] times in ...' (e.g. 'referenced 50 times in the media across 10 countries').
- When a specific publication is mentioned, where available, provide relevant readership and circulation figures from an appropriate date²¹ (e.g. 'the Guardian (print readership: 867,000; circulation: 152,714)').

20 Raw citation counts should be treated with caution, taking into account that different fields have different distributions of citation.

21 Circulation is 'a count of how many copies of a particular publication are distributed', and readership is 'an estimate of how many readers a publication has' (National Readership Survey 2018).



3.3. Employment

Description

Case studies provided evidence of economic impact by citing the number of jobs created or the number of employees. There were a variety of synonymous terms and sentence structures used to quantify the number of people impacted by job creation (e.g. 'employs a total of 19 staff', 'generated 250 jobs', 'provided employment for high quality chemists (>60 FTE)').

Guidance for standardisation

- When referring to increasing employment as an outcome of research, where possible include both the headcount and the number of FTEs (where FTE is full-time equivalent) (e.g. 'generated 10 jobs (headcount: 10; FTEs: 10)', 'this created 50 part-time jobs (headcount: 50; FTEs: 25)').



3.4. Financial figures

Description

A range of financial indicator-related terms were used within the case studies (e.g. 'value', 'sales', 'revenue', 'turnover', 'cost savings', 'profit', 'return on investment (ROI)', 'gross value added (GVA)', 'income', 'royalties', 'expenditure', 'assets', 'quality-adjusted life years (QALYs)').

Guidance for standardisation

- Where possible, use the following formulation: '... [TERM(S)] of ... [ALPHABETIC CURRENCY CODE][CURRENCY VALUE] ...' (e.g. 'profit of GBP1,000', 'turnover of approximately GBP80,000,000', 'gross value added of GBP1,400,000 per year').²²
- Where possible, use more specific terms to express the financial indicator terms in the above formulation. Thus, if describing 'profit', specify the type of profit (e.g. 'gross profit', 'post-tax profit', 'pre-tax profit', 'net profit', etc.); if describing 'expenditure', specify the type of expenditure (e.g. 'capital expenditure', 'health expenditure', 'public expenditure', 'total expenditure', etc.).
- For 'return on investment', use 'ROI'; for 'gross value added', use 'GVA'; for 'quality-adjusted life years', use 'QALYs'.



3.5. Emissions

Description

A number of case studies refer to changes in emissions, referencing greenhouse gases in general, and also more specifically, carbon dioxide, methane and nitrogen oxides. These terms are written out in a variety of ways (e.g. 'kg CO₂ of emissions reduction per day', 'tonnes of CO₂', 'Mt CO₂e in greenhouse gas emissions', '479.1 megatons of CO₂ equivalent', 'CO₂e (carbon dioxide equivalent) savings of over 9kg per unit').

Guidance for standardisation

- Use the following abbreviations for carbon dioxide, carbon dioxide equivalent and nitrogen oxides respectively: 'CO₂', 'CO₂e', and 'NO_x'.
- Use SI units for all compound units (e.g. 'MtCO₂e/year', 'gCO₂/km').