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ESIC Series: Paper 9 Estimating initial costs of Evidence Synthesis Infrastructure Collaborative solutions: assumptions and overall results

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PII: S0895-4356(26)00400-2

DOI: <https://doi.org/10.1016/j.jclinepi.2026.112524>

Reference: JCE 112524

To appear in: *Journal of Clinical Epidemiology*

Received Date: 8 January 2026

Revised Date: 1 July 2026

Accepted Date: 14 September 2026

Please cite this article as: Pokhrel S, Hanney S, ESIC Series: Paper 9 Estimating initial costs of Evidence Synthesis Infrastructure Collaborative solutions: assumptions and overall results, *Journal of Clinical Epidemiology* (2026), doi: <https://doi.org/10.1016/j.jclinepi.2026.112524>.

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ESIC Series: Paper 9 Estimating initial costs of Evidence Synthesis
Infrastructure Collaborative solutions: assumptions and overall results

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Abstract

Aim: To estimate the initial costs of implementing the Evidence Synthesis Infrastructure Collaborative (ESIC) solutions and therefore provide funders with a costed menu of options for strengthening global evidence synthesis systems.

Background: ESIC was established to enhance the timeliness, relevance, and affordability of evidence synthesis worldwide. Five Working Groups and a Governance Planning Group were tasked with identifying priority solutions to address systemic gaps in infrastructure, capacity, and governance. We were tasked with costing these solutions from a funder's perspective to inform strategic investment decisions.

Methods: We followed a structured approach with planning of the costing occurring concurrently with the solutions being identified by the groups. We identified resource requirements, measured quantities, and applied unit costs. Inputs included personnel, tools, and system requirements, with indirect costs set at 20% of direct costs and an additional 5% for monitoring, evaluation, and learning. Data were gathered through resource-use questionnaires, literature reviews, and consultations with ESIC groups. Salary costs were estimated using a 3×3 matrix of seniority and geographic bands (Global North; Global South—high/upper-middle income; Global South—low/lower-middle income). Sensitivity analyses addressed uncertainties, particularly in salary assumptions. A separate costing exercise was conducted for a Vanguard Suite, a prioritised collection of 100 living evidence syntheses.

Results: The total estimated cost for all 40 solutions identified by the groups was US\$278.3 million (range: US\$257.2–299 million). Employment costs accounted for the largest share, with 80% of staff time and 78% of senior roles allocated to the Global South, reflecting ESIC's equity goals. Individual group costs ranged from US\$9.1 million (Governance) to US\$70.5 million (Data solutions). The suite of living evidence syntheses was costed at US\$19.2 million.

Conclusion: This costing exercise provides transparent, equity-focused information to assist funders when selecting scalable solutions aligned with ESIC's mission. While estimates involve assumptions, they offer a pragmatic basis for investment planning and demonstrate ESIC's commitment to affordability, inclusivity, and global impact.

Keywords:

Evidence Synthesis, ESIC, Evidence ecosystem, living evidence syntheses, policy informed decision making, Cost

Running title: Initial costs of ESIC solutions

Word count: Abstract (310) Main body (3417 including tables)

What is new?

Key Findings: Initial costing figures were produced for all 40 ESIC proposed solutions.

What this adds to what was known: No such previous estimates were available.

What is the implication and what should change now: These initial costing estimates could help to inform the work of the ESIC Funders' Interest Group, a group of potential funders.

Background

Efforts to optimise evidence synthesis and its connection to end-users culminated in the global Evidence Synthesis Infrastructure Collaboration (ESIC). This paper presents the work of the Economic Advisors to cost the solutions recommended by the five Working Groups (WGs) and the Governance Planning Group (GPG). The groups focussed on:

- WG1: Demand-side engagement - engaging all relevant interest holders in identifying demand for and use of evidence synthesis
- WG2: Data sharing and reusing - building data infrastructure to make it normal to study a question once and use the answers many times in many different contexts
- WG3: Safe and responsible use of AI - using technology safely and responsibly to achieve the best impact from the available people and resources
- WG4: Methods and Process Innovation – devising synthesis methods and processes that enable radically more timely, relevant, and affordable synthesis
- WG5: Capacity sharing - building a global community with the capabilities to deliver and use evidence synthesis across all major societal questions
- GPG: Governance - devising options for how key interest holders could continue to set and achieve shared goals

Further information about ESIC is available from the ESIC website (<https://www.evidencesic.org/>) .

Methods

Remit of the Economic Advisors

The main task planned for the economic advisors was to estimate the costs, from the “funders’ perspective”, of the solutions that were going to be identified and proposed by each of the six Groups. In order to plan and undertake the costings, it was anticipated the advisors would review relevant literature and engage with the Secretariat and all others leading the ESIC initiative throughout the various stages of the scheduled ESIC planning process. The advisors were expected to develop the costing methods, present and obtain consensus for them, and then implement them. Additionally, the advisors were subsequently asked to contribute to developing the concept of a costed Vanguard Suite, a prioritised collection of 100 living evidence syntheses, in conjunction with colleagues from the leadership group.

The Vanguard Suite would consist of 100 demand-driven, policy-scale living evidence syntheses on major societal challenges related to the Sustainable Development Goals (SDGs).

Profs Subhash Pokhrel and Steve Hanney from the Health Economics Research Group (HERG) in the Department of Health Sciences at Brunel University of London, in the UK undertook the costing task. HERG has over 40 years of experience of conducting economic evaluations, including costings, of healthcare interventions, with Prof Pokhrel having particular expertise in analysing the return on investment of public health interventions. Furthermore, the HERG team, especially Prof Hanney, also have many years' experience of assessing and valuing the benefits from research, and in analysing how research systems are best organised to maximise benefits.

Approach used by Economic Advisors

As the planning of the costing occurred concurrently with the solutions being identified by the groups, a number of steps were involved in developing and apply the costing. Table 1 sets out the costing methods that we used. The text below explains how we interacted with the six groups to explain the approach to them, consult them about it, and engage them in providing required data.

(i) Frequently Asked Questions (FAQs)

We began with preliminary reading of key reports such “*Global Evidence Report: A blueprint for better international collaboration on evidence*” [1] and discussions with various members of the leadership group. We then developed a list of FAQs and presented it at an ESIC meeting, before providing a final version reflecting comments made. We developed the FAQ list by considering how standard economic approaches to costing [2, 3] would be relevant for the ESIC solutions that the Groups might propose, in light of their reports from the early ESIC Stages. For the FAQ, we tried to merge consideration of what data we might require to conduct the costings, with a process of envisaging the questions members of the co-leads group might ask.

The full final version of the FAQ document is available as Appendix 1, but it may be useful to highlight some of the key points. We clarified that the ESIC aim was to identify the best solutions for the production of relevant, timely and affordable evidence syntheses in terms of the balance between the likely impact of each solution and the effort, or resources, the solution would require. And that, therefore, the ambition was to produce a fully costed “menu of options” for potential funders to consider.

Table 1: Summary of methods and key assumptions used in costing ESIC solutions

Component	Description / Assumption made	Strength	Important caveat considered
The item to be costed	ESIC solutions – the prioritised actions proposed by the five Working Groups and the Planning Group to achieve the objectives of ESIC initiative.	Each solution was developed by a group of experts in the field	Solutions could be diverse in terms of what resources they would require for delivery.
Primary method: Three Steps for Bottom-up costing	A bottom-up costing method involving the following three steps: (i) Identify all resource use needed to deliver the solution (ii) Measure the resource use to produce and deliver the identified solution over a defined period (iii) Value the resource use by applying relevant price information or unit cost to the measured resource use to estimate the total cost of producing and delivering the solution. [2].	This framework helps identify and measure all resource use before valuing it, so that a reasonable accuracy can be assured.	Distinction still needs to be made between direct and indirect costs, e.g., in a University-based solution, some of the people such as legal and financial teams will be provided by the institution, but there are likely to be overhead or indirect charges in relation to the premises to cover these.
Step 1: Identify all resource use	Resource use was defined as the inputs including premises (e.g. office space and amenities), people (e.g. any human effort including skills and knowledge: base salaries, pension and insurance contribution; the full range of staff need to be considered, including managers, professionals, administrators, legal experts, communications team etc.	Helps to identify all key ingredients, enabling a more accurate bottom-up costing of the ESIC solutions	Identified costing ingredients relate to the proposed activity for a new type of initiative and are therefore a best guess only. However, in identifying the ingredients, the working groups could draw on their prior experience in

	and the time that staff would spend, e.g. percentage full time equivalent or simply, number of days, and recruitment costs), tools (man-made resources like computers, AI tools: purchase costs for hardware and software, maintenance / service costs and for how long it would be paid for) and other system requirements (citizen engagement, data sharing, compliance, travel and subsistence, open access publication fees, translation fees, training/CPD/capacity strengthening cost; meeting costs, including venue hiring & catering, etc. These may be one off or ongoing.)		budgeting a programme of work similar to an ESIC solution or part of it.
Step 2: Measure all resources	Quantify identified resources – see Appendix 2 for details. Premises – Groups were not asked to measure; a fixed 20% applied to direct costs [see Appendix 3]. People - person months in a 3x3 matrix [3 Location bands (see below) x 3 seniority levels (junior, mid-tier, senior)]. Tools – quantity and length of use Other system requirements – relevant quantities	3x3 matrix helps capture the variation across location banding and use of new or existing assets, to enhance accuracy.	Accurate unit costs by such categories (e.g. location banding) may not be readily available for all bands.

	Consider existing or new assets: where existing assets can be used this might reduce the need for some elements of cost as such as recruitment, purchase of equipment etc. Geographic location: salaries and other inputs are likely to vary depending upon the geographic location in which the solution is based. Three location banding was used to reflect this variation: (1) The Global North; (2) The Global South: high and upper-middle income countries; (3) The Global South: lower-middle and low-income countries.	More equitable costing.	
Step 3: Value the resource use	Apply unit costs to the quantified resources. Calculation was done in an Excel-based model with following linked sheets: (a) Unit cost parameters: these included average salary costs in a 3x3 matrix, and the unit costs of other identified ingredients. As there was no single credible source for salary data for the 3x3 matrix format, various sources were used and data	Excel allowed the application of bottom-up method in a transparent manner. Consistency and accuracy checks were easy to implement	Setting up the calculation sheets for 40 solutions as separate sheets with varying ingredients could be time consuming.

	were triangulated/calibrated. For other items, data were drawn from expert opinions or wider internet searches (e.g. for travel costs). [See Appendix 4 for further details]. (b) For each ESIC solution (x40): the quantity of identified inputs, linked to unit costs were used to calculate the solution's total costs and its distribution (% share) by the main input categories (c) Group total cost (x6) and its distribution (% share) by each within-group solution, and % share of employment costs (d) Total ESIC cost (including 5% of the total costs for all 40 solutions to reflect the additional costs needed for monitoring, evaluation and learning). (e) The employment costs by location were then analysed, showing for each of the three location bands: the percentage of group person years, percentage of group total employment cost, and percentage of group total senior role.		
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	Illustrative example: Salary costs: 6 junior staff on a 0.7 full time equivalent contract over 60 months in location band 2 (unit salary cost: \$31,663) = $[\{6 \times 0.7 \times (60/12) \} \times 31,663] = \\$664,923$ Similar calculations (quantity x unit costs) were applied to all identified and measured ingredients before adding up to get the total direct costs.		
Uncertainty assessment	Salary scales were considered to be the major uncertainty parameter - lower and upper values of the unit salary cost were used to estimate the lower and upper bound around the base case costs. [3]	A range was provided around the indicative total costs	Limited uncertainty analysis but deemed appropriate for the purpose based on discussions with the wider groups.

In that context, the answer to the first potential question clarified that the costing was intended to provide funders with an idea about the likely costs of solutions, but formal proposals for funding to deliver a specific solution would depend on which funder might chose to seek applications to deliver the solution according their individual specifications. The answer to a question about what was “meant by costing the solutions proposed by the Groups”, highlighted that it was the resources that would be needed to deliver the solution that were being costed. We noted that the ESIC “Capability Framework” defined resources as “People, tools and funding.” We extended that to include premises and the various system requirements that might be needed such as travel and open access publication fees. We then highlighted the three steps that would be necessary for costing. First, identify all the types of resources that would be needed. Second, measure what amount of each resource would be required, and third, apply relevant unit costs to value the resource use [2, 3].

The answer to a question about salary scales was that given they were likely to be a major element in the costs, it was important to recognise there are significant variations between the costs in different countries. To handle this in a practical way we proposed that for costing we could use three broad bands consisting of roughly equal numbers of countries:

1. The Global North
2. The Global South: high and upper-middle income countries
3. The Global South: lower-middle and low-income countries

We explained that we would ask Groups to suggest what percentage of the staff time to deliver each solution should be based in each location band. Similarly, we would ask Groups to suggest what proportion of the time should be in one of three salary grades, tiers or levels depending on seniority. The answer to a further key question explained how we would address the likely uncertainties in our estimates. We anticipated that would be caused by the assumptions we would probably have to make. We emphasised that we would conduct a sensitivity analysis to understand how sensitive the final cost estimates would likely be to particular costing assumptions or proxies. Therefore, we would aim to present a ‘base case’ estimate, and a range of costs with a higher and lower figure than the base case.

(ii) Resource Use Questionnaire

Prior to developing a Resource Use Questionnaire for Groups to complete, we reviewed a range of funders’ websites to ensure we were including at least a substantial proportion of the items that funders would probably be willing to cover. While no one funder’s requirements

formed the entire basis of our approach, it made sense to review the requirements of the three funders, among others, thought to be willing to fund ESIC solutions. The Resource Use Questionnaire was devised to allow, and encourage, Groups to identify all the types of resources they would need, and attempt to measure, or estimate, how much of each type of resources they would need.

The full Research Use Questionnaire is included as Appendix 2, with additional guidance added at the front that was separately provided to Groups after discussions with various Groups had revealed the desirability of providing some additional guidance. Below we highlight a few key aspects of the Resource Use Questionnaire.

The Resource Use Questionnaire followed the pattern of resource use set out in the FAQs, however there were no questions about premises or any other indirect costs for the reasons explained below. After three administrative questions, Question 4 covered People. Here, Groups were asked to report the number of people who would be involved in each of the three levels, or tiers, of staff (ie, senior, mid-tier, junior), in each of the three costing location bands. Additional columns asked for information about the expected number of months the proposed staff would work (up to a maximum of 60, i.e. the five years initially envisaged for ESIC), and their Full Time Equivalent status. Question 5 asked about contracts, which was intended to be an alternative way some staff might be involved for specialist tasks, etc.

Question 6 asked about various categories of Tools that might be required, including hardware and software. The remaining four questions asked about the resource use on aspects of Other System Requirements, such as capacity development, citizen engagement, travel and publications and promotion. A final question provided an opportunity for Groups to supply additional information.

We held discussions with various Groups as requested about aspects and examples of completing the Resource Use Questionnaires, and in some instances collaborated with the Citizens Engagement advisor to highlight the importance of including some funding for citizen engagement in as many proposed solutions as possible.

(iii) Indirect costs

It rapidly became clear that it would be unrealistic to ask Groups to identify and estimate their likely requirements in terms of premises and all the other items (such as amenities, security and cleaning) that are usually included as indirect costs in funding applications. Therefore, we drew on information from the websites of many research-funding organisations

to conclude that, in line with the policies of many funders, we would have a fixed percentage for indirect costs, and for ESIC that would be set at 20% of the total direct costs. The level of indirect costs were generic estimates from the funders' perspective although we recognise that different funders will have their own preference and institutions putting in future bids will have to apply according to the specific guidelines of the particular funder. A fuller explanation of the approach to indirect costs is provided in Appendix 3.

(iv) Sourcing unit costs

Next, unit costs were drawn from various sources. There was no single credible source for salary data for the three tiers or levels of seniority we used at the three geographical locations applied. Therefore, we utilised various data sources to triangulate / calibrate salary unit costs by the locations and tiers. For other items, data were drawn from personal communications (e.g. with ESIC's Citizen Engagement advisor for citizen engagement costs) or wider internet searches (e.g. for travel costs). These are documented in Appendix 4 which presents the underlying assumptions behind the unit costs used. We also liaised with the potential funders about aspects of the unit costing.

(v) Developing and applying the Excel spreadsheet

We developed an Excel-based costing model. The data collected through Resource Use Questionnaire and relevant unit costs were entered to estimate the total costs by solutions. An interactive feedback process with the Groups led to refinement of some data to finalise the costs by solutions, particularly benchmarking with other groups. For example, this process made significant changes in the way citizen engagement costs were being considered by the groups. Once we had estimated the direct costs of each solution, the additional 20% was added for the indirect costs. Finally, 5% of the total costs of all 40 proposed solutions was considered appropriate for the Monitoring Evaluation and Learning (MEL) and added to the initial total figures.

(vi) Sensitivity analysis and range

The salary scales were considered to be the major uncertainty parameter. Therefore, we used lower and upper values of the unit salary cost to estimate the lower and upper bound around the base case costs. We thus presented a range along with the base case costs in final tables [4].

(vii) *Vanguard Suite of living evidence syntheses*

As part of its commitment to demonstrating early value, ESIC aims to deliver policy-scale living evidence synthesis products on key global policy challenges within its first year [5]. Therefore, towards the end of the planning process, we played a part, along with some members of the Secretariat, the Roadmap writing team and Co-Chairs from WGs 2, 3 and 4, in fast-paced online interactions about a proposed Vanguard Suite of living evidence syntheses. To cost this suite we applied the approach used above to the time allocation and staff requirements proposed by others involved in the interactions.

Results

The groups proposed a total of 40 solutions (39 group-specific and the addition of the Vanguard Suite). Table 2 lists the solutions as well as the cost and the main cost driver of each one. The overall cost of all the solutions, plus the 5% for MEL, was estimated to be US\$278.3 million. The range for the total cost was US\$257.2million – \$299million. The main cost driver for most solutions was staff costs but for four high-cost solutions it was contracts costs.

Table 2: Estimated cost of the solutions proposed by each group and main cost driver (adapted from [5])

Vanguard Suite	Estimated cost	Main cost driver*
Delivering the Vanguard Suite of evidence syntheses	\$19,200,000	People (91%)
Range	\$16,800,000 - \$21,500,000	
WG1 Demand side engagement solutions**	Estimated cost	
1.1 Regional Demand-Side Secretariats	\$8,900,000	People (55%)
1.2 Implementation Support to Intermediaries	\$11,400,000	Contracts (89%)
1.3 Co-production labs where producers and users work together on synthesis products	\$5,300,000	People (70%)
1.4 Users publishing synthesis needs	\$3,300,000	People (73%)
1.5 Innovation Grants for synthesis users	\$9,400,000	Contracts (96%)
Group Total	\$38,300,000	
Range	\$36,900,000 - \$39,700,000	
WG2 Data solutions	Estimated cost	
2.1 Federated Repository of Synthesis Data	\$33,500,000	People (67%)
2.2 Interoperable data standards	\$6,200,000	People (69%)
2.3 Metadata standards to facilitate data identification and discoverability	\$6,200,000	People (72%)
2.4 Open Access Standards for Equitable Data Sharing and Reuse	\$13,000,000	Contracts (56%)
2.5 Quality Assurance of data systems	\$11,700,000	People (96%)
Group Total	\$70,500,000	
Range	\$63,800,000 - \$76,700,000	

WG3 AI solutions	Estimated cost	
3.1 AI assisted software for all stages of the evidence synthesis process	\$33,300,000	Contracts (68%)
3.2 Inventory of AI tools for evidence synthesis	\$9,800,000	People (87%)
3.3 Centralized database of annotations from synthesis (now incorporated into 2.1)	-	-
3.4 Crowdsourcing training platform to support training and adoption of AI models	\$3,600,000	People (59%)
3.5 Framework for validation of technology performance	\$1,300,000	People (86%)
3.6 Implementation of best practices and governance of synthesis technologies	\$2,500,000	People (33%)
3.7 Research into error assessment and reliability of AI assisted synthesis	\$1,400,000	People (76%)
Group Total	\$51,800,000	
Range	\$50,100,000 - \$53,500,000	
WG4 Method and process innovation solutions	Estimated cost	
4.1 Evidence Support Units for rapid synthesis embedded in user organizations	\$3,100,000	People (83%)
4.2 Shared quality standards for different types of synthesis	\$1,100,000	People (48%)
4.3 Cross-sector multi-disciplinary funding calls and communities of practice	\$1,000,000	People (73%)
4.4 Coordination of ongoing synthesis projects to avoid duplication	\$5,100,000	People (91%)
4.5 Panel of citizen partners at global, regional, and sub-regional levels	\$7,800,000	People (80%)
4.6 Methods for synthesis of evidence not controlled by commercial publishers ('grey literature')	\$1,300,000	People (88%)
4.7 Methods for assessing the certainty of evidence	\$1,700,000	People (82%)
4.8 Interactive tools for evidence dissemination	\$1,400,000	People (77%)
4.9 Methods to improve synthesis to meet policymakers' needs	\$5,600,000	People (93%)
4.10 Methods for translating findings from synthesis to local contexts	\$7,800,000	People (92%)
4.11 Academy for Evidence Synthesis and continuous funding to key organizations	\$3,800,000	People (87%)
Group Total	\$39,600,000	
Range	\$36,000,000 - \$43,300,000	
WG5 Capacity sharing solutions	Estimated cost	
5.1 ESIC Knowledge Hub	\$9,200,000	People (85%)
5.2 AI tools for Knowledge Translation	\$3,400,000	People (74%)
5.3 Regional and country-based learning and development centers	\$9,300,000	People (57%)
5.4 Mentorship and Train the Trainer Programmes	\$2,000,000	People (87%)
5.5 Continuous Professional Development Modules	\$1,200,000	People (87%)
5.6 Competency Frameworks	\$1,300,000	People (91%)
5.7 Curriculum for UN and national training agencies	\$40,000	People (65%)
5.8 Innovation grants for synthesis production and knowledge translation	\$8,300,000	People (90%)
5.9 Funders Forum	\$700,000	People (93%)

5.10 Monitoring, Evaluation and Learning (MEL) system	\$1,100,000	People (82%)
Group Total	\$36,600,000	
Range	\$33,300,000 - \$39,800,000	
PG1 Governance solutions	Estimated cost	
G.1	\$9,100,000	People (69%)
Range	\$8,000,000 - \$10,300,000	

* the percentage is of the direct costs, not the total costs.

** indicates higher cost options available and set out in the relevant group Stage 4 reports.

Equity was a key consideration throughout the whole ESIC planning phase. We examined the combined figures for all the solutions in terms of the percentage of the Full Time Equivalent staff time that collectively the Groups recommended should be based in the Global South. Table 3 shows this was 80% overall. We then examined the percentage of the Senior time that Groups had suggested should be based in the Global South. This was 78%. Furthermore, the majority of proposed solutions did include some allocation of costs to pay for the time and expenses of citizens engaged in the solutions.

Table 3: Estimated total cost of each group's solutions and proposed staff locations

Group	# of solutions	Group total costs (US\$)	Employment costs by location**								
			% Group person years			% Group total employment costs			% Group total Senior role***		
			GS - LLM	GS - HUM	GN	GS - LLM	GS - HUM	GN	GS - LLM	GS - HUM	GN
Vanguard	1	\$19,200,000	49%	33%	17%	29%	38%	33%	50%	33%	17%
WG1*	5	\$38,300,000	9%	57%	34%	3%	50%	47%	0%	67%	33%
WG2	5	\$70,500,000	49%	34%	16%	31%	38%	31%	49%	34%	16%
WG3	7	\$51,800,000	48%	31%	21%	28%	34%	38%	53%	26%	21%
WG4	11	\$39,600,000	35%	34%	31%	17%	33%	50%	36%	32%	32%
WG5	10	\$36,600,000	47%	30%	23%	23%	32%	45%	32%	32%	36%
GPG*	1	\$9,100,000	0%	100%	0%	0%	100%	0%	0%	100%	0%
ESIC total	40	\$265,100,000	34%	46%	20%	19%	46%	35%	31%	46%	22%
Grand total with 5% MEL	-	\$278,300,000									
Range****	\$257,200,000	\$299,000,000									

GS = Global South, LLM = low-income and lower-middle income countries, HUM = high and upper-middle income countries, and GN = Global North

Vanguard – Delivering a Vanguard Suite of evidence syntheses; WG1 - Demand side engagement; WG2 – Data sharing and reusing; WG3 – Safe and responsible use of AI; WG4 – Methods and process innovation; WG 5- Capacity sharing; GPG – Governance for collective impact

*Includes the lower of two intensity alternatives for WG1. For GPG, it is the high intensity alternative.

**Average employment cost data was sourced from a multi-country analysis and other publicly available data, used in base case scenario. The proportion of the total costs that is contributed by employment costs is lower in WG1 and WG3 than in the other groups.

*** Senior person years in each costing location band as a percentage of the Group's total senior person years. Senior represents roles like professors, directors, leads, etc.

****Considers lower and higher annual average employment costs than the ones used in base case; Low values (-19% in GS-LLM, -17% in GS-HUM and -3% in GN). Higher values 14%, 17% and 5% respectively, calculated using the full spectrum of available data.

Discussion

Inevitably, we have to acknowledge that the estimates rely on making many assumptions, and pragmatic approaches including having a blanket allocation for indirect costs of 20% of the direct costs, and adding an additional 5% for MEL. The global salary data, in particular, are still an uncertain costing parameter. However, we consulted with Brunel University of London's Pre-Award Team at its Research and Development Office (RSDO) that oversees the research proposal costings to provide a benchmark of the items used in the resource use questionnaire and the salary scales. This provided some level of validation. Despite our efforts to benchmark, we recognise that costing 40 solutions in the very short time available was challenging, so the figures were only intended to be initial estimates. Furthermore, we recognise the high value of contracts in four high-cost solutions added transparency challenges.

Nevertheless, engagement with the full range of expertise and experience within the ESIC leadership, and across various Groups, was helpful throughout the planning process to refine and agree on the approaches to use when costing the solutions. The range of disciplines represented helped to ensure the costing approach was well-suited to cover all fields. Collectively, all those involved in the ESIC planning process, helped the Economic Advisors to cost the full set of proposed solutions in a way that was aligned with ESIC core values of equity and engagement. Furthermore, we have provided a menu of options costed from the funders' perspective, from which the funders will be able to choose ones for which they will invite full proposals, developed according to each funders' specifications. Additionally, whilst the total estimated costs provided an initial target to help mobilise resources through the ESIC Funders' Interest Group (a group of potential funders) and usefully gave an indication of the comparative costs of the diverse solutions, the spreadsheet model developed is not expected to be used for assessing proposals or setting funding limits.

CRedit authorship contribution statement

Subhash Pokhrel: Conceptualisation; Methodology; Formal analysis; Investigation; Writing – review & editing; Supervision; Funding acquisition

Stephen Hanney: Conceptualisation; Methodology; Investigation; Writing – original draft; Writing – review & editing; Project administration; Funding acquisition

Abbreviations

ESIC: Evidence Synthesis Infrastructure Collaboration; FAQ: Frequently Asked Questions; GN: Global North; GS: Global South; GPG: Governance Planning Group; HERG: Health Economics Research Group; HUM: higher and upper-middle income countries; LLM: low-income and lower-middle income countries; MEL: monitoring and evaluation.

Acknowledgements

This work was conducted as part of the Evidence Synthesis Infrastructure Collaborative planning process, a global initiative to make evidence synthesis more timely, relevant and affordable. The views/perspectives expressed are those of the Economic Advisors.

Funding

The ESIC planning process was funded by the Wellcome Trust. Economic Advisors were paid consultancy fees for their work, and costs for accommodation and travel to Cape Town, South Africa for the June ESIC consensus meeting were also covered by the Wellcome Trust. The open access publication was supported by a Wellcome Trust grant [323143/Z/24/Z Recipient Mrs. Fiona Campbell].

Conflict of Interest

None.

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APPENDICES

APPENDIX 1

Frequently Asked Questions (FAQ) on ESIC costing

Why this document?

The overarching aim of ESIC in Stage 4 is to identify the best solutions for the production of relevant living evidence syntheses in terms of the balance between both the impact (i.e. the magnitude of the benefits a task will bring upon completion) and the effort (i.e. the total resources a task will require). The ESIC ambition is to produce a fully costed ‘menu of options’ for potential funders to consider.

This Frequently Asked Questions (FAQ) document attempts to clarify the approach to be taken by the Costing Consultants to work with and for the 5 Working Groups (WGs) and the Governance Planning Groups (GPGs) in the two linked phases of Stage 4.

In Stage 4a the Costing Consultants will be available to help the groups to identify aspects of the resources that are required as part of the effort. In order to provide the groups with the full costings (in USD) for their proposed solutions in Stage 4b, the Costing Consultants will rely on help from the groups in various ways.

This FAQ aims to cover several aspects of the costing process.

1. What is the difference between costing the ESIC solutions and costing applications to funders?	The costing of the ESIC solutions is intended to produce a fully costed ‘menu of options’ for the Cape Town meeting. This is intended to provide funders with an idea of the overall cost of the ESIC initiative, and the cost of individual elements or solutions. The Wellcome Trust and the other funders will decide later which of the solutions they wish to fund, and will then invite applications for funding that will be structured according to the specifications and general requirements of the individual funder(s).
2. What is meant by costing the solutions proposed by the Groups?	As indicated in the ESIC Guidance document, in Stage 4 each group is expected to prioritise solutions for their particular area to support the conduct of living evidence syntheses in response to global knowledge needs. The groups have to consider how to achieve the maximum impact across these solutions using an “impact-effort matrix”.

We can thus think of solutions as the production and delivery of goods or services. Therefore, **resources** will be needed to create and deliver the solutions. The Capability Framework describes the resources as “People, tools and funding.”

To be able to fully cost the solutions it is helpful to extend this definition. For the purpose of this document, therefore, resources are defined as the **inputs** to production of goods and services, and may involve **premises** (e.g. office space and amenities), **people** (e.g. any human effort including skills and knowledge), **tools** (man-made resources like computers, AI tools) and **other system requirements** (e.g. travel and subsistence, open access publication fees).

It is helpful to consider three steps when thinking about fully costing the solutions (but FAQ4 raises some cross-cutting issues that will also have to be considered):

1. **Identify** all resource use: what (premises, people, tools and other system requirements) will be involved in the production and delivery of your identified solution?
2. **Measure** the resource use: what level of premises, people, tools and other system requirements would you need to produce and deliver the identified solution, and over what time period?
3. **Value** the resource use: apply relevant price information or unit cost to the measured resource use to estimate the total cost of producing and delivering the solution.

The four input categories: **premises, people, tools, and other system requirements** can be seen as a framework to produce and deliver your proposed solutions, therefore it's helpful to identify and measure all resource use before valuing them. For example, if the proposed solution is based in a university, it may be assumed

	that some of the people such as legal and financial teams will be provided by the institution, but there are likely to be overhead or indirect charges in relation to the premises to cover these.
3. What is the role of the costing consultants?	As described in the revised guidance for WGs and PGs, in Stage 4a the groups are asked to produce a short-list of prioritised solutions for their area, and consider how to achieve the maximum impact across these solutions using an “impact-effort matrix”. Using the terminology of FAQ2, this will include identifying all the resource use that will be needed, and measuring the resource use. The Costing Consultants can help the Groups to fully consider all the elements that might need to be included. But the costing is not included at Stage 4a. In Stage 4b the Costing Consults will undertake to value or cost the inputs included in the solutions proposed by the Groups, but will rely on assistance from the Planning Analysts/Clerks and nominated members of each group. As Costing Consultants understand it, the intention set out in the guidance is that each group will then integrate the cost figures produced by the Costing Consultants into their Stage 4b reports.
4. Are there cross-cutting issues that will also impact on cost?	A range of cross-cutting issues will influence the cost of the various inputs. These include: Geographic location: salaries and other inputs are likely to vary depending upon the geographic location in which the solution is based. Below in FAQ6 the costing consultants propose that location be identified in terms of three broad bands. Existing or new assets: where existing assets can be used this might reduce the need for some elements of cost as such as recruitment, purchase of equipment etc.
5. What are key elements of various inputs?	These are some examples by type of input [not an exhaustive list], the full cost of which will probably vary depending on the cross-cutting issues: Premises – Office rent, overheads, etc. for the length of their use

	People – base salaries, pension and insurance contribution, by location banding; the full range of staff need to be considered, including managers, professionals, administrators, legal experts, communications team etc. and the time that staff would spend (e.g. percentage full time equivalent or simply, number of days), and recruitment costs. Tools – purchase costs for hardware and software, maintenance / service costs and for how long it would be paid for. Other system requirements – citizen engagement, data sharing, compliance, travel and subsistence, open access publication fees, translation fees, training/CPD/capacity strengthening cost; meeting costs, including venue hiring & catering, etc. These may be one off or ongoing.
6. How are salary scales considered as they vary widely between countries?	Salary costs might take a significant proportion of the full economic costs of a proposed solution. Therefore, a proposal can be cheaper from a funder's perspective if it is in a low-salary band area, provided there are adequate skillsets to deliver the proposed tasks. Costing Consultants suggest the use of three broad bands of countries would provide a pragmatic level of accuracy in the costing, but still leave considerable flexibility in the locations. They propose the three bands consisting of roughly equal numbers of countries could be used for costing [having low-income countries as a separate group would have resulted in a relatively small group]: 1. The Global North 2. The Global South: high and upper-middle income countries 3. The Global South: lower-middle and low-income countries Groups will need to identify where in terms in terms of which band of countries you envisage the teams that deliver your proposed solutions are to be located, but, of course, it might be that a solution

	could be delivered by a team working partly in one band of countries, and partly in one, or both, other bands. The Costing Consultants will aim to cost in a way that reflects the percentage of the required resources that the groups suggest should be based in each band. Costing consultants are happy to advise how best the groups might like to do this. (See also FAQ12 for use of a sensitivity analysis to costing alternative percentages in each band). Costing consultants are currently identifying appropriate salary scales for each band based on various sources of data. We anticipate a simple grading of salary scales involving three tiers: junior, middle ranking and senior. Therefore, there is no need for the groups to ask about peoples' salaries (see FAQ 14). The same principle also applies to other inputs such as tools.
7. How will citizen involvement be included in costing?	The ESIC Citizen involvement plan aims to “recognise, acknowledge and reward citizens involved in co-production”. Whilst ‘reward’ in this context is broader than (culturally appropriate) financial reimbursement for their time, any direct financial payments such as reimbursement of expenses or compensation if envisaged need to be included in the costing. If citizens volunteer their time, the full economic costing will still need to value this at the approval market rate.
8. How can costing consultants help with identifying and measuring resource use, and the groups help costing consultants with costing?	In Stage 4a and earlier, costing consultants will provide you with guidance and support, where appropriate and requested, when groups are identifying and measuring the resources needed. Therefore, engaging with them early on is likely to be helpful to complete this task. They are available for individual meetings as and when needed and attend most if not all weekly Co-leads meetings for any burning issues. You can contact them at: Subhash.Pokhrel@brunel.ac.uk Stephen.Hanney@brunel.ac.uk In Stage 4b, as the consultants undertake the costing of the resource use identified and measured for the proposed solutions,

	they will also want to work closely with groups (particularly with the planning analysts and planning clerks). Hopefully the groups will be able to inform the costing consultants of any information they have gathered that might be relevant for costing elements in their proposals, as well as responding to urgent requests from the consultants for clarification about any aspects of the inputs to be costed. Furthermore, given the very tight timetable, the consultants are likely to be reliant on rapid responses from groups to the consultants' initial draft costings.
9. At what stage of the Double Diamond do we need to identify and measure the resources/inputs needed?	The main stage for conducting this work is Stage 4a as each group prepares its short-list of priority solutions and assesses the effort required to deliver them. However, when interviews are being conducted in Stage 3 as the long-list of possible solutions is being compiled, if anyone mentions the inputs required it would be useful for this to be recorded. It would also be useful to note if anyone seems particularly knowledgeable about inputs and identify them as someone to go back to in Stage 4.
10. How can the groups help the consultants with the template for costing the solutions?	It is intended that the consultants will prepare an Excel costing spreadsheet before the start of Stage 4. However, we anticipate a great deal of variation in terms of proposed / identified solutions that might require significant adaptation of the Excel spreadsheet. Therefore, once you have identified a solution to short-list as a priority, please get in touch with the Costing Consultants so we can adapt the spreadsheet according to the specific needs of each group.
11. The ESIC Guidance documents mentions alternative strategies. What are they and	There might be alternative strategies by which an identified solution can be achieved. For example, WGs & PGs might propose particular solutions could be delivered by alternative strategies that would mean different levels of inputs in terms of people/tools etc would be required (entailing different costs) but also different levels of impact of each strategy. Groups don't have to find alternative strategies for each solution, but it might be a helpful approach to consider, for example, when

how to cost them?	the initial proposal looks like being very resource-intensive, and therefore is likely to be very high-cost, albeit with a large impact. Having alternative strategies costed might be more robust than presenting just one set of costing information. However, doing this might result in alternative strategies for the same solution appearing in different quadrants of the Impact Effort Matrix.
12. What is sensitivity analysis?	When final costs are estimated, these are likely to be uncertain due to various assumptions or proxies involved in the cost calculation (e.g. less confidence in some of the available price or unit cost data such as location banding as described in FAQ 6 or areas as described in FAQ 15). It is therefore a good practice to reflect on those uncertainties while presenting the cost figures. This is called sensitivity analysis (the goal is to understand how sensitive the final cost estimates are to a particular costing assumption or proxy). It is thus the ambition of the costing team to present two sets of the cost estimates: (i) the ‘base case’ estimate which would be arrived at by using the preferred set of assumptions around the costing parameters; and (ii) the ‘range’ of costs which would be arrived at by considering the lowest and highest value of potentially uncertain costing parameters. It is important however to understand that the range above is not the same as the 95% confidence interval and should not be interpreted as such.
13. Will the costing follow the costing guidelines of a particular funder?	No. There are many potential funders beyond Wellcome who it is hoped will consider the ESIC menu of options and their funding requirements vary in terms of specific items that they can fund or not. It is expected that future application teams will scrutinise such requirements <i>vis a vis</i> the fully costed proposals.
14. Do we have to ask people to	No. The costing consultants will identify and apply salary scales for each of the broad bands of countries identified. These scales are

provide data on their salaries?	being constructed from a range of sources , and any suggestion for existing known salary scales on which to draw would be most welcome.
15. What assumptions (or proxies) are being made in costing the solutions?	Costing involves using various assumptions about how resources are identified, measured and valued. The WGs and PGs might have to make various assumptions about what identified and measured resources are required. The costing consultants might make assumptions about how to value the measured inputs to calculate costs. The costing consultants hope to work together with groups on these issues in all steps and can help groups develop those assumptions in as comprehensive way as possible so that we end up with the required fully costed proposals.
16. How pragmatic will the costing approach be?	The costing consultants recognise that within the rapidly moving project there is a need to be agile and pragmatic where necessary. However, during the project various colleagues have told us of the importance of including key items sometimes overlooked such as funding for training, translation, citizen engagement, etc, and therefore there is also pressure to be as comprehensive as possible. The costing exercise will strike a balance between the two competing goals guided by the groups. Nevertheless, as noted in FAQ 1, this is a different exercise than the ones that will be undertaken later when applications for funding are made in response to specific calls from funders.
17. Will there be any consideration of the current costs of an existing solution?	The aim of ESIC is to produce new model that is more effective and affordable. A 'benchmark' is needed to do this. Note however that: • <i>More effective may not always mean cheaper.</i> • <i>Affordability refers to funders' ability to pay within their budget constraints.</i> • <i>Eventually, 'value for money' would be a requirement for funding.</i>

	Any information on current costs helps with identification and estimation of the costs of new elements of the infrastructure / solution, thus contributing to the goal of costing the future model of the solution as described in this FAQ.
18. What is the difference between money, funding and costs in relation to various ESIC documents?	Money refers to financial outlays that would be required to do a certain task. Without money, the task cannot happen. Funding refers to the amount of money provided by a funder to an individual or a group to complete an agreed task. Funding might not cover all the monies that would be required to complete the task. Costs refer to the value of the resources (see FAQ 2 for definition) that must be used to produce and deliver an agreed task. Actual costs could be higher than available monies (funding) or financial outlays (when there is hidden effort such as volunteer time).
19. Are the new models for some tasks likely to cost more or less than existing models?	Some solutions for the future identified by groups are likely to build on existing models or assets . The costs of new model could be lower (wherever possible) or higher depending on the context. For example, if a new solution relies on already set up infrastructure, it might not require the setup costs and thus will be cheaper. However, if it requires additional skilled people and/or relatively expensive technology, the costs might be higher. Furthermore, it is likely that the price of some solutions might be reduced because of the use of AI, but the proposed solutions might involve a larger quantity, for example as living syntheses are conducted in more fields, and therefore the overall cost might be higher but with potentially much larger impact. This final consideration would well illustrate the advantages of using an impact-effort matrix.
20. There might be overlaps in resource use between potential solutions. How	Costing consultants recognise the desirability of synergies across the solutions from the groups. However, synergistic solutions might involve overlapping activities which if not identified could lead us to count the inputs more than once. Double counting occurs when one includes the same resource item or input more than once in the costing. As the groups are working

can we address the issue of double counting?	together in a synergistic spirit, it is possible that the same input will be proposed in different solutions from two groups. For example, there might be elements of training or citizen engagement included in more than one solution that covers broadly the same topic area or audience. Groups might like to suggest where there might be an overlap, so that it should be costed in only one of the solutions. Alternatively, the costing consultants will try to identify and address the costing issue of such overlaps in consultation with the groups. Over the course of ESIC planning process, there are a number of decision points where such synergies are discussed and agreed upon. Costing consultants will work to ensure the double counting of resource use will be avoided as far as possible.
21. How do we consider “ready to roll out” or “in development” elements of ESIC solutions?	The advances, for example in AI, means that certain elements of potential ESIC solutions will need to be considered anyway. However, there might be other elements which are still in development and the cost of which is currently highly uncertain. In such situations, the costing consultants will take a pragmatic approach and work together with the groups in making reasonable assumptions around costing those elements.
22. How can we use costing to help achieve the equity goals of ESIC?	Thinking about resource use can be a good opportunity for the groups to embed equity concerns into their solutions. It is thus expected that the groups will come up with the solutions that address the equity issues. Costing consultants will then fully cost those proposals.
23. Evidence synthesis work is often criticised for its high unit cost. Why this is relevant to us?	Often, it is the lack of full understanding of the processes involved in conducting a systematic review that leads to the assumption that evidence syntheses cost too much. Identifying, measuring and valuing all resource use will therefore help increase transparency. This could help the groups demonstrate opportunities for minimising costs without compromising the quality. Once we know the costs of ESIC solutions, the groups can more confidently present to the funders how “value for money” will be

	achieved by balancing the relevance, cost-efficiency and real-world impact.
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Journal Pre-proof

APPENDIX 2: ESIC – Resource Use Questionnaire for each prioritised solution (with initial additional clarification that was separately provided)

Key points of clarification for costing

1. Deadlines: please send as many completed Resource Use Questionnaire as possible on Fri 23 May, with the remainder as they become ready, and at least by 7.00am GMT on Wed 28 May.
2. Opportunities for revisions: we will process the questionnaires in the order we receive them. Therefore, the earlier you submit them, the greater the chance that there might be opportunities to receive a draft costing in time to revise it if you wish.
3. Software: please complete the questionnaire in word, or use an Excel file if you prefer.
4. Currency: US\$
5. Cost limits: Currently there is no limit on the maximum of any one prioritised solution, or the portfolio of solutions– Wellcome is developing a funding consortium.
6. Premises etc: the cost of premises and related facilities and institutional staff such as HR, legal, cleaning etc are indirect costs (or overheads) and do not need to be entered onto the questionnaire. The costing consultants will apply the approach used by many funders and use a fixed % (20%) of the direct costs of each solution. This will identify a figure for the solution's indirect costs.
7. Alternative versions of a solution: Question 2 (Solution number) shows Groups how to submit questionnaires for alternative versions of the same prioritised solution: they should all have the same number but be identified please as A), B), C) etc.
8. Citizen Engagement: Maureen Smith has kindly offered to advise Groups on how to identify an appropriate # of hours to include in Question 8 on the questionnaire.
9. Paying staff or others to go on a capacity building event (training course etc): please use Question 7 (Capacity Building) on the Resource Use Questionnaire.
10. Running training courses as part of the solution: please use Question 4 (People) or Question 5 (Contracts) to incorporate the cost of the trainers, and use Question 6 (Tools) for any computers, software etc that might be needed; if the course is going to be provided free to participants, please use Question 11 (Other) to show the average training event meeting room/catering unit cost, and the # of events.
11. Project meetings: if you anticipate needing to hire a meeting room and/or provide catering, please use Question 11 (Other) to show the unit cost for an average meeting/catering and the # of meetings.

Guidance attached to the second edition of the Resource Use Questionnaire (some of these points were repeated in the additional clarification that was subsequently provided)

- **The questionnaire involves the measurement of resource use step (see FAQ2). It facilitates the transition between prioritisation and costing to inform production of the required “fully costed” solutions – it is not a detailed funding application.**
- **Please send as many completed questionnaires as possible on the new deadline of 23 May, and the remainder in the window for receiving completed Resource Use Questionnaires which closes at 7.00GMT on Wed 28 May.**

- **NB: Please do not wait until all the questionnaires from your Group are complete before sending – please send each one as soon as it is ready.**
- **Not every question has to be answered for every prioritised solution – if there is no proposed resource use related to a particular question, then please just ignore that question.**
- **Not every costing band has to be used.**
- **Question 4 looks long partly because it facilities costing of solutions in which different amounts of effort might be required at different points over the length of the solution. For example, infrastructure development might require more staff at the beginning than in the rest of the duration of the solution.**

1. Name of the Group:
2. Prioritised solution number - use A, B etc for any alternative version of the solution – it is crucial that they are not listed as additional solutions:
3. Title of the solution:
4. **PEOPLE:** Who will be involved in delivering the solution: this might include a wide range of professional, technical and administrative staff, including people who might have full time roles as trainers

Type	Location – This is to allow a rough estimate of costs. It is not intended to be specific countries. Just use the # of bands you wish: for example, all staff could be in Band 1	Expected Number – Different levels of effort over the life of the solution can be shown by using separate lines for the number of staff to be employed for different lengths of time	For how many months? if applicable, use separate lines for the number of staff to be employed for different lengths of time	Approx FTE
Senior (Established)	Band 1: Global South – low and			

career such as Professor / Lead / Director, usually more than 10 years of experience)	lower middle income			
	Band 2: Global South - high and upper middle income			
	Band 3: Global North			
Mid-tier (such as Senior Lecturer / Senior Researcher / Theme Lead), usually 5-10 years of experience). Also, if appropriate include project manager, head of	Band 1: Global South – low and lower middle income			
	Band 2: Global South - high and upper middle income			
	Band 3: Global North			

communication staff, etc.				
Junior (such as Lecturer / Researcher, post-doc fellow, usually 0-5 years of experience). Also, if appropriate include project admin, communication staff, etc.	Band 1: Global South – low and lower middle income			
	Band 2: Global South - high and upper middle income			
	Band 3: Global North			

5. Are there any third-party contracts (except, e.g. IT maintenance which is included in Q6) involved in delivering your solution, i.e. costs charged by an external supplier to deliver a piece of work? If so, please indicate:

Type of external service	Expected value of the contract (in US\$):

6. **TOOLS:** Would you need any tool to deliver this solution? Pls indicate all that applies to you – this could be existing tools, or items required for developing a new tool.

Type	How many?	Approx cost of each in US\$ if known	For how many months where relevant?
Software license			
Data management tools			
Data sharing tools			
AI subscriptions			
Virtual space for meeting and coordination			
New hardware			
Hardware upgrades			
IT related training			
Maintenance contracts			
Items required to develop new tools			
Other (specify)			

OTHER SYSTEM REQUIREMENTS

7. **CAPACITY DEVELOPMENT:** Are you proposing the solution includes funding to pay people (staff or others) to attend capacity building activities?

Type	Location of capacity building activity	Over the length of the solution, expected # of attendees funded (staff or others as part of the solution) to participate in	Average cost per attendee in US\$ (including fees, accommodation, travel, etc.) if known

		the capacity building events	
Short course/ training/CPD etc	Band 1: Global South – low and lower middle income		
	Band 2: Global South - high and upper middle income		
	Band 3: Global North		

8. CITIZEN ENGAGEMENT: Is citizen engagement involved in delivering the solution?

Location	Estimate of total number of HOURS of citizen engagement during the length of the solution: this figure should reflect the time that will be compensated – it will also be used to inform the level of costs of reimbursing expenses, including travel
Band 1: Global South – low and lower middle income	
Band 2: Global South - high and upper middle income	
Band 3: Global North	

9. TRAVEL: Is travel required for the administration of this solution and/or its promotion at meetings, conferences etc

Type	Expected # overseas trips during the length of the solution	Expected # in-country trips	Total days of accommodation

Travel and accommodation			
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10. PUBLICATIONS AND PROMOTION EXPENSES: Are there any dissemination activities involved in delivering your solution?

Type	# of items	Approximate cost of each if known (in US\$)
Open access publications		
Presentation materials		
Posters		
Videos		
Fees for attending conferences		
Other		

11. OTHER: Is there any other resource use that is not covered above? If so, please provide a brief description and estimated cost.

Thank you for your cooperation! If you need any help regarding this survey, please feel free to contact Subhash Pokhrel (Subhash.Pokhrel@brunel.ac.uk) and Stephen Hanney (Stephen.Hanney@brunel.ac.uk).

APPENDIX 3: The inclusion of Indirect Costs, or Overheads, in the costing of ESIC priority solutions

1. Why there is no need for Groups to measure the level of resource use for the premises and other “indirect” cost items for their solutions.

The costing consultants have been tasked with preparing “estimates of costs” for the priority solutions proposed for ESIC by the various Groups, **from the “funders’ perspective”**.

The “indirect” costs or overheads associated with grants from funding bodies can include a range of items. Examples can include the cost of amenities, facilities, renting premises and also the cost of the staff not directly involved in the work of a specific funded project, but who undertake necessary organisation-wide HR, legal, financial roles etc for the institutions where the staff working on the projects are based. In relation to funding the indirect costs associated with their grants, there is considerable variation in the approaches adopted by funding bodies in different countries, and within the same country. Furthermore, some funders, including The Wellcome Trust, have different approaches for different types of recipients of their grants.

Many funding bodies have a cap on the level of indirect funding they will supply. This is often expressed as a % of the total “direct” research costs (ie, staff, tools, travel etc).

Given the highly variable perspectives adopted by funders in relation to supporting indirect costs, and the frequent existence of a cap on the maximum that they will provide, the costing team are proposing that the figure for indirect costs for ESIC solutions should be a standard maximum % of the total direct costs for each solution. This means that there will usually be no need for Groups to attempt to measure the resource use related to indirect costs element of their proposed solutions.

2. Why a figure of 20% of total direct costs seems the appropriate standard figure to use to calculate the indirect cost of solutions

For the indirect costs of each solution, the costing consultants are proposing to use a standard figure of 20% of the direct costs. If, however, Groups believed one or more of your proposed solutions could be delivered using a lower % of the direct costs, the costing consultants would be happy to consider such cases.

Evidence from various source supports the adoption of the 20% of the direct costs figure as the most appropriate one to be used to for costing the overheads/indirect costs of ESIC prioritised solutions. It is the % used by the Wellcome Trust for grants for overseas projects, and to non-Higher Education Institutions in the UK. For projects funded by some programmes of the UKRI (UK research councils including ESRC) in the Global South, and projects in non-academic institutions in the UK, there is a “*20% of labour costs option: this option allows you to claim 20% of your labour costs as overhead.*” Furthermore, the 20% of the direct costs figure is also in the middle of the range of % figures used by different funders as described in ascending order the paragraphs below, starting with examples where the figure is less than 20% moving on to those where it is higher.

In some systems the cap for indirect funding can be zero. This is the often case with the grants from many public funders of research in countries such as Australia and Canada, and charities in the UK. However, in these cases, there are other schemes of public funding that supply bulk sums to cover the cost of at least some of the “indirect” expenses necessary for the conduct of the institution’s portfolio of projects. The Wellcome Trust applies this policy to Higher Education Institutions in the UK, where there is a public sector funding scheme to contribute towards the indirect costs of institutions that receive grants from Medical Research Charities such as Wellcome.

Other leading funders have a low cap for indirect funding, eg USAID, Jacobs Foundation and the Gates Foundation (in relation to USA Higher Education Institutions) have a cap of about 10% of the direct cost. (For other organisations the % funded by Gates varies from 0%-15%). Much of the data available relates to Higher Education Institutions, but an analysis of selected Think Tanks globally claimed that the funding for indirect costs they received from Foundations, and some public sector funders, ranged from 7-29% of the direct costs (but the actual expenditure incurred by these Think Tanks, including ones based in Egypt, India, Kenya and Peru, to cover indirect costs was estimated to be 18-51%).

For Federal research funders in the USA, such as the National Institutes of Health and the National Science Foundation, the figure has recently been considerably reduced to 15%, although this is subject to legal challenges – it mostly goes to Higher Education Institutions. EU/European Research Council, Horizon Programme: indirect costs capped at 25% of eligible direct costs.

An Irish Higher Education Authority report (2023) recommended indirect costs be paid at 25-30% of direct costs. Some Irish funders had higher rates.

Public sector funders in the UK can pay much higher levels of indirect costs to various types of organisations, including for projects in LMICs, but it can get particularly complicated because, while UKRI and NIHR tend to accept reasonable indirect costs identified by UK universities, in most cases they then only pay 80% of the overall full economic cost of the project to UK universities – and no indirect costs to universities in other high income countries.

APPENDIX 4: ESIC Costing: underlying assumptions

Appropriate unit costs were identified for each of the category headings specified in the Resource Use Questionnaire, apart from Contracts where the figure supplied by the Groups were use – sometimes after clarifications by the Economic Advisors.

People

Unit cost of employment (salaries/pensions/insurance etc) for different people involved to deliver the solution

The complex nature of ESIC solutions meant that an equitable global partnership model that would involve different roles and seniority of people across the Global South and Global North was the preferred approach to delivering the solutions. Therefore, to strike a balance between precision and practicality in costing the prioritised solutions and to simplify the costing model, a 3x3 matrix was created based on average salary and on-costs data from various sources (calibration/triangulation approach). The final average employment cost is as below in 2025 US\$, and the remainder of the text in this “People” section described how we arrived at the figures.

	Junior (e.g. postdoctoral fellow, administrator, technician etc.)	Mid-tier (senior lecturer, project manager, senior technician, etc.)	Senior (Professor, Project Lead, Director, etc.)
Band 1: Global South-Low and lower middle income countries (GS-LLM), including data from/on Bangladesh, Cambodia, Ghana, Kenya, Nepal, Sudan, Tanzania, Uganda, Viet Nam	\$13,075	\$25,312	\$44,086
Band 2: Global South – High and upper middle income countries, including data from/on Brazil, South Africa, Thailand, Uruguay	\$31,663	\$50,404	\$76,398

Band 3: Global North – high income countries, including data from/on Australia, Canada, Europe, Ireland, Japan, USA, UK	\$53,261	\$79,785	\$135,118
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The process of arriving at this final average salary table involved several steps starting with identification of appropriate sources of information to use. It is important to note that no credible single dataset was available to provide this information in the format needed for the cost modelling and/or for the most recent years. Therefore, the following four alternative sources were used to calibrate/triangulate the estimates with data checked, verified and adjusted for various parameters. (In an earlier version of the costings' assumptions document, an additional source had been used - statistics from the International Labour Organisation. But, this was dropped as it became apparent that this was lowering the averages in the Global South to an inappropriate level.)

- 1. Multi-country analysis** – conducted by costing consultants using the websites listed and personal communications from the Research Support and Development Office (RSDO) of Brunel University of London, the unit responsible for costing grant proposals across all disciplines at Brunel, with some triangulation with some colleagues from the relevant countries. This analysis was not specific to one particular sector.
- 2. United Kingdom Research and Innovation (UKRI) - Pay and reward policy – UKRI**
- 3. Action on Disability and Development (ADD) International - ADD-salary-scales-2025-updated.pdf**
- 4. AI-enabled internet search** – details (prompts and returns) are provided in Annex A.

Each of these sources had strengths and weaknesses identified below before we describe each one in more detail:

Source	Strengths	Weaknesses
Multi-country analysis	Reliable and credible sources	Some old data Whether oncosts were included was not clear in some sources
UKRI	One of the most trusted data sources	No Global South data available
ADD International	A rigorously developed approach to paying staff on international NGOs	Might not be representative of academic salaries

		No Global South: high and upper middle-income countries (Band 2) included
AI-enabled internet search	Could provide the most recent and market wages based on a number of sources	Picks up sources that might not be reliable Inconsistency of data returns over time as the system continuously updates but it is hard to ascertain that.

1. **Multi-country analysis:** First, the costing consultants conducted a **multi-country analysis** using websites and personal communications from the Research Services Development Office (RSDO) of Brunel University London. The RSDO drew on the pre-research grant award processes they have undertaken for some Brunel-led overseas projects across all disciplines, including project costings. The RSDO provided anonymous data in the 3x3 matrix format, and also helped identify appropriate websites. Costing consultants conducted some further triangulation with colleagues from the relevant countries such as Bangladesh, Ghana and Nepal. This multi-country analysis resulted in the following table:

Multi-country analysis - Final compiled data from various sources in US\$					
The most recent year available is used. No uplift is made as pay-rise rate might not have been consistent with inflation rate.					
NB: We aimed to have a representative balance of countries in each band. We recognised that the figures we obtained for some countries may have been higher (or lower) than expected but we aimed to get an estimate that would average out across multiple data points to represent the bands. Therefore, here we show just the sources used and the averages for each tier in each costing band.					
Band	Country	Junior	Mid-tier	Senior	Source:
GS-LLM	Ghana				Average of two sources. Salary information obtained from Ghana based on grades from this source: http://fairwages.gov.gh . RSDO Brunel supplied based on actual applications. It is assumed that oncosts are included.
GS-LLM	Nepal				Salary of Tribhuvan University Officials, Faculties and Staffs - Edusanjal . It is assumed that oncosts are included. Kathmandu University salaries for project staff. Includes basic salary and allowances.
GS-LLM	Uganda				Average of: Kabale University. Salary Structure for Public Universities for FY 2024/2025 - Kabale University . & the salary scale

					for Uganda from the ADD salary scales 2025 – see below for information on ADD: https://add.org.uk/wp-content/uploads/2025/04/ADD-salary-scales-2025-updated.pdf
GS-LLM	Viet Nam				RSDO Brunel supplied based on actual application. It is assumed that oncosts are included.
GS-LLM	Average for countries above	\$9,493	\$13,967	\$21,321	
GS-HUM	Brazil				RSDO Brunel supplied based on various searches - no verification. It is assumed that oncosts are included.
GS-HUM	South Africa				Average employment cost of University of Cape Town and Central University of Technology .
GS-HUM	Thailand				Average wage classified by level of education. Bank of Thailand data for doctoral degree level average salary used for mid-range, and a proportion uplift or downlift applied for senior and junior
GS-HUM	Uruguay				Based on salary scale -see tab. On-costs: 12.625% added.
GS-HUM	Average for countries above	\$22,702	\$32,058	\$46,546	
GN	Australia				Australia - Queensland Salaries . On-costs: 28.929% added.
GN	Canada				Academic Salary Administration of University of Toronto – Academic Administrative Procedures Manual. On-costs sourced from Benefits Accounting .
GN	Ireland				Salary scale for Trinity College Dublin, which is at the high end of the range in Ireland. Pension of 3% & National Insurance of 11.5% added: Ireland - TCD Salaries .
GN	Japan				Japan - Tokyo Salaries . On-costs: 16.55% added. These data are from 2021.
GN	United Kingdom				Brunel Salaries . Supplied by RSDO, Brunel University based on actual mid-range salary scales for postdoc, senior lecturer and professor respectively. Pension:

					<u>14.5% and National Insurance 15% added with London Allowance of £2508</u>
GN	Average for countries above	\$62,486	\$84,446	\$146,378	

2. **UKRI data** for staff salaries for Research Council centres and units was adjusted for on-costs using Brunel estimates of on-costs and converted to US\$ (1 GBP = 1.25US\$).
3. **ADD International** salary information was regarded as a credible source to include in the calibration / triangulation process. ADD is an international Non-Governmental Organisation (NGO) (<https://add.org.uk/about-us/>) that campaigns to improve opportunities and services for disabled people, which is a major cross-cutting SDG. It has employees in Bangladesh, Cambodia, Kenya, Sudan, Tanzania and Uganda on one scale, and those in Europe, UK and USA on another scale. Like many other NGOs such as Clean Air Fund, Medicine Sans Frontier, WaterAid, it uses Project Fair based at Edinburgh University, UK, to advise on the use of appropriate salary scales (<https://www.project-fair.business-school.ed.ac.uk/>). On costs were added using average multi-country analysis estimates for on-costs. All the GS-LLM countries reported in ADD the source were used to estimate the average ADD salary. Europe/US salaries were used for a Global North average.
4. **AI-enabled internet searches** – Microsoft Co-pilot was used to generate average salaries across the 3x3 matrix. The search used several data sources (see Annex A for details). Initially, we made the marginal decision not to include these figures in our average but once we have completed the initial costings of the full set of solutions, it became apparent that it would be preferable to include this to better reflect the most recent market employment cost data.

Then an average over all these four sources (to the extent they were available) was taken as the estimated average employment cost for each costing location band and for the type of role. Our figures represent a pragmatic approach by assuming an average figure over five years.

Source	Band 1: Global South - low and lower middle income countries (GS-LLM)			Band 2: Global South - high and upper middle income countries (GS-HUM)			Band 3: Global North - high income countries		
	Junior	Mid-tier	Senior	Junior	Mid-tier	Senior	Junior	Mid-tier	Senior
Multi-country analysis	\$9,493	\$13,967	\$21,321	\$22,702	\$32,058	\$46,546	\$62,468	\$84,446	\$146,378
ADD	\$10,983	\$21,344	\$39,061				\$40,831	\$57,913	\$121,451
UKRI							\$47,246	\$89,282	\$134,520
Internet search	\$18,750	\$40,625	\$71,875	\$40,625	\$68,750	\$106,250	\$62,500	\$87,500	\$138,125
Average	\$13,075	\$25,312	\$44,086	\$31,663	\$50,404	\$76,398	\$53,261	\$79,785	\$135,118

Unit costs of tools

On the hypothetical resource use questionnaire, supplied to Groups to help them complete their Resource Use Questionnaires for each of their proposed solutions, the following unit cost data examples were included by the costing consultants based on internet searches:

Software license costs: example – Stata SE 3-year plan for 5 concurrent users, developmental economies pricing: US\$6,500 new purchase + US\$2,190 renewal at 4th year.

AI subscriptions: example – ChatGPT Pro license: \$200/month (for 60 months).

Virtual space for meeting and coordination: example – zoom subscription: \$15/month

New hardware: example – laptops: \$800 each.

Additionally, an ESIC-relevant tools cost database was built up based on other specific tool costs provided by the Groups or searched for by the costing consultants once a Group had specified its requirements. Where appropriate, expert opinions were also sought to provide best estimates.

Capacity development/Training events attendance

Organising and running training was costed as part of People, Tools etc (see Resource Use Questionnaire).

Where staff and others are going to be sent for training or any other capacity building (or have their travel & accommodation paid for to attend ESIC-provided training), the following estimates were used:

Average cost per attendee

Band 1 \$900

Band 2 \$1,500

Band 3 \$2,900

NB: Any estimate of costs has to consider a wide range of factors, including mode of delivery, length and location. In the hypothetical example, we provided possible costs for training located in each costing band on the assumption there might be a mixture of online and in person training event attended, with those in Band 3 countries (Global North) likely to be more expensive. For example, courses on evidence synthesis advertised in March 2025 ranged from an online course over 4 days for librarians in Africa run by the Information Training & Outreach Centre for Africa for a fee of US\$75:

(<https://www.itoca.org/images/Evidence%20Synthesis%20training%20for%20African%20Librarians%20Announcement%20May%202025.pdf>) to an 8 week online/personal study course run by Oxford University for US\$4,300 (<https://www.conted.ox.ac.uk/courses/systematic-reviews?code=O24C189B9Y>). However, for courses involving international travel, flights in the Global South can be at least as expensive as in parts of the Global North – see Travel below.

Citizen engagement costs

In liaison with the Citizen Engagement expert, Maureen Smith, an hourly rate of US\$26 was identified to reflect the time that will be compensated. This was informed by using rates from the National Institute for Health Research in the UK (<https://www.nihr.ac.uk/payment-guidance-researchers-and-professionals#payment-rates>) Canada's Strategy for Patient-Oriented Research (SPOR). Then a figure of 15% of the US\$26 was added as an approximate estimate of the level of costs of reimbursing expenses, including travel. (In any ESIC solution involving Citizen Engagement the full actual expenses would be reimbursed). For the costing estimates this gave a final figure of US\$30 per hour for Citizen Engagement in the Global North. This was converted into comparable figures for the 2 bands in the Global South based on the salary figures used in the respective bands.

Location Hourly rate /unit cost

Band 1 \$9 [as an actual figure was unavailable for this band, a band conversion factor compared to Band 3 was based on salaried as reported above]

Band 2 \$19 [as an actual figure was unavailable for this band, a band conversion factor compared to Band 3 was based on salaried as reported above]

Band 3 \$29.90 [\$26 adjusted by 15% extra to cover travel costs on average]

Travel costs

Assumed the following as global average estimates for flights and accommodation costs for attending project meetings, conferences etc, based on internet searches (see Annex B). Our estimates are mostly based on the assumption that the differences between the costing bands could be less than for salaries, because flights (and in some cases hotel accommodation) in the Global South can be at least as expensive as in parts of the Global North. Therefore, this item was not costed by bands.

Overseas travel costs - \$1200

In-country travel costs - \$350

Accommodation and subsistence - \$250/night

Dissemination costs

In the hypothetical example we stated the following as average estimates based on internet searches. These were used in the costing, unless Groups provided a reasonable alternative: if Groups' suggestions seemed to be considerably out of line with these, we tried to check with the relevant Group.

Type	Unit cost
Open access publications	\$2,000
Presentation materials	Group supplied estimates
Posters	\$100
Videos	\$2,100
Fees for attending conferences	\$350

Annex A: Internet search

The costing consultants spent significant time prompting ChatGPT and Co-pilot to provide these figures with deep research / thinking enabled. However, the estimates generated had huge variations regardless of specificity of the prompts, as set out below. Most of the time, they were unable to use the most credible sources but relied heavily on sites like SalaryExpert or Glassdoor, which are believed to rely heavily on evidence such as that provided by a small number of respondents to online surveys.

Generally, the figures for employment costs for the Global North were very similar to other sources. However, the internet searches figures were considerably higher than the ones we identified in the multi-country analysis from more reliable sources for Bands 1 and 2 (Global South). Initially, this was thought to be a potential issue for concern and therefore this data source was not used. Eventually, in the light of the initial costings of all solutions, we decided to use it to better reflect the current market employment costs.

A quick Internet search: Microsoft copilot with the following prompts (24/05/2025)

Searches on 24/05 2025 using Microsoft Copilot

Prompt: What is average academic salary for lecturer (assistant professor), senior lecturer/reader (associate professor) and professor (to reflect junior, mid-tier and senior

type) in global south (low and lower middle income countries), global south (high and upper middle income countries) and global north (to reflect differences that might be in costs)?

Return: Academic salaries vary significantly across regions due to differences in economic conditions, institutional funding, and cost of living. Here's a general breakdown:

Global South (Lower-Middle & Low-Income Countries)

- In **India**, assistant professors earn around **₹500,000–₹1,200,000** per year, while full professors can make **₹1,500,000–₹3,000,000** annually.

- In **Nigeria**, salaries for professors can range from **₦3,000,000–₦8,000,000** per year, which is significantly lower compared to high-income countries.

Global South (Upper-Middle & High-Income Countries)

- Salaries in countries like **Brazil**, **South Africa**, and **China** tend to be lower than in the Global North but still competitive. For example, in **China**, professors can earn between **¥200,000–¥500,000** per year, depending on the institution.

- In **South Africa**, salaries for professors range from **ZAR 600,000–1,200,000** annually.

Global North (High-Income Countries)

- **Lecturer (Assistant Professor)**: Salaries range from **£40,760** in the UK to **€3,821–€5,943** per month in the Netherlands.

- **Senior Lecturer/Reader (Associate Professor)**: In Germany, associate professors earn **€5,365–€6,676** per month, while in Switzerland, salaries range from **125,250–158,783 CHF** per year.

- **Professor**: Full professors in Denmark earn **58,236 DKR** per month, while in Switzerland, they can make up to **275,359 CHF** annually

These figures provide a broad overview, but salaries can vary based on institution, experience, and additional benefits. Would you like more details on a specific country?

Source used:

Professor Salaries from around the World - Academic Positions

Professor Salaries by Country | Salary Calculator by Country - SalaryExpert

Prompt: average out and give me a table with following columns: region, average salary junior, average salary mid-tier and average salary senior, source with URL. Include employer's oncosts such as pension and national insurance contribution.

Return: Here's a table summarizing average academic salaries across different regions, including employer oncosts such as pension and national insurance contributions:

Region	Average Salary (Junior)	Average Salary (Mid-Tier)	Average Salary (Senior)	Source
Global South (Lower-Middle & Low-Income Countries)	£10,000-£20,000	£25,000-£40,000	£45,000-£70,000	SalaryExpert
Global South (Upper-Middle & High-Income Countries)	£25,000-£40,000	£45,000-£65,000	£70,000-£100,000	SalaryExpert
Global North (High-Income Countries)	£45,000-£55,000	£60,000-£80,000	£90,000-£120,000	Academic Positions

These figures include employer oncosts such as pension contributions and national insurance, which typically add 15–25% to base salaries depending on the country. Let me know if you need more details on a specific country!

Reorganised table

Region	Average Salary (Junior)	Average Salary (Mid-Tier)	Average Salary (Senior)
Global South (Lower-Middle & Low-Income Countries)	\$18,750	\$40,625	\$71,875
Global South (Upper-Middle & High-Income Countries)	\$40,625	\$68,750	\$106,250
Global North (High-Income Countries)	\$62,500	\$87,500	\$138,125

Sources that Copilot used: [Professor Salaries From Around the World - Academic Positions](#) ; [Professor Salaries by Country | Salary Calculator by Country - SalaryExpert](#)

Annex B: Internet search on global averages of travel costs

ChatGPT – 27/05/2025

Prompt: analysing reported fares, please let me know a global averages of international travel, in-country travel and per night accommodation costs. include all countries and present the figures in US dollars.

Second prompt: can you include global south and update the table as well.

Certainly! Here's an updated overview of global average travel and accommodation costs, including data for the Global South, presented in U.S. dollars:

 International Airfare (Economy Class, Round-Trip)

- Global Average: Approximately \$1,217 in early 2024, with a 15% increase projected for 2025, adding about \$150 to the average fare.
- Regional Variations:
 - Latin America: Airfares remain about 10% higher than 2019 levels, with slower recovery due to economic factors.
 - Africa: Limited data available; however, airfare trends suggest variability based on routes and demand. (Fast Company)

 Domestic (In-Country) Travel

- United States: Average domestic round-trip fare is approximately \$265 in summer 2024.
- United Kingdom: Average domestic airfare reached £564 (approximately \$710) in September 2024, marking a 20% increase from the previous year.
- Australia: Average domestic flight cost is about \$220, up from \$203 in 2019.
- Latin America: Specific data on domestic fares is limited; however, domestic travel costs can vary widely across countries in the region.
- Africa: Data is scarce; domestic travel costs are highly variable and depend on infrastructure and demand.

 Accommodation (Per Night)

- Global Average Hotel Rate: Approximately \$184 per night in 2024.
- Regional Averages:
 - North America: Highest regional average at \$218 per night.
 - Europe: Average nightly rate of \$176.
 - Latin America: Average hotel rates soared to \$269 per night in the first half of 2024.
 - Africa: Average hotel rate is approximately \$198 per night.
 - Asia-Pacific: Average hotel rate is around \$158 per night. (Storyblok)
- Budget Options:
 - Hostels: Average of \$37 per night for a dorm bed.
 - RV Campsites: Range between \$25–\$60 per night.

 Summary Table

Category	Global Average (USD)	Notes
International Airfare	\$1,217	Early 2024 average; projected 15% increase in 2025.
Domestic Airfare (U.S.)	\$265	Summer 2024 average.
Domestic Airfare (U.K.)	\$710	September 2024 average.
Domestic Airfare (Australia)	\$220	Up from \$203 in 2019.

Category	Global Average (USD)	Notes
Hotel Accommodation	\$184	Global average per night in 2024.
Hostel Accommodation	\$37	Average per night for a dorm bed.
RV Campsite	\$25–\$60	Per night range.

Please note that these figures are averages and can vary significantly based on specific destinations, seasons, and booking times. For more precise budgeting, it's advisable to consult local travel resources or booking platforms relevant to your intended destinations.

What is new?

Key Findings: Initial costing figures were produced for all 40 ESIC proposed solutions.

What this adds to what was known: No such previous estimates were available.

What is the implication and what should change now: These initial costing estimates could help to inform the work of the ESIC Funders' Interest Group (a group of potential funders).

Journal Pre-proof

Declarations

No human and animal subjects involved

Declaration of interests:

None