Consultation on changes to our funding policies for knowledge exchange and innovation (KE&I)

Organisation	**University of Glasgow**
Question 1: how should the outcomes framework currently in place for UIF evolve to ensure University KEIF is structured to deliver on its renewed purpose and has the right strategic drivers and incentives in place?	The University of Glasgow (UofG) is a world-leading research-intensive institution which delivers substantial economic and social contribution for Scotland through our research and innovation activities, our world-class learning and teaching provision, our extensive international connections and our educational exports. We welcome the SFC's continued commitment to a core, stable funding stream to support capacity in Scottish universities for KE&I activity, recognising that UIF funding has been vital to the delivery of KE&I activities across the Scottish HE sector. Drawing on this support, the University of Glasgow's knowledge exchange and innovation activities have encompassed: - Supporting inclusive economic growth and inward investment - Addressing inequalities and improving social mobility - Improving population health and wellbeing - Supporting sustainability - Contributing to place making and regional cultural vitality Key highlights have included: - Development of the Glasgow Precision Medicine cluster, which includes the University's Clinical Innovation Zone and Precision Medicine Living Laboratory (£90M programme including £38M award from the UK Government's Strength in Places Fund), and which has attracted companies to locate in Glasgow from California, Germany and Singapore; - The £6M MIRAGE consortium within the global sensors and imaging systems sector; - The Industrial Centre for Artificial Intelligence Research in Digital Diagnostics (iCAIRD a £10M ISCF award from Innovate UK plus £6M from industrial partners); - Creation of the Glasgow Lighthouse Laboratory, a national COVID-19 testing facility set up by the University and the UK Department for Health & Social Care, which has analysed over 27million covid tests and contributed over £34M GVA to the local region;

	- A robust portfolio of spin-out and social enterprise creation, including membership of the Aspect consortium (£7.4M from UKRI Connecting Capability Fund) to drive commercial and business opportunities from social sciences, humanities and arts (SHAPE) research involving continued high levels of engagement with social science commercialisation and social investment programmes (the ASPECT ARC Accelerator, and the newly formed ASPECT Investor Network) and; - Launch of major social science business engagement programmes, including the Glasgow Soil Health Programme, a collaboration between Glasgow, Bayer, BASF, UPL, RaboBank, Microsoft and PwC to create a global infrastructure for trading, accounting and quality assurance for carbon sequestration in soil. Whilst it is vital that we build on the foundations of best practice and lessons learned from the UIF programme, we support reform of the outcomes framework and the associated structuring of the KEIF programme to ensure that the Scottish HE sector is optimising its contribution to economic and social prosperity and wellbeing outcomes in the post-Brexit and post-pandemic era. We believe that the current process of UIF reporting limits the capability of the fund to demonstrate its benefits. UofG's recently commissioned economic impact report independently assessed our economic contribution to the UK economy and provides tangible evidence of a return on investment to SFC and the Scottish and UK Governments for the public funding that the University receives. The report determined that: - UofG contributes £4.4 billion to the UK economy (an increase of 14 per cent in the three years to 2018-19) - UofG directly employs over 8,000 people and supports a student population of over 30,000 - The combined expenditure of UofG and its associated international student population supports an estimated 14,350 full-time equivalent (FTE) jobs (excluding University staff), 72 per cent of which are in Scotland and the remainder across the rest of the UK - For every £1 million invested in the University's research, £7.2 million of economic activity is generated, 95% of which is a result of productivity spill overs in the private sector - UofG is among the top UK universities for generating intellectual property from its research

	- UofG is also a major contributor to broader non-economic social outcomes which are explored through a series of accompanying case studies. The report has been very favourably received by our partners in government as a means of demonstrating our contributions towards the delivery of strategic innovation ambitions and serves as a useful basis for shaping future discussions around the evolved KEIF outcomes framework. Based on the above, we recommend: 1. The identification of a smaller number of long-term transformational KEIF outcomes around the economy and society (e.g. high-value jobs created) that directly align with the ambitions of Scottish and UK Government's innovation, economic and place-based strategies as the basis for the KEIF outcome framework. These strategies include: the Scottish Government National Strategy for Economic Transformation and forthcoming Innovation Strategy, the BEIS Innovation Strategy and the UK Government Levelling Up White Paper. Alignment to the SFC's proposed overarching National Impact Framework, the Scottish Government's National Performance Framework and the UN Sustainable Development Goals will also feature in determining the KEIF outcomes framework. Critically, this KEIF outcomes framework must be adopted by all members of the SFC's proposed system (e.g. Interface, Innovation Centres, and any mission-led initiatives) such that all members are working in true partnership to sustainably grow the system's capability in delivering to a shared innovation outcomes framework. 2. The development of a broad series of meaningful indicators grouped under each KEIF outcome that will enable institutions to assess and clearly articulate the value of their contribution towards outcomes at a more granular level. These should align with targets defined in the strategies referred to above and may include indicators around economic growth, skills, jobs created and retained, societal impacts, and innovation ecosystem facilities, including partnership working and collaboration. Notable examples of such approaches that can be drawn upon include: the University of Glasgow's

	Economic Impact Report, the KEF metrics, and the 2020 Knowledge Transfer Metrics report submitted to the European Commission. 3. A move towards a tailored allocation and operating model for each HEI eligible for KEIF that requires them to prospectively state their strategic intent to deliver against a selected number of the KEIF outcomes (as above in point 1) at the outset of a longer-term five-year funding cycle. SFC could achieve this by awarding KEIF based on the submission of a university's specific five-year action plan with defined deliverables against the selected outcomes to drive cross-sectoral strategic alignment. For each HEI, development of the action plan would involve selecting the outcomes that best align with their areas of research and innovation strength; and thereby those that they are most likely to deliver on. Then, from within each of their chosen outcomes, each HEI can select the indicators that they consider they are best placed to support the delivery of and define their contribution to associated targets as stated in UK and Scottish Government strategies. Within the five-year cycle, the action plan would require annual review and refresh in order to provide agility to react to emergent priorities. The level of flexibility provided by this approach would be particularly advantageous given the heterogeneity of specialisms and local operating environments across the Scottish HEI sector and their resulting potential to deliver economic and societal impacts. In particular, it would enable universities to: - Have the necessary certainty of a long-term funding settlement and drive a more focused, strategically aligned use of funds and delivery towards outcomes; - Strategically plan activity on a longer-term horizon, cognisant of the timescales involved in fully realising innovation activities towards impacts; - Undertake wider consideration of the changing national/international environment in which Scottish HEIs operate (e.g. UKRI Impact Acceleration Accounts, enterprise agencies, business support programmes etc.);

	- Draw on incentives including the opportunity for an enhanced level of KEIF if this can be proven to accelerate or ensure delivery of a nationally desired outcome; - Undertake annual reporting against a list of agreed projects/activities to allow for strategic sector-level monitoring and to enable plans to pivot if required. 4. Retaining the platform element of the KEIF with the remainder allocated via a competitive, future focussed process based on assessment of the submitted action plan (as above in point 3). Our recommendations are in clear alignment with the Scottish Government's requirement for a culture of delivery and accountability, as defined in the National Strategy for Economic Transformation. Finally, it is imperative to highlight that the level of innovation funding across the Scottish HE sector falls far short of that available to the English sector. For example, English Russell Group universities of similar scope and scale to the University of Glasgow receive more than 2.5 times the quantum of funding. We believe that the potential of the University KEIF programme to accelerate the competitiveness of the Scottish sector, leverage significant portions of UK and international innovation-related funding and deliver key contributions to economic and societal prosperity is contingent upon addressing the disparity of national baseline funding levels for university innovation-related activity as a matter of priority. We therefore strongly urge the Scottish Government to make parallel investment in Scotland's HE sector to support its innovation capability and competitiveness.
Question 2: what are your views on the current UIF collaborative framework, how could this evolve and be sustained to support further good practice and purposeful collaboration? Is there a role for the Knowledge Exchange Concordat in this context or more generally?	The UIF collaborative framework has been a welcome initiative in growing productive networks of practitioners across the sector for knowledge sharing. However, overall progress towards delivery of outcomes via this route has been hampered by the individual capacities of each HEI to allocate dedicated resources to collaborative activities over delivery of their institutional innovation priorities. The concept of accelerating deeper collaboration to strengthen the Scottish HE sector as a world-leader in research-led innovation is a strongly permeating theme throughout the recent SFC review and the Scottish Government's new National Strategy for Economic Transformation. The Universities Scotland Research & Commercialisation Directors Group activity with the Scottish Government to

	implement the national Inward Investment Plan is a good example of multi-party collaborative working; however, progress has, again, been hampered by a lack of dedicated resources. For example, attracting multi-national companies to co-locate with Scottish research strengths requires both dedicated business development time to understand the "Team Scotland" offer and further significant business development time to prospect and build relationships with potential inward investment partners. We therefore recommend: - Development of a new generation of ambitious collaborative programmes supported by additional dedicated funding to incentivise participation and create capacity in pursuit of the KEIF outcomes. These programmes should take the form of an ambitious strategic collaborative approach within a key enabling area aligned to one (or more) of the KEIF outcomes. Consortia of KEIF recipients and selected agencies in SFC's proposed system could then form active, committed partnerships and bid into a programme for multi-year funding to support the delivery of objectives contributing towards the desired KEIF outcome. Clearly a similar approach has been developed by Research England through their Connecting Capability Fund (CCF; now into its second funding round). The University of Glasgow's participation in the ASPECT consortium has provided us with first-hand experience of the benefits of such an approach. The Scottish sector should look to learn from the CCF experience and beyond in developing its core proposal for new collaborative programmes. While such a proposal would require "new money" into the system, the University believes that some of this could be met through a mixed model involving contributions: (i) leveraged from external partners and (ii) from other agencies such as SE and SDI, as appropriate. - The formation of a university consortium-led investment fund to support universities' commercial and social spin-out enterprises. There is already established appetite across the Scottish sector for this type of initiative.

	- The continuation of the pan-Scotland collaborative framework model but with enhanced clarity of mission to concentrate on a continuous improvement framework for KE&I (good practice and optimising institutional activities / policies). Groups may be aligned either to agreed KEIF outcomes or to areas of thematic KE&I activity, but these should be reframed to ensure the KEC principles are embedded at their core.
Question 3: what are your views on how the impact and outcomes of University KEIF should be measured, including the role of metrics or other indicators in any future funding and allocation model? We would welcome views on current or potential good practice regarding measuring net-zero KE&I activities and outcomes.	We believe that the current retrospective UIF outcomes reporting format is cumbersome and provides little benefit to the SFC and Scottish Government in terms of capturing the impact and return on their investment. The development of the KEIF funding scheme provides a natural opportunity for the SFC, the Scottish Government and HE community to re-design allocation and measurement processes to ensure that these are better aligned with intended outcomes. The foundations for measuring the impact and outcomes of university KEIF must be clearly set against a common understanding of the expectations placed on universities as delivery partners for Scottish and UK Government's policy objectives and ambitions around economic and social prosperity and wellbeing outcomes. We note that the role of metrics and indicators in the SFC's future funding and allocation model for KEIF will undoubtedly be influenced by the current major review of the HESA Higher Education - Business and Community Interaction survey, which seeks, amongst other things, to meet government and UKRI policy priorities. We are also mindful of the Scottish Government's recently published National Strategy for Economic Transformation and its forthcoming updated Innovation Strategy and welcome the commitment to development in the next six months of detailed delivery plans for the Culture of Delivery programme including a set of metrics of success. As stated in our response to Question 1, we support the incorporation of indicators as an integral part of a tailored allocation model for KEIF. This involves individual HEIs selecting the most appropriate indicators within their chosen outcomes and then building these into a prospective action plan. The benefit of this approach will be to clarify the HEI's strategic intent and provide assurance of delivery that is measurable in a meaningful format for the SFC and Scottish Government to determine return on investment.

	The growing maturity of the university KE&I sector has driven a shift beyond singular focus on commercially orientated output indicators (financial and IP-related) towards development of a more holistic approach that reflects the complexity of the KE&I system and its longer-term impacts. Our response to Question 1 contains notable examples to inform selection of indicators for funding policy development; however, in this holistic context, we draw particular attention to the set of indicators at Figure 2 from the 2020 Knowledge Transfer Metrics report submitted to the European Commission. This framework encompasses indicators across four quadrants considering both KE&I inputs (internal context and environment) and outputs (activity and impacts) and in line with Scottish Government and SFC aspirations should be adapted to capture broader metrics in support of government ambitions such as place-based/regional dimensions, civic impact, public sector and community engagement, and sustainability impacts as well as supply chain activity to support net zero. Finally, we acutely recognise that the full breadth of impacts cannot be measured via indicators/metrics alone and we therefore support a focused evidence-based narrative element in areas where independent indicators/metrics are currently unavailable. This element should remain short and avoid being overly burdensome on universities and reviewers. Lessons may be learned here from the approach and experiences of the first iteration of KEF across the local growth and regeneration and public and community engagement perspectives.
Question 4: how could the University KEIF, with Interface, help support collaboration with colleges, collectively supporting Scotland's SME base to be more innovative?	It is well understood that more than half of Scotland's economy is derived from companies employing less than 99 people and that innovation for these companies generally involves solutions in areas that increase their productivity and competitiveness or reduce their environmental footprint. To encourage uptake, the use of University KEIF to support innovation across the SME base will therefore require solutions that are cost effective, easy to implement and supportable with early quantifiable benefits. It is traditionally a challenge for large HEIs to interact with SMEs given the scale and diversity of the SME base and there is huge scope for universities to collaborate with the FE sector here, particularly around skills development.

	Building on Interface's expertise and body of previous work and initiatives such as Life Sciences in Scotland - Capabilities, we recommend a detailed portfolio review and mapping of the SME sector is conducted. This would be beneficial in helping us identify where: (i) there is greatest alignment with our current research strengths, (ii) there are synergies with FE partners and (iii) where we can have the most impact. This would need to be updated regularly given the dynamic nature of the sector. Following on from this, university KEIF could be deployed to: 1. Support dedicated industry engagement posts, located in our local ecosystem and working with local colleges and Interface, to work between the SME sector and the University, with a targeted focus around areas of UofG research and innovation with the greatest potential to benefit SMEs; 2. Provide marketing and engagement resources to work intensively with SMEs in these targeted sectors to develop their absorptive capacity for research-driven innovation, recognising the gap in perception of opportunity between SMEs and the research base; 3. Support Interface to work in both directions, introducing SMEs to the HEI and also introducing innovative university outputs to business, and facilitating FE partnerships; 4. Explicitly include a focus on partnering with SMEs to innovate in their business models, and increase their sustainability and social impact benefits, recognising the long-term influence of these factors on profitability; 5. Recognise universities as a source of new SMEs through spin-outs and start-ups and help support these through their initial, high risk, first 1-2 years. This can be as fundamental as recommending professional services with experience through to help identifying locations to embed the new entities in Scotland; and 6. Recognise universities as magnets for inward investment, often encouraging SMEs to locate and set up in Scotland as part of university-led innovation ecosystems. The University of Glasgow's

	Clinical Innovation Zone has three such SMEs who have located from California, Germany and Singapore, and our planned Health Innovation Hub aims to attract further SMEs (target 300FTE by 2025). This resonates with our response in question 8.
Question 5: how could core capacity funding (College KEIF) best support colleges to be effective agents of KE&I? We would particularly like to learn from colleges directly on what KE&I means to them and where capacity is needed to deliver this effectively, which could include building on current practice.	
Question 6: we would welcome views on what would be an appropriate period for SFC to run the first cycle of College KEIF before formally reviewing it and establishing a mature model for future years.	
Question 7: we would welcome views on the potential value of using College KEIF to create frameworks for collaboration and sharing of good practice across the colleges, and with universities.	
Question 8: our review recommended that we co-design the Entrepreneurial Campus strategy with colleges and universities. We would welcome views on what is proposed in this consultation, including potential opportunities, weaknesses and gaps.	We welcome the recommendation on co-design of an Entrepreneurial Campus strategy for Scottish colleges and universities. The design and execution of this strategy will be important to the delivery of the ambition set-out in the Scottish Government's recently published National Strategy for Economic Transformation to establish campuses as hotbeds of start-up creation. As noted in the consultation document, Scottish institutions are, to different extents, already engaged in education, training and support of both student and staff entrepreneurs. The scope and scale of these activities vary between institutions and often reflect each institution's curriculum/research activity. The activities are also funded (often via competitive applications) and in some cases delivered through partnership with other public or private sector agencies (e.g. SE, HGSP, UKRI TRI, Santander, CONVERGE, etc). The co-design and execution of the Entrepreneurial Campus Strategy will therefore

	require co-ordination (and potentially re-purposing for some) to align with the new activities outlined in the National Strategy for Economic Transformation (e.g. Tech-Scaler; Start-Up Scaler, Pre-scaler, etc). In our view the co-design of a coherent Entrepreneurial Campus Strategy will require sectoral agreement on the components that need to be available on a campus to achieve the desired national aim to create hotbeds of start-up creation and to align with the initiatives outlined in the National Economic Transformation strategy; thereafter, each institution should audit its campus against the agreed components to identify gaps in current provision. The following are a suggested mix of Entrepreneurial Campus key components: - Co-Working Space on Campus: The availability of visible physical space where entrepreneurs can locate, collaborate and meet is important to fostering a culture of enterprise and creating the on-campus "buzz" as well as connectivity an entrepreneurial campus requires. - Sector-Specific Accelerator programmes: providing a valuable mechanism for founders to receive structured support (and in some cases pre-seed investment) to accelerate the validation and launch of their business ideas. It should be noted that biomedical entrepreneurs need access to regulatory and governance advice, and safe spaces (e.g. the University's Living Laboratory at the Queen Elizabeth University Hospital campus) to interface with health data and co-develop and validate their ideas alongside clinicians and patients. - Grants: offering funding to support students and staff to have the time to engage in validation/development of their business idea/technology; critically, for deep technology, funding is required for technology/commercial de-risking to reach investor readiness. - Mentorship/Entrepreneurs-in-Residence/Product Designers-in-Residence: ensuring campuses can offer access to experienced entrepreneurs who can guide, mentor and (in some cases) lead opportunities (e.g. successful alumni). Product Designers-in-Residence can also provide valuable advice and input. - Education/training/Networking programmes: offering a mix of formal training programmes and networking events on campus. Active involvement of business schools can be key in delivery these programmes.

	- Student-led Entrepreneurship Societies/Student Internships: providing funding in support of student societies and internships to deliver peer-to-peer engagement. The SFC should also seek to address the availability of translational funding and models to de-risk technologies (both technical and commercial) to a readiness level for investment or in-license by an existing company, which is a root cause of Scotland underperforming against its potential. The solution required is capital to engage industry-experience teams to undertake the required de-risking, but also commercial leaders that have the experience/networks to attract the levels of venture capital seen in other nations such as the US and Israel to produce scalable start-up/spin-out ventures. Other views include: - The Entrepreneurial Campus strategy should be developed to cater for the breadth of personal circumstances of both students and staff, i.e. mechanisms that provide equity of access ranging from cost-of-living support for financially disadvantaged students to buy-out of early career researchers/academic staff to give them time to focus on an entrepreneurial opportunity. - A mix of activities is needed to cater for those with and without a business idea; for many students, participation in entrepreneurial activities (either intra-curricular electives or extra-curricular activities) will improve graduate skills and employment prospects. - Once established, successful execution of the Entrepreneurial Campus Strategy will require a mix of new funds and re-purposing of existing activities. The success of an Entrepreneurial Campus Strategy will require strong operational working amongst and across various partners including SFC, Scottish Government, SE, SDI, UKRI, ICs, NHS, City Councils and relevant private sector organisations, requiring a shared vision for action and investment tailored for each institution's strengths, weaknesses and location.
Question 9: we would welcome evidence of current practice in Scotland (or elsewhere) to ensure we have an up-to-date picture of what is working well	A number of initiatives are available in Scotland and the UK that are making a difference to the trajectory of entrepreneurial students and staff are listed below, many of which are embedded within universities. The activities they fund are part of the mix required to take innovations from university

and upon which the Entrepreneurial Campus strategy could build on.	research through to new venture creation and beyond. The Entrepreneurial Campus Strategy should consider how these initiatives align to deliver the National Economic Transformation Strategy: - Innovate UK ICURE programme; - Scottish Enterprise High Growth Programme; - UKRI Impact Acceleration Accounts; - Translational grants e.g. MRC DPFS, BHF Translational Awards, Wellcome Trust, CRUK, BBSRC Follow-on-Fund; - Santander Entrepreneurship Awards; - CONVERGE; - Enterprise Fellowships (e.g. RSE; RAENG); - ASPECT Programme (multi-university programme to support entrepreneurship in the social sciences funded via Research England's Connecting Capability Fund); - Innovate UK grants. The University of Glasgow-led Living Laboratory for Precision Medicine (which includes £38M SIPF funding) is building an entrepreneurial biomedical campus integrated with the Queen Elizabeth University Hospital. Our Clinical Innovation Zone location already has a critical mass of SMEs and a genuine ethos of collaboration, which is creating an environment for cross-fertilisation of ideas, co-development of innovation, and the development of entrepreneurial skills. This collaborative environment enabled the Lighthouse Laboratory to be built and rapidly accelerated, and to become Scotland's largest diagnostic facility (processing over 27million tests). Many students and ECRs have now spent time in the Lighthouse, learning invaluable industry skills and processes (including QMS and SOPs), understanding the innovation journey, and many benefiting from developing an entrepreneurial mindset as well as enhanced employability beyond academia. The University hopes to build on this exemplar where our partnership with industry is helping to grow academic entrepreneurs. There are many examples around the globe of Entrepreneurial Campus initiatives which could inform elements of the Entrepreneurial Campus strategy, including:

	- Johns Hopkins University FastForward U initiative: an entrepreneurship hub that offers students the mix of components mentioned above - Cambridge University Entrepreneurs: a student led organisation founded in 1999 that supports and provides training for students, staff and alumni. They have awarded over £600k in prize money to more than 60 start-ups. These companies have contributed to the local region raising over £250m of investment and producing over 500 full-time jobs. - Imperial College Entrepreneurial Ecosystem: a mix of physical space, training, funding, competitions and support for the university's students, staff and alumni. - The Oxford Foundry: a mix of physical space, skills development, upskilling provision, and accelerator support focused on the development of more ethical leaders and ventures which better society.
Question 10: the Review recommended that the university and college sectors join SFC in repositioning Innovation Centres (ICs) as stable long-term infrastructure investments. We would welcome views on the details of the proposed 'repositioning' as described in this consultation, including any opportunities, weaknesses and gaps.	The University of Glasgow supports the repositioning of ICs within the KE&I system and the proposal to move them onto longer-term more stable funding. The University also welcomes the opportunity to explore and co-design the role of ICs with all agencies in the SFC's proposed system. The views and experiences of the existing ICs themselves will be key to leading this process. The Scottish Government's National Strategy for Economic Transformation highlights that Scotland underperforms in the translation of its research output to national economic impact and that the next decade needs to see a step change in outcomes. This will require a strongly performing innovation ecosystem with deep linkages between its many inter-related assets. When defining the renewed role for the ICs in this it will be important to understand where the SFCs proposed KE&I system will sit in relation to elements such as the "world class entrepreneurial infrastructure of institutions" (e.g. tech-scaler programme) and the "industry-led cluster builder organisation" proposed in the Scottish Government's programme of action. Ensuring seamless linking of capabilities and clarity of purpose for each element within the system will be key to success. We support the proposal for the ICs to act as translational organisations in maximising impact from universities through deeper partnership, provision of KE&I support and helping leverage UK, EU and other sources of R&D support. As the ICs transition to infrastructure the individual approaches and

	operating models need to reflect the specific technology/sectors in which they operate - including their individual models of interactions with HE/FE - so that they can stay agile and relevant. A one-size-fits-all approach would likely diminish the impact of existing work. As part of the commissioning process, SFC along with SG and the enterprise agencies should undertake an opportunity and gap analysis to identify potential for the IC programme to address gaps in Scotland's innovation ecosystem. As ICs become part of the long-term infrastructure, they should add value to support sector-specific gaps and ensure they are not duplicating effort or competing with universities (e.g. the historical TMRI model). It will be important for universities hosting ICs to understand the metrics for continued funding, and to work closely with SFC to maximise their value for Scotland. There is potentially a role for some of the ICs to work with universities to accelerate de-risking and commercialisation of university generated innovations. These activities, such as developing prototypes, performance data, user trials, health economic assessment, etc., would produce more readily licensable opportunities and investor-ready opportunities whilst also mitigating risks inherent to university spin-outs. The collaboration would bring deeper partnership between ICs and universities alongside contributing directly to maximising economic, social and environmental impacts from universities. An area of particular interest in the consultation document proposal for repositioning of the ICs is in connecting and building opportunities of scale. We support the development of a creative and ambitious proposal around the revised model IC noting also that there is a clear link here to the development of mission-led approaches. Drug discovery and development is an area of opportunity for such an approach. Whilst previous collective HEI efforts (i.e. Creative Biopharma; Accelerating Discovery Initiative) failed to be funded by Scottish Enterprise the opportunity remains. An example of what can be achieved is Apollo Therapeutics. This collaborative venture was founded in 2016 by Cambridge, UCL and Imperial (£3.3m investment each) who teamed-up with AstraZeneca, GlaxoSmithKline and Johnson & Johnson Innovation (£10m investment each) to identify and co-fund translational projects originating from the 3 universities research. The aim is to optimise discovery and delivery of new breakthrough treatments in areas of high unmet clinical need by providing academic projects with an additional major source of early-stage funding thereby enabling more projects to

	progress and commercial drug development expertise through active engagement of the industry partners. In June 2021 the venture raised £100m to accelerate 15 early-stage drug programmes, deepen its pipeline from universities and build out its operations. There is potential for ICs to take a leading role in catalysing similar initiatives in Scotland. In other enabling technology focussed ICs, the approach of upskilling SMEs via exposing and supporting their adoption of new technologies, has the potential to create an ecosystem where business and entrepreneurs are R&D and innovation ready and able to more strongly connect to the skills and expertise in our further and higher education sector. A further opportunity would be the deeper and broader inclusion of social sciences, humanities and arts (SHAPE) research across the renewed IC programme. SHAPE research helps us understand ourselves, others and the world around us. World class research in themes such as end of life studies, education, policy, inclusion and diversity, decolonisation, conflict and ethics, exists within our HE systems. Incorporation of these and other themes will drive inclusive innovation by bringing new perspectives, facilitating uptake and adoption of innovation and ultimately providing vital solutions to some of the greatest challenges facing society today.
Question 11: we would welcome views on how we could best strengthen the Innovation Centres' relationship with universities and colleges, ensuring added value, sense of partnership and collaboration, avoiding duplication of effort etc. This would include opportunities for alignment and partnership with Interface, Scottish Enterprise, Highlands and Islands Enterprise, South of Scotland Enterprise and other relevant agencies and organisations.	The University of Glasgow's relationship with the ICs that we host is strong. For example, CENSIS is involved in providing expertise and support to our innovation development activities, especially in areas where the focus in broader economic impact. They provide invaluable expertise and advice with regards to how we manage some of our UKRI Impact Acceleration Accounts, which can help us more easily accelerate innovation opportunities. For the wider programme of ICs, the interactions with UofG are less obviously, and we would welcome ICs focusing more attention on relationship building with TTO and industry engagement teams, so that they develop a deeper understanding of our existing and emerging strengths as well as areas of complementarity with other HEI/non-HEI partners to facilitate collaborations and leveraging of external funds. Addressing the broader fragmentation in Scotland's innovation landscape and clarifying the role of ICs within this will help the repositioned ICs to flourish.

	As noted previously, ICs should add value to support sector-specific gaps and ensure they are not duplicating effort or competing with universities. It might be helpful for individual ICs to canvas universities about optimising partnership and collaboration, as this varies between the ICs. Again, inclusion of a broader range of disciplines (SHAPE) to the ICs would strengthen links across HEI's and would enable a new way of working with the various regional enterprise agencies and other relevant organisations to deliver on Scottish Government ambitions around inclusive growth. Furthermore, this would extend the offering of the IC's, bridging the gap between the technological/scientific solutions and the human factor.
Question 12: we would welcome views on potential areas of future opportunity where the Innovation Centre model could help deliver outcomes for Scotland.	There is a current gap in the market in the area of drug discovery and development. The IC model could be leveraged to create specialised technology demonstrator/de-risking ventures in areas of Scottish HEI strength. For example, the Apollo Therapeutics mentioned above is a form of innovation centre in harnessing disease biology discovery (an area of strength for Scottish HEI) or the Quantum Start-Up Foundry (quantum an area of strength for Scottish HEI) at the University of Maryland aimed at supporting quantum entrepreneurs and start-ups. The opportunity is to be as creative and flexible in considering what an IC could be (and how it could be structured and financed) to support a Scottish HEI sector strength with the potential to enable economic transformation. Another example is the SRI International model (formerly Stanford Research Institute). This not-for-profit organisation was formed 75 years ago by Stanford University Trustees to support economic development in the region. SRI has played a central role in creating some of Silicon Valley's most important innovations and economic impacts. The existing Innovation Centre remit is, for the most part, focused on engaging the private and public sectors. Extending these models to include the creation of processes, methodologies and intangibles as outcomes would enable a more viable route to engaging the third sector. For example, exploring the use of social enterprise - an area where UofG is growing expertise and activity- could offer an alternative to the more traditional routes of commercialisation and would open up significant portions of the HEI system that are currently untapped.

	It is worth noting that the Lighthouse Laboratory, established as a university-industry partnership, is currently Scotland's largest diagnostic facility. Current/ongoing changes to government covid policy will quickly reduce the requirements for testing. An independent report which was commissioned to look at legacy opportunities has described the potential for the Lighthouse to become Scotland's Eurofins which could be a game-changing outcome for the regional economy and the continued supply of a highly-skilled workforce. There is currently no IC with the remit to support the development of such an opportunity in diagnostics, but this is an area where the supported collaboration between Scottish universities and industry would be very valuable.
Question 13: we would welcome views on strengthening Interface's relationship with universities and colleges, ensuring added value, sense of partnership and collaboration, avoiding duplication of effort etc. This would include opportunities for alignment and partnership with Innovation Centres, Scottish Enterprise, Highlands and Islands Enterprise, South of Scotland Enterprise and other relevant agencies and organisations.	As noted in our response to question 1, we propose adoption of a shared innovation outcomes framework by all members of the SFC proposed system to incentivise and strengthen partnership working. We welcome the proposal to reposition Interface as stable long-term infrastructure thereby removing uncertainties around shorter-term funding cycles. Following on from this, the proposal to re-establish the purpose of Interface provides us with the opportunity to explore how we can make our relationship with Interface more strategic. Interface is a strong and established organisation, a key attribute of which is its unparalleled connectivity across the Scottish business base (6000 trusted partnerships). Under its current form, Interface is largely focused on connecting Scottish businesses into the research and knowledge capability of the HE sector and providing critical support to businesses in doing so, for example in navigating the funding environment. One option to strengthen our relationship with Interface is expansion of this core purpose to provide a reciprocal "service" to universities by leveraging Interface's connectivity to identify Scottish business partners, for example for grant applications requiring private sector partners, and thus facilitating delivery of the university's strategic objectives for innovation. This bidirectional approach would be particularly powerful in facilitating university engagement with SMEs, and in particular with groups of SMEs.

Question 14: if you have direct experience of working with Interface, we would welcome suggestions for evolutions to its operating model to help it develop even more effective support for productive relationships between businesses and our universities and colleges.	Interface provide a valuable resource/service that effectively caters to the breadth and diversity of the Scottish HE sector as well as businesses of all sizes and types. Recognising that not all HEI's pair well with all business types and sizes, the service they offer could be enhanced by moving further towards a tailored approach that takes account of a specific institution's research capabilities, size, financial structure and aspirations in the business engagement arena.
Question 15: we would welcome general views, based on direct experience of the Innovation Voucher scheme, on how it could evolve and better support our system for KE&I.	We have used Innovation Vouchers successfully as a first step in engaging and partnering with companies; however, in certain sectors, academic disciplines, or project types, the quantum of funding available via the Innovation Voucher scheme is too small to allow any meaningful first step to be undertaken. Following on from this, with the idea of an Innovation Voucher being a first step in engagement, the jump in funding to possible second steps is often large with the qualifying criteria for being fundable requiring a more significant piece of underpinning collaborative activity than can be delivered via an Innovation Voucher. A larger scale of funding values across the Innovation Voucher scheme (up to £10k) would allow the scheme to better support the KE&I system. Additionally, provision of a longer-term commitment to the advanced innovation voucher scheme by the enterprise agencies would create a smoother on-ramp for deeper collaborative engagement and impact generation.
Question 16: we would welcome views on widening the scope of Innovation Vouchers to encompass wider KE activity but retaining the key objective of using them as a means to promote first time collaborations and encourage longer-term relationships.	The University of Glasgow would welcome widening access to Innovation Vouchers to encompass social, cultural and creative collaborations. The opportunity to promote Innovation Vouchers to all disciplines and organisations would generate better uptake and interest. This would shift Innovation Vouchers from being a somewhat niche offering to being the first port of call for many nascent partnerships.
Question 17: how could colleges and universities help SFC understand, or monitor longitudinally, how many Innovation Vouchers have led to ongoing relationships? Are there cross sectoral digital	The current reporting frequency related to Innovation Vouchers requires a significant resource. We would welcome a less frequent and longer follow up period.

solutions to this which can help us better understand the outcome we hope to achieve?	
Question 18: From experience of mission-led approaches elsewhere, how would you advise SFC to use its resources and investments to facilitate such activity in support of Scottish Government objectives for economic transformation?	The recent unparalleled changes in our external environment (the pandemic, Brexit etc.) have brought sharp focus to the vital role of universities in solving some of the world's greatest economic and societal challenges. The University of Glasgow welcomes the shift towards an interdisciplinary mission-based approach, whilst protecting curiosity-driven/discovery research. In terms of innovation, the mission-led approach will require re-direction of the whole innovation system towards delivery of long-term specific outcomes. The consultation document and the Scottish Government's National Strategy for Economic Transformation make clear the priority areas for Scotland (green recovery, a well-being economy and a just transition to a net-zero carbon society) whilst the new National Science and Technology Council have been tasked with defining the Innovation Missions Programme set out in the BEIS Innovation Strategy. Missions must be developed in partnership with HEIs, so that we can build on our world leading research and innovation strengths. The definition of missions in support of the Scottish Government objectives and how these are interpreted and applied will be a crucial consideration. In terms of mission-led approaches elsewhere, there is likely learning to be gleaned from the experiences to date of the mission-led approach of the Scottish National Investment Bank. It is also imperative that missions focussed funding is made available for such activity to deliver on these ambitions and we urge the SFC to lobby the Scottish Government to identify what is needed to secure and protect the relevant capabilities in the HE sector. More generally, mission-led research needs to be combined with mission-led translation to achieving desired economic outcomes. The public/private sector responses to vaccine development for COVID is an example of what can be achieved with alignment of funding and interest especially where it builds on significant academic capacity (e.g. Oxford University's vaccine discovery/development expertise). There are academic capabilities and disruptive innovations in Scottish Universities that have the potential to address key societal needs however to realise the ambitions of the National Economic

	Transformation Strategy they need to be partnered with entrepreneurs, investors and corporates to provide the essential mission-led translation activity. Currently there are innovations in Scottish Universities that could provide scalable solution and significant economic impact yet they are struggling to get the support required to advance. These innovations are very early stage and high risk but need to evolve at pace to compete with other nations. The key is to get the innovation in a form and/or stage of development where the risk profile is sufficient for entrepreneurs and/or private sector (e.g. investor, corporate) to engage. For example, at Glasgow we have a very early-stage technology that could transform the way integrated circuits are manufactured, packaged and recycled. Potentially, this innovation could enable the creation of a highly scalable manufacturing company based in Scotland and competing in a global market. In addition, the solution will slash the environmental impact of producing integrated circuits compared to traditional semiconductor foundries. This is the type of opportunity where funding, at pace, with the right entrepreneurial team, could be transformative for Scotland.
Question 19: We would welcome views on the breadth of the role a KE&I Advisory Board could play and what stakeholder membership would give us the most effective support for SFC's role in the ecosystem.	We support development of a KE&I Advisory Board comprising Scottish interests and both UK and international perspective and expertise. Beyond representation from the agencies in SFC's proposed system we also support representation across the spectrum from policymakers in government (including NSET Delivery Board) to end users in industry. The Board's core remit should be to provide strategic advice on KE&I and drive effective use of funds and delivery on outcomes as well as ensuring links to broader Scottish and UK Government initiatives. On a practical level, the Board could have a key, active role in the KEIF programme in terms of reviewing action plans and determining funding allocations, undertaking interim (annual) review and determining additional funding allocations for new initiatives to accelerate towards delivery of outcomes.
We may publish a summary of the consultation responses and, in some cases, the responses themselves. Published responses may be attributed	Publish information and excerpts from this survey response INCLUDING the organisation name.

to an organisation where this information has been provided but will not contain personal data. When providing a response in an individual capacity, published responses will be anonymised. Please confirm whether or not you agree to your response being included in any potential publication.	