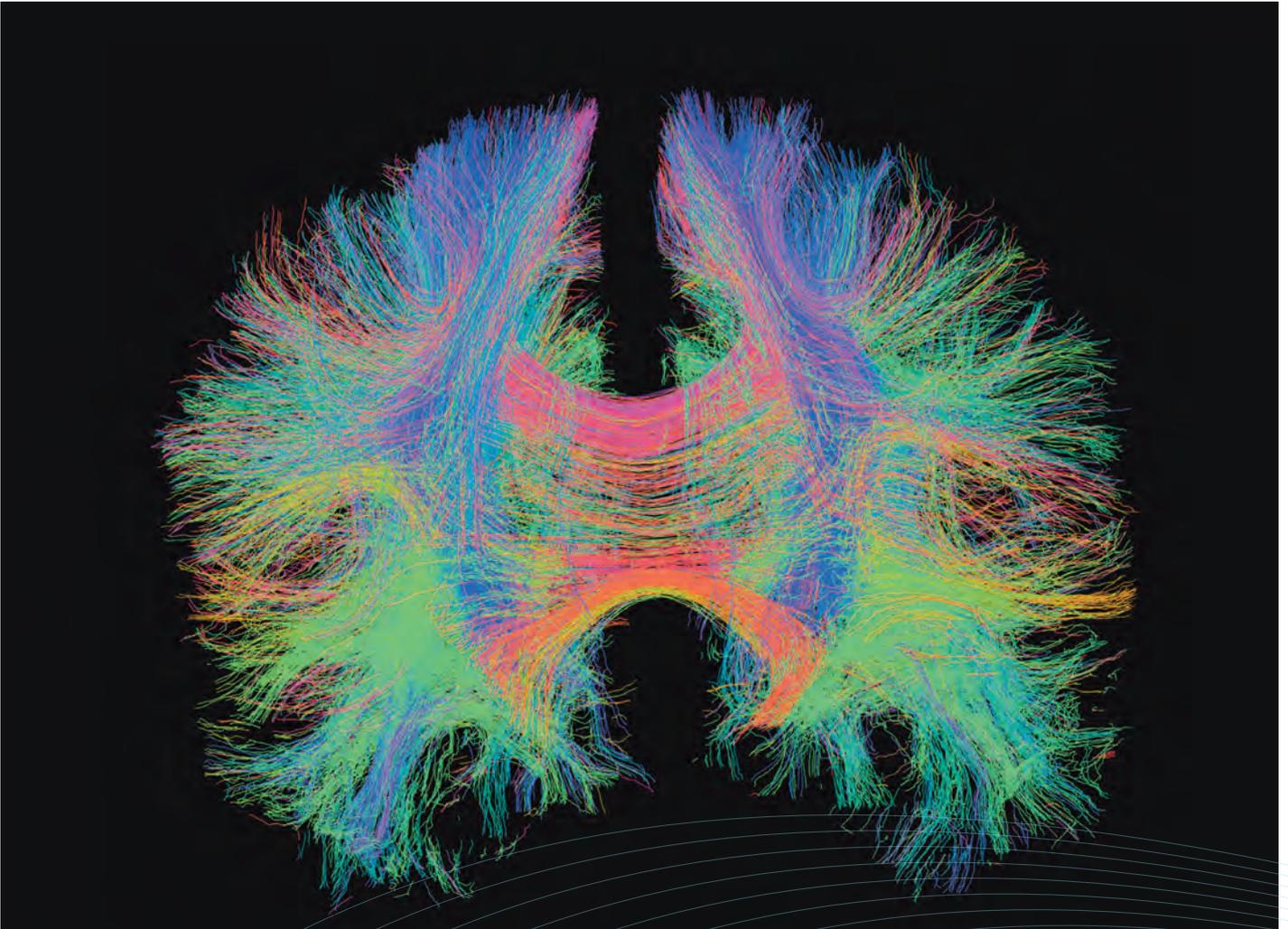




*The Royal Society
of Edinburgh*

KNOWLEDGE MADE USEFUL



Outcome Agreement with Scottish Funding Council

2018-21

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Introduction

RSE: Knowledge Made Useful

RSE, Scotland's National Academy, was established in 1783 for 'the advancement of learning and useful knowledge'. Our contemporary mission remains the same – the deployment of knowledge for public good: knowledge that contributes to the social and economic well-being of Scotland and its people and the nation's wider contribution to the global community.

We advance our mission, 'knowledge made useful', in a number of ways:

Inspiring and supporting learning across the life course and nurturing talent:

from hands-on experiments for children through masterclasses in Scottish universities as part of our wider schools programme, to developing excellence and talent through our research awards, fellowships and mentoring to young researchers and entrepreneurs; from supporting the next generation of experts and leaders through facilitating the Young Academy of Scotland to holding talks and events to engage the public in a wide variety of topics from science and nature to ethics and business.

Providing an independent source of expertise and advice to support informed decision making and economic and social well-being:

from our on-going work on the implications for Scotland of the UK's departure from the EU to our current enquiry on the 'Future of Energy in Scotland'; from our examination of Women in Stem, 'Tapping All Our Talents', in 2012 and current work to review progress five years on, to input into development of the Government's STEM Strategy.

Promoting Scotland's interests and reputation and supporting positive diplomatic relations:

from our strategic partnerships with academies and learned societies across the world to our active participation in Connected Scotland; from our joint events and projects with partners overseas to our international exchange programme promoting the reputation of Scottish research and innovation and enabling international collaborations.

Introduction

*Our work makes a direct contribution to **Scottish Government priorities:***

- We support **high quality and inclusive learning** through our schools' programme, through our outreach programme, RSE@, which aims to reach those communities which have fewer opportunities to engage with leading experts in a variety of fields, and through our wider programme of public engagement.
- We directly contribute to **internationally competitive and impactful research** through our work to enhance research capacity and leadership. This includes a competitive programme of research grants supporting research excellence and support for early career researchers. We also fund international exchanges and collaborations including joint projects and workshops recognising that an open research system, which supports work across disciplinary and geographical boundaries, is key to producing high quality, high impact research.
- **Effective knowledge exchange**, is central to RSE's mission of knowledge made useful. Our wide-ranging events programme includes public talks to enhance knowledge and understanding of science and society, as well as conferences with policy-makers and practitioners, such as recent events on biodiversity, migration and European research partnerships. We also recently published the first two guides in what will be a series of 'primers' supporting the use of scientific evidence by the judiciary.
- As part of our wider programme of knowledge exchange, we support **collaboration between universities and industry** through our programme of Enterprise Fellowships which enable promising science and technology researchers to develop into successful entrepreneurs and are currently undertaking a programme of work, being led by our Business Innovation Forum, on how to enhance productivity, innovation and the commercialisation of research in Scotland.

Introduction

We also support the Scottish Government's cross-cutting themes:

- **Partnership-working and collaboration** is at the heart of what we do, and we are committed to working collaboratively to maximise impact and the public benefit delivered from our activity. As an independent educational charity, with no institutional affiliation, RSE is well-placed to bring together a range of partners. Over the past three years we have collaborated with a diverse range of organisations from across the public, private and third sector including Equate Scotland, YoungScot, SCDI, Institute of Directors, the Scottish Parliament, SEPA, SNH, David Hume Institute and professional and learned bodies across the UK and beyond. The RSE is also committed to feeding into, and working within the context of, the Strategic Board to support a collaborative approach to enterprise and skills.
- **Managing the implications of the UK's departure from the European Union:** alongside the work of the EU Strategy Group to explore the implications of Brexit and how the UK leaving the EU might best be managed, RSE has a key role to play in supporting positive relations and continuing research collaborations with our European partners through its unique links with learned academies across Europe. We are also represented on the Board of ALLEA, which brings together 59 Academies in more than 40 countries across Europe, and are keen to explore opportunities for further engagement in this space, exercising our soft power through these unique networks and non-political channels, to support and maintain Scotland's profile and place in Europe.
- We are committed to **tackling gender imbalance:** we monitor the diversity of applicants and awardees for grant funding and attendance at our events and are currently reviewing our seminal report, *Tapping All Our Talents*, published in 2012 to assess progress on taking forward the recommendations in that report and further action required to support women in STEM. We are also taking steps to further diversify our fellowship. We are making progress on increasing the number of female fellows (33.5% of fellows elected over the past five years are female compared with 18.5% over the previous five years) and in 2012 elected our first female President, in 2017 appointed our first female Chief Executive and, uniquely among the UK academies, the majority of our Council is now female.

The Table at Annex A illustrates the close alignment between the RSE's strategic outcomes and development aims and the Scottish Government's strategic priorities.

We are proud of what we have achieved over the course of the last three years [period of the last Outcome Agreement] but we are ambitious to do more and RSE is embarking on a substantive programme of activity, building on these achievements, to enhance our relevance, impact and reach.

Key priorities

The activities we plan to deliver over the period 2018-21 to contribute to Scottish Government priorities are delivered through three, inter-connected, public benefit programmes: Building Research Capacity and Leadership; Ext ending International Connections and Collaborations and; Enhancing Outreach and Impact. The programmes will be partly funded by SFC grant, which provides leverage that enables the RSE to deliver this significantly wider programme of public benefit activities.

Key priorities within these programmes include:

Research Capacity and Leadership

- Continuing and extending our successful Enterprise Fellowship scheme (supported by Scottish Enterprise and the Research Councils) and developing further links with the innovation centres
- Supporting interdisciplinarity through a continuing programme of small grants and developing a new award designed to bring early career researchers in STEM and social science to come together with other partners from outwith academia to tackle a national societal challenge
- Extending our engagement with the college sector, including piloting sabbatical grants and enterprise fellowships [for discussion with Colleges Scotland]
- Piloting a suite of charity fellowships to support use of evidence and research to inform policy and practice in the third sector [subject to funding]
- Supporting early career researchers in STEM and Social Science through sabbatical grants
- Developing the next generation of researchers, innovators and leaders through our support for and funding of the Young Academy

Key Priorities

Outreach and Impact

- › Delivering RSE@ at Inverness, a two-year programme of activities and events to enable the public, and especially schoolchildren, to engage and learn with leading experts, building on the legacy of previous programme and exploring the extension of RSE@ to other areas and settings, for example, RSE@themuseum
- › Delivering a programme of activities inspiring and supporting learning including school talks and *Quiz a Whiz*
- › Reviewing our schools programme to ensure added value including exploring the opportunity for co-delivery of activity with new partners such as, for example, the Children's University and Scottish Book Trust
- › Supporting engagement in STEM careers through science masterclasses, a review of issues facing women in STEM and supporting implementation of the Government's STEM strategy for education and training
- › Harnessing the experience and expertise of leading business fellows and working with the wider community to support economic growth through a programme of work on productivity, innovation and skills and contributing to a joined up approach to enterprise and skills
- › Providing an independent forum for discussion and debate to enhance the public's contribution to and engagement with key issues of national importance.

International Connections

- › Supporting match funded international exchanges to raise the profile of Scotland's research and high-quality research
- › Delivering and contributing to a series of joint projects with international partners to share learning
- › Maintaining positive international relations with key academies – including the Chinese Academy of Sciences, the largest research organisation in the world – to promote Scotland's research strengths within the international research community and facilitate opportunities for joint working
- › Further developing our engagement with European academies to support ongoing research collaborations and positive relations in the lead up to and post-Brexit.

RSE Programmes and Planned Activities

1 Research Capacity and Leadership

This programme provides competitive research fellowships, grants and scholarships. It seeks to inspire and support Scotland's most promising young talent across research, business and the public sector, in order to build research capacity and strengthen Scotland's ability to realise benefits from its research and innovation base creating value for the economy and society.

Key achievements

In 2016/17, RSE awarded over £3m in funding for research and enterprise across 31 institutions in the UK. In the period of the last outcome agreement RSE appointed six new **five-year postdoctoral fellows** researching topics such as structure of the Earth's lithosphere; potential novel tools to counter anti-microbial resistance; improved understanding of processes underlying IVF; and new mathematical ways of handling large datasets. As an example of medium term outcomes, the 11 postdoctoral Fellows who completed their fellowships prior to March 2016 had collectively published 151 papers, initiated 56 collaborations during the five-year fellowships and successfully bid individually and jointly for a total of £17m of additional funding in this period.

Dr Bartek Waclaw, who received an RSE Personal Research Fellowship in 2013, created the first three-dimensional computer model of how a solid tumour grows, mutates and evolves. This important research will help us to understand how lethal cancers develop resistance to drugs and chemotherapy.

Over 60 **Arts & Humanities grants** to build collaboration through workshops and networks were made in the period. The projects encompass a diverse range of topics from the design approaches in the creation of dwellings at the beginning of the 21st Century through consideration of abuse in Child Welfare hearings to developments in musical education and reworking Walter Scott to bring his writings to new audiences.

Dr Karen Brown University of St Andrews, received a grant to look at museums, communities and the cultural landscapes of Scotland and Costa Rica. Building on this work, she was subsequently awarded €2.4 million Euros from the Horizon2020 programme to carry out a four-year project on Museums, Community and Sustainability in Europe, Latin America and the Caribbean. As part of this, Dr Brown will collaborate with the Staffin Community Trust to run monthly workshops to reconnect young people with their heritage.

RSE Programmes and Planned activities

Since 2015, forty-nine new **Enterprise Fellows** have been given the opportunity to establish their new businesses and undergo the business training offered by the scheme. Companies formed by Enterprise Fellows have levered significant additional funding.

The Orkney-based tidal energy firm Scotrenewables, which was originally founded by an Enterprise Fellow, received a €10M (£7M) boost from the Horizon2020 programme in 2016 to deliver a production model, incorporating several cost reduction innovations, that would deliver a step change cost reduction to the tidal energy sector. Adding to their successes, in May 2016, the company launched 2MW SR2000; the world's largest energy generating tidal turbine.

Caroline Barelle, 2015 Scottish Enterprise and BBSRC Fellow, saw her biotech company, Elasmogen, spin-out of the University of Aberdeen in early 2016. Elasmogen is a next-generation, therapeutic biologics company that develops soloMERs to help treat disease, such as inflammatory eye disease. During the Fellowship, Caroline outlined a product pipeline and developed a robust IP-protected portfolio to cover the platform, the production process and the product. She is currently presenting all over the world, securing investment and negotiating sales with several pharma companies.

RSE Programmes and Planned activities

Planned activities

The Research Capacity and Leadership Programme will administer, on an open highly competitive basis, Research Fellowships, Grants, Studentships and Scholarships. It will comprise three parts:

a) **New interdisciplinary national challenge award**

Societal and global challenges are complex and require a multi and inter-disciplinary approach cutting across the arts and humanities, science and social science. In that context, RSE plans to introduce a new award to enable early career researchers to come together in an interdisciplinary team and with partners from outwith academia to address a societal challenge of national and/or global importance. The award would enable a substantial research programme to be undertaken by a new team in Scotland funded by the grant and would help establish long-term collaborations across disciplines and between academia and the public and third sector. The scheme will be framed to:

- Be equally attractive to male and female candidates
- Be iconic and competitive
- Meet an unmet need
- Stimulate long-term interdisciplinary collaborations and partnerships
- Foster collaboration between academia and the public and / or third sector
- Provide clear public benefit on an issue of national significance
- Have dissemination and outreach at its core

In developing the award we will take account of recent developments, including the launch of the UK Industrial Strategy Challenge Fund and the Innovation Challenge Fund in Scotland (which is predominantly focused on innovation challenges in the public sector) to ensure our new award complements these new schemes and to explore opportunities to develop our new award in a way which facilitates successful applications to larger UK funding streams for Scottish researchers.

b) **Support for STEM**

To complement the new interdisciplinary scheme, and providing they can be funded within the resources allocated, we will continue the recently reintroduced one-year **Sabbatical Research Grants**, which provide support to allow established researchers to take one year away from teaching and administration duties, and to concentrate on research that is likely to enhance the transfer of ideas and technology from the research community into wealth creation and improvement of the quality of life. We will particularly encourage applications from those in the post-1992 universities and collaborations between universities and colleges.

RSE Programmes and Planned activities

The highly successful **Post-Doctoral Research Fellowships** awards scheme, jointly funded by SFC and Scottish universities, was introduced to strengthen Scotland's STEM base. The highly successful scheme has provided scope to place special emphasis on areas of research key to the wellbeing of Scotland, for example, energy, environment and biosciences. The model is now well-established within universities¹ and it is planned that the Fellowship Scheme be replaced by the innovative new interdisciplinary award outlined above recognising that the gap these fellowships once addressed has now been filled and enabling resources to be redirected to new priorities and funding gaps. We will however provide continued funding for the current cohorts of Post-Doctoral Research Fellowships (PDRFs) until their conclusion in 2022.

Core-funding from SFC has also enabled us to allocate additional funding for Postdoctoral Research Fellowships with fellowships also funded by the BP Research Fund and the Caledonian Research Fund administered by RSE. The Caledonian Research Fund also supports European exchange visit grants and postgraduate studentships. The RSE is currently reviewing how these funds may best be used in the future to complement the SFC funded schemes.

Supporting entrepreneurialism and the contribution of research to the economy is a key priority for RSE. The **Enterprise Fellowships** funded by Scottish Enterprise and UK Research Councils (BBSRC, NERC and STFC), give opportunities to researchers to commercialise research and training in entrepreneurship, forging key interactions between business and academia. The RSE aspires to develop and expand this scheme, by securing the support of additional funders, and will explore the possibility of further co-operation with the Innovation Centres.

c) Arts & Humanities Awards

The RSE Arts & Humanities Awards, are designed to help develop a more inclusive national identity through enhanced understanding of the diversity of human culture, both past and present. Through the award of research grants, the programme supports investigations in Scotland that will lead to advances in creativity and knowledge that will be of value to the research community, and of use in wider social contexts.

The Arts and Humanities Awards Programme comprises **small research grants** to support personally conducted research; funding for **research workshops** to facilitate intellectual and creative interaction between researchers from different disciplines and from a range of institutions, within the academic community, the public and the private sectors, the Scottish Government and the third sector as appropriate (e.g. Creative Scotland, Historic Scotland, the National Museums and the creative industries); and **Research Networks** to create and/or to consolidate collaborative partnerships over a two-year period.

A major component of success and requirement of the Programme is that dissemination of a substantial proportion of research outcomes is made accessible to a non-specialist audience supporting our wider ambitions around making learning accessible to all.

¹ Chancellor's Fellowships, Kelvin Fellowships

RSE Programmes and Planned activities

2 Outreach and Impact

RSE is committed to ensuring high quality and inclusive learning and effective knowledge exchange. The Outreach and Impact Programme aims to engage on key contemporary issues by providing an impartial forum for public debate and discussion and providing expertise to ensure that Scotland's policy makers and influencers have access to the best national expertise. RSE aspires to communicate with a wide audience, both locally and internationally and to share knowledge and information on matters of scientific, economic, social and cultural importance. Through the activities in this programme RSE will enhance the public's contribution to and understanding of issues and to inform and influence public policy. It also seeks to inspire and motivate school students throughout Scotland, particularly in relation to STEM subjects.

Key achievements

a) Schools & communities

RSE@ / Talk science @ Irvine Bay

During the last three years, RSE has delivered events for both school pupils and the public in three diverse areas of Scotland: Dumfries & Galloway, the Scottish Borders and Irvine Bay, North Ayrshire.

Talk Science @Irvine Bay was delivered in 2014-16 with the assistance of Irvine Bay Regeneration Company comprising public and school talks and activities focussed on life sciences, IT and engineering. One of the highlights was a discussion between forensic anthropologist Professor Sue Black and crime writer Ian Rankin which attracted more than 260 people.

“

I enjoyed hearing about the life of one of my favourite authors, especially as he was speaking to a highly qualified professional female scientist. It is inspiring to hear such talented individuals in conversation.

”



RSE Programmes and Planned activities

Following the success of its initial RSE@ programme in Dumfries & Galloway which ran from 2011-12, the Holywood Trust has supported further RSE outreach activity in the area and has agreed to continue this support until 2019.

The most recent programme, RSE @ Inverness was launched in September 2017 at Eden Court, Inverness.

Alongside its outreach programme, RSE holds an annual Christmas lecture for school pupils and the public, in various parts of Scotland. The annual Christmas Lecture in 2015 was delivered in the Caird Hall, Dundee by the Minecraft legend Stampy Cat (aka Joseph Garrett). Over 4,000 young people, some queuing for hours, successfully secured tickets to the daytime and evening events. Stampy gave insights into how he makes his videos and what it takes to be a successful YouTuber. The lecture was recorded by the BBC, and by the early part of 2016 there had been more than 368,000 views on iPlayer.



b) Using Expertise

EU referendum

The RSE, in partnership with the Centre on Constitutional Change and the Economic and Social Research Council, held a series of events aimed at enlightening the debate in the lead up to the Referendum. The events examined, in a balanced way, a number of issues including: fiscal matters and trade; freedom of movement; social Europe; the environment; and the impact on devolved areas such as Scotland.

With the **Brexit** negotiations now underway, the RSE has established an **EU Strategy Group** and produced five Advice Papers on the implications of Britain leaving the EU. The RSE has used the expertise of our Fellows and Young Academicians, and our wider network, to prepare initial papers to inform thinking and discussion, with a particular focus on the way the issues affect Scotland. The topics covered so far are: Rights and Social Protection; Constitutional Law and Government; Economy, Public Finance and Economic Strategy; Research, Innovation and Tertiary Education; Migration and Diversity

The Learned Societies Group (**LSG on Scottish STEM Education**), for which the RSE provides the Secretariat, discusses and acts on the delivery of STEM education in Scotland. It was particularly active in relation to the introduction of science benchmarks to improve the Curriculum for Excellence, as well as providing input into the Scottish Government STEM Education and Training Strategy.

RSE Programmes and Planned activities

c) Young Academy of Scotland

The Young Academy of Scotland, (YAS) initiated in late 2011, has grown and developed over the period of the last outcome agreement. Its 153 members come from across Scotland and collectively run a series of activities with public benefit objectives. Its recent initiatives include:

- the allocation of four membership spaces for academics at risk and refugees;
- bringing the **Global Young Academy General Meeting** in 2017 to Scotland, which attracted young researchers from 50 countries;
- partnering the David Hume Institute in hosting the **Politicians & Professionals Series** in 2015, 2016 and 2017 in which members of the public have an opportunity to hear from and questions each of the leaders of the five parties represented in the Scottish Parliament
- **YAS's #AspirationalAdvice Twitter campaign** – which ran from 1st January to 1st May 2015 – engaged people from all aspects of Scottish and international society, and reached over 4,500 individuals. US Ambassador Matthew Barzun took part and his advice, “Explore the globe! Study abroad, work abroad, travel abroad!” made it into the top five most-viewed tweets of the campaign.

Planned activities

The Outreach and Impact Programme will deliver activities on topics of scientific, economic, social and cultural importance. Drawing on the expertise of its Fellowship, these activities will support high quality and inclusive learning and effective knowledge exchange through engagement with the public and school-aged children, those in business & innovation, policy makers and practitioners. The Programme comprises 3 main elements:

a) Schools and Communities

The outreach programme, RSE@, will extend across the length and breadth of Scotland to enable the public and especially school children to engage and learn with leading experts. School activities will be focussed particularly on those areas which have fewer opportunities to access the type of resources and events the RSE can provide. The programme will comprise inspirational educational talks, discussion forums and workshops for school children and the wider public to stimulate and develop interest in science, society, culture and the arts across all age groups and enhance the understanding and appreciation which people have of their local community and environment.

Over the period of the next Outcome Agreement we will deliver the second year of RSE@ Inverness, continue legacy work in areas already covered and define the next RSE@ project. We will also explore expansion of the RSE@ brand working in partnership with other organisations.

RSE Programmes and Planned activities

b) Using Expertise

Effective knowledge exchange and providing an independent source of advice and source of expertise to support informed decision- making and economic and social well-being is central to the RSE's mission of **'Knowledge made useful'**.

Alongside our support for the commercialisation of research under our Research Capacity and Leadership Programme outlined above, the Business Innovation Forum (BIF) seeks to inform and contribute to the debate on Scotland's economic future and the work of the Strategic Board on Enterprise and Skills. As part of this, the BIF will undertake a programme of work over the coming year initially focussed on three broad themes - Innovation & Commercialisation, Productivity and Skills. We will also work with SFC, SDS and the enterprise bodies as appropriate to support a collaborative approach to enterprise and skills.

As an independent educational charity with the power to convene a wide range of partners, RSE is well-placed to provide a space for debate bringing together academic policy makers, practitioners and people with lived experience to discuss key issues of national importance. We want to continue and further develop this role over the coming years both through events which engage the general public – enabling views to be informed by access to a wide range of evidence, expertise and experience – as well as smaller roundtable meetings which provide a safe space for discussion on complex and / or contested policy matters.

c) Young Academy of Scotland

The RSE Young Academy of Scotland, (YAS) initiated in 2011, has established itself as a model for other young academies being formed internationally. It brings together some of the most able and innovative young academics, entrepreneurs, artists and professionals in Scotland, with the aim of harnessing their creativity to develop a coherent and influential voice for the greater good of Scottish society. The RSE will continue to resource YAS and enhance the YAS membership connections to RSE Fellows and wider society to enable YAS to meet the objectives it set out in its Vision 2020.

RSE Programmes and Planned activities

3 International Connections

The International Connections' Programme aims to promote Scotland's interests and reputation on the global stage, enhance research capacity and leadership and strengthen the nation's connections with the world.

We deliver on these aims through:

- building links and strategic partnerships with academies and learned societies across the world;
- actively participating in Connected Scotland;
- organising and participating in joint events, workshops and projects with partners overseas;
- funding an international exchange programme and enabling international research collaborations;
- hosting international delegations;
- making joint (and individual) statements on matters of international importance and; participating in the academic human rights network.

There is a strong read across between the aims of the RSE and the objectives in the Scottish Government's International Policy Statement published in December 2017.

Key achievements

In December 2014, as a result of RSE's relationships with the **Chinese Academy of Science** – the largest research organisation in the world – and the **Natural Science Foundation of China**, RSE initiated a high-level forum 'NSFC-RSE-CAS New Paradigms for Future Collaboration on Science and Innovation' in Beijing. This led, in May 2015, to a visit of the President of the Chinese Academy of Sciences, Professor BAI Chunli to the RSE during which he took part in productive discussions about research and innovation with Scotland's First Minister,

Nicola Sturgeon and RSE President, Dame Jocelyn Bell Burnell. In July 2015, a delegation led by the Vice-President of the National Natural Science Foundation of China (NSFC), Professor LIU Congqiang, also came to Scotland. The delegation spent time at a number of Innovation Centres facilitating contacts that have led to a series of joint workshops on topics of mutual interest to Scotland and China and funding for joint projects. The most recent topics have been: 2015 Sensors & imaging systems; 2016 Oil & Gas Reservoir Geophysics; and 2017 Synthetic Biology.



RSE Programmes and Planned activities

As a member of **ALLEA**, the organisation for all European Academies, the RSE participates and builds relationships across the whole of Europe. For its **annual McCormick lecture**, RSE is able to use these connections to bring important speakers to Scotland and showcase to them the activity taking place in Scotland. The 2017 Lecture entitled “The Future of EU Research and Innovation” was delivered on 16 October by **European Commissioner for Research, Science and Innovation, Carlos Moedas**. Other recent speakers include **Madam Irina Bokova, Director-General, UNESCO; Professor Günter Stock, past President of the European Federation of Academies of Sciences and Humanities (ALLEA); Professor Jean-Pierre Bourguignon, President of the European Research Council**.

The RSE and the **French Embassy in London** are collaborating in an annual programme of science events. These events are intended to stimulate Franco–Scottish collaboration in science, present new scientific ideas and their social and commercial implications to the public and increase awareness of French and Scottish science in each other’s country. The diverse range of topics covered recently include Energy Conversion and Storage, Linear Algebra and Parallel Computing and Robotics.

Planned activities

The RSE initiates and supports a wide range of activities that help raise Scotland’s profile and enhance Scotland’s involvement in global collaboration. Through events, strategic partnerships and publications the RSE promotes the reputation of Scottish research, innovation and culture.

The bedrock of achieving our objectives is in forging strong partnerships that deliver benefits for Scotland and /or the RSE. These benefits include:

- economic growth
- increased research capability and leadership
- contribution to addressing global challenges
- positive international relations
- promotion of human rights

The International Connections Programme facilitates two way matched funded international exchange programmes for collaboration, through the RSE’s international partners, and raises international awareness of research and innovation in Scotland. Through the development of key relationships with national academies worldwide, the RSE is in a unique position to contribute fully as a partner in **Connected Scotland**. These activities help enhance Scotland’s international science and innovation collaborations, profile, and standing.

RSE Programmes and Planned activities

During 2018-21, RSE will seek to maximise its development of relationships, including the priority countries currently identified by Connected Scotland. This will include the current strong links with China, harnessing the positive and unique relationship we have with the national academies, the Chinese Academy of Science, the National Natural Science Foundation of China and the Chinese Academy of Social Science, to promote Scotland's culture, our research strengths and to facilitate opportunities for joint working and collaboration with Scottish researchers and businesses. We will also further develop our engagement with European academies to support ongoing research collaborations and positive relations in the lead up to and post-Brexit.

We want to ensure our international programme is targeted to best effect. In that context, in 2018, we are undertaking a review of our partnerships to identify the partnerships we want to maintain or strengthen, those we want to draw back from and new partnerships we want to develop. This review will take account of a number of factors including current and potential benefits, alignment with Scotland's current and future research strengths, contribution to Scottish Government priorities (including protecting Scotland's place in Europe in the context of Brexit) and connection to the SG's and Connected Scotland's priority countries

Details of programmes

The aims, commitments and measures of progress for each activity within the three RSE programmes are tabulated below. The first column identifies the contribution these Programmes make to Scottish Government priorities and themes as below:

- 1 High quality learning**
- 2 Internationally competitive and impactful research**
- 3 Effective knowledge exchange and innovation**
- 4 UK's departure from EU**
- 5 Partnership working and collaboration**

Research capacity and leadership

Note	RSE programme aim	Commitments and strategies
2	Support early career researchers in STEM and social sciences with outstanding potential to build a team to contribute to significant challenges	Annually award an interdisciplinary major grant of up to £1m for innovative, collaborative research on a significant national or global challenge
2	Continue to support early career researchers with outstanding potential to establish their STEM careers in Scotland	Continue to administer Post-Doctoral Research Fellowships previously awarded with end dates up to September 2021
2, 3	Support established STEM researchers to take time away from teaching and administration duties, to concentrate on research that is likely to enhance wealth creation and improvement of the quality of life.	Award Sabbatical Research Grants, and explore opportunities for expansion with new partners
2, 3	Develop and build on collaborations between Arts & Humanities researchers in Scottish HEIs and cultural institutions	Annually award up to 20 new grants supporting small projects, workshops, networking activities, and at least one major project in the period

Details of Programmes

Research capacity and leadership

Note	RSE programme aim	Commitments and strategies
3	A greater number of academics in Scotland and the UK are involved in enterprise, innovation and the commercialisation of technology-based ideas resulting from academic research	Annually award up to 14 new Enterprise Fellowships and administer those previously awarded Explore opportunities for expansion of the Enterprise Fellowship scheme with new partners
5?	Increasing networks and collaborative activity of participants	Support delivery of NESTA/SFC Crucible Awards

Outreach and Impact

Note	RSE programme aim	Commitments and strategies
1	School students are engaged and inspired	Hold series of scientific, cultural, economic and social well-being activities for school aged children
1	The expertise of RSE Fellows and visitors is made available to a wider audience	Develop the existing Quiz a Whiz digital platform
1	The public have an increased awareness and understanding of Scotland's research and innovation capabilities by attending RSE events	Hold series of public events on scientific, cultural, economic and social well-being related topics
1	Increase the impact of events	Wider public outreach through disseminating content of above activities to those who did not participate.

Details of Programmes

Outreach and Impact

Note	RSE programme aim	Commitments and strategies
1	Improve understanding of key areas of development in research	Publish “Science Scotland” magazine
1	Ensure reach is throughout Scotland	“RSE @” outreach programme
3	Raise awareness overseas of some of the best of the research and innovation being undertaken in Scotland	Promote the role of Innovation Centres in research and commercialisation to priority countries
3	To align international activities with those of partners in Connected Scotland	Support and contribute to the activities of Connected Scotland
4	Increase awareness of the RSE’s policy activities and advice and promote discussion of key issues that can inform policy activities and advice	Produce and promote advice on business innovation in Scotland
4	Improve engagement with Fellows to provide authoritative advice across a broad range of policy issues	Produce and provide evidence and advice which informs public policy considerations / debate
5	Maintain relationships with key stakeholders across the public, private and third sectors	Hold / participate in events which facilitate engagement with stakeholders including the business community, parliamentarians and public policy decision makers
5	Support the development of the Young Academy of Scotland	Provide financial and administrative support of YAS

Details of Programmes

International Connections		
Note	RSE programme aim	Commitments and strategies
2	Raise awareness overseas of some of the best of the research and innovation being undertaken in Scotland	Hold collaborative activities and events with other national academies, international partners and UK partners
2	Increase networks and collaborative activity of participants	Hold workshops with international partners in key sectors promoting collaboration in research and innovation
2	Promote the reputation of Scottish research, innovation and culture	Award joint research project grants (up to 12) and administer those previously awarded
2	Increase the exchange of early-career researchers, giving them the opportunity to experience research activities in other countries	Award international exchange grants (up to 40-person weeks) and funding for exchange visits/to promote initial collaborations

Annex A Strategic Impact

The RSE’s strategic outcomes and development aims, set out in our Strategic Framework 2016-21, align closely with the Scottish Government’s strategic priorities.

Scottish Funding Council Priorities and themes	RSE Short Term Outcomes	RSE Long Term Outcomes and development aims
<p>Access to education for people from the widest range of background and addressing gender balance</p> <p>High quality learning in a learning system which is seamlessly connected for the learner; including learning which prepares people well for the world of work, prioritising provision that meets known skills gaps in the economy</p>	<p>There is increased access to learning opportunities for people and communities outwith the Central Belt and from areas of multiple deprivation</p> <p>Those engaged with RSE activities are more representative of the diverse backgrounds, cultures, communities and areas of Scotland</p> <p>Young people participating in the RSE@ programme have a greater understanding of current issues related to their community and its future development</p> <p>Members of the public know more, and are better informed about, contemporary national and global scientific issues after attending an RSE event, conference or lecture</p> <p>Understanding of the skills and innovation system in Scotland is enhanced on the back of the work of the Business Innovation Forum.</p> <p>There is a good understanding in Scotland of how to support education and training in STEM (including the participation of women.)</p>	<p>Enhance the public’s contribution to and engagement with contemporary national and global scientific, cultural and economic issues</p>



Scottish Funding Council Priorities and themes	RSE Short Term Outcomes	RSE Long Term Outcomes and development aims
<p>Demonstrate value for money and impact for the public investment they receive, sustainable institution with focus on equality and diversity</p>	<p>There is greater awareness within the Scottish Government and UK Government of the RSE’s current and potential future role and contribution as Scotland’s National Academy</p> <p>Good relations have been developed with UKRI and other potential stakeholders and funders.</p> <p>RSE is viewed as a respected provider of independent and objective evidence and advice and partner of choice in facilitating debate on issues of national importance.</p> <p>The expertise of the RSE Fellowship is better utilised to provide authoritative advice across a broad range of social, cultural and economic issues</p> <p>The Fellowship is increasingly diverse and engaged.</p> <p>Those engaged with RSE activities are more representative of the diverse backgrounds, cultures, communities and areas of Scotland</p>	<p>To redevelop our premises to provide the modern facilities necessary to deliver our activities more effectively;</p> <p>To create an active and more diverse fellowship that reflects outstanding individual achievement in modern society</p> <p>To secure increased funding from a diverse range of sources</p>
<p>Outline actions and strategies to identify and address the challenges associated with the UK’s departure from the EU.</p>	<p>There is clear evidence based advice on the implications of Brexit for Scotland in key areas and potential responses.</p> <p>SG and UK Government debate and policy is informed by the RSE’s work on Brexit</p> <p>RSE’s European networks are developed and enhanced</p> <p>Relationships with key MSPs, MPs, and civil servants are developed and maintained</p>	<p>Provide expertise to ensure that Scotland’s policy makers and influencers have access to the best national and global expertise</p> <p>Raise Scotland’s profile and strengthen its connections with the world</p>

Annex B Financial Context

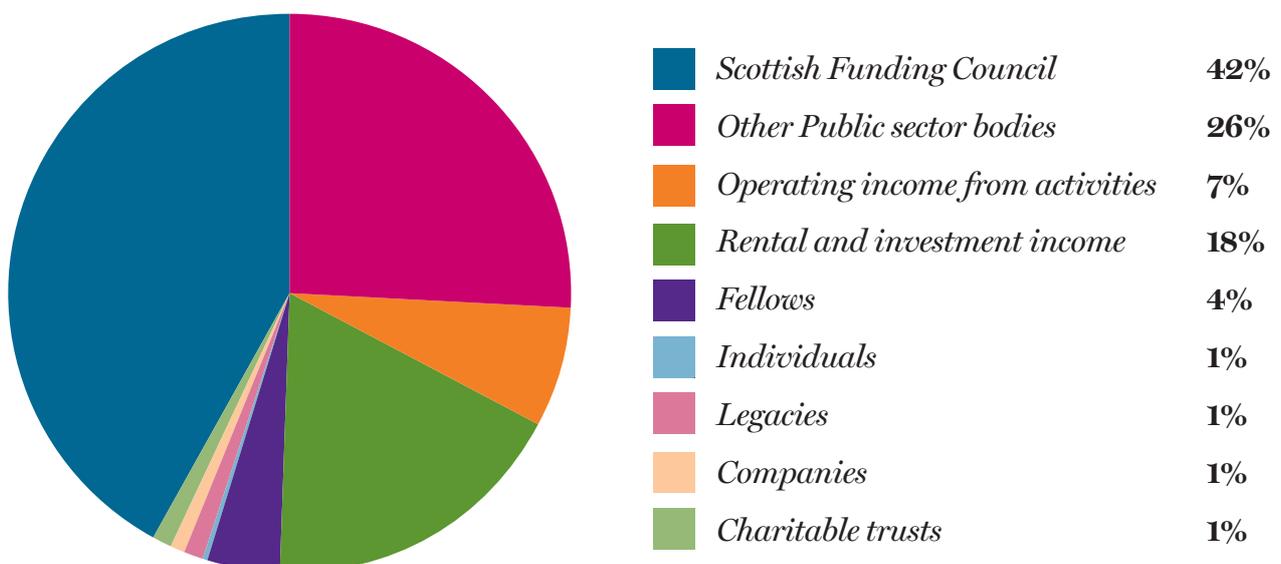
The RSE is an independent organisation which, first and foremost, sets its goals, aspirations and programmes of activity in keeping with its role as Scotland’s National Academy. As a registered Scottish charity, it delivers a wide range of public benefits. In doing so it also considers the added value it can bring to the greater public good through relationships with public bodies such as the SFC. Where it can and where it considers it appropriate to do so, the RSE delivers programmes of activity that complement the goals and aspirations of public bodies.

In 2018-2021 the total value of the RSE programmes of activity is expected to be £24m which will comprise:

- > £18m direct expenditure (includes grant in aid from SFC)
- > £2.5 m matching funding (Scottish Universities and Overseas sister academies)
- > £3.5m pro-bono input of RSE Fellows

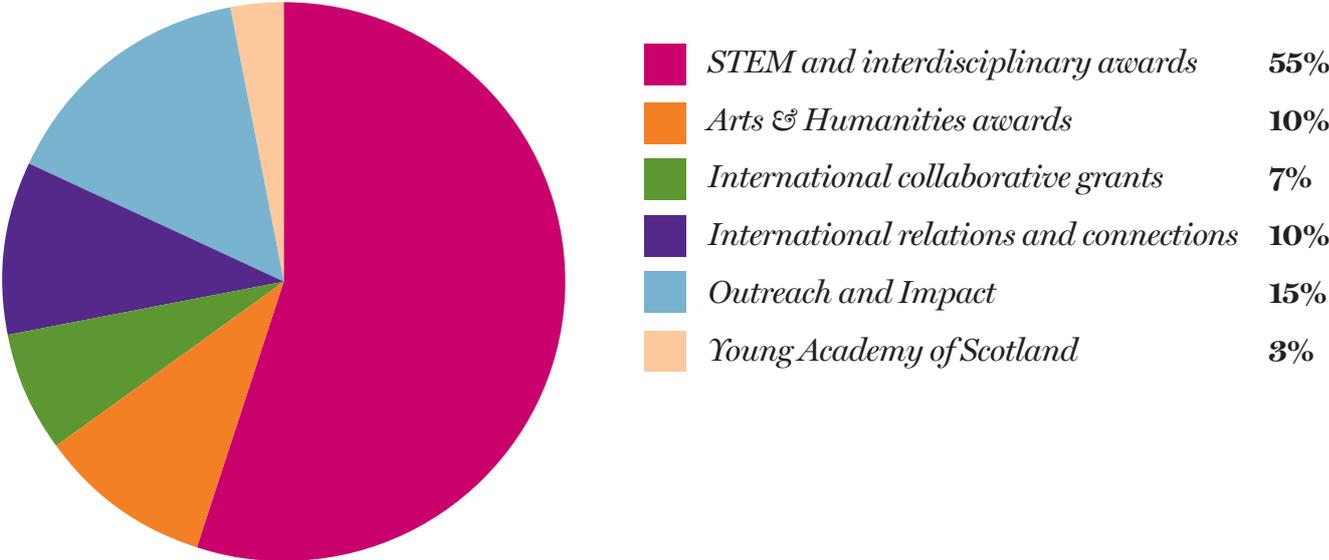
SFC funding is expected to comprise 37% of this total. The charts below illustrate the sources of RSE income in 2016-17 and the indicative allocation of SFC funding over the period of the outcome agreement. 72% of the total received will be allocated to those programmes which route funding directly to Scottish Universities and Cultural Institutions, through awards for STEM and interdisciplinary research, Arts & Humanities research and international collaborative grants.

RSE INCOME BY SOURCE 2016-17



Strategic Impact

INDICATIVE ALLOCATION OF SFC FUNDING 2018-21





*The Royal Society
of Edinburgh*

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22 – 26 George Street Edinburgh EH2 2PQ

www.rse.org.uk



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