

RSE

*The Royal Society
of Edinburgh*

KNOWLEDGE MADE USEFUL

Annual Report
2019–2020



See
yourself
in science?

Scientists come from
all sorts of backgrounds.

What unites them is a
curiosity about the world
and a need to understand
how it works.

What does science
mean to you? Tell us at
#STEMatEdinAirport

@newsRSE

@royalsocietyedinburgh

Professor
Cait MacPhee
CBE, FRS, FRSE, FRSC, FRSE
Professor of Biological Physics,
School of Physics and Astronomy,
University of Edinburgh

I love the mechanics of
designing an experiment that
will, in an ideal world, give
a clear answer. I really enjoy
gathering all the puzzle pieces,
and there is absolutely nothing
like that feeling you get when
the pieces click together and
suddenly you understand
something that you've been
trying to figure out for years.
And now you know something
that no one else on the planet
knows, until you go out and
tell them all about it.

Cait is holding 'gloop' or 'slime' - a
viscoelastic material that behaves like
both a liquid and a solid.

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President's Foreword

I am delighted to introduce the Royal Society of Edinburgh's Annual Report for 2019/20.

As Scotland's National Academy we are here for all of Scotland and this year has seen the start of some important initiatives to raise the visibility and extend the reach of RSE in different ways. It has been an exciting year as we have delivered a wide-ranging programme in pursuit of our mission 'knowledge made useful', enhancing our impact and reach both nationally and internationally.

Our priorities are to inspire young talent, engage the public on key contemporary issues, provide expertise to policy makers and influencers and promote Scotland's interest overseas. Through delivering to these priorities over the past year, we have: strengthened Scotland's research capacity and leadership; created new innovative links between research and industry; influenced public policy; raised Scotland's profile in the world; and enabled the public's contribution to debates on issues of national and global significance.

These achievements are possible due to the diverse knowledge and expertise of our Fellowship, which is drawn from the worlds of science, the arts, business and public service.



A handwritten signature in black ink that reads "Prof. Anne Glover".

Professor Dame Anne Glover FRS FRSE
President

14th September 2020

This breadth of knowledge and expertise represents a huge asset for Scotland and I am grateful to all the Fellows who have, freely and generously, contributed to the RSE's work over the course of the past year.

As you will see in the following pages, we have delivered much to be proud of over the past year, as the RSE continues to play its part in the life of the nation. We are ambitious to do more and establish the RSE firmly at the heart of modern Scotland.

Chief Executive's Foreword

Welcome to the 2019/20 Annual Report of the Royal Society of Edinburgh, Scotland's National Academy. This has been an exciting year as we have sought to deliver our mission of knowledge made useful in new and different ways to better connect with a wider range of people.

Our work on public engagement is central to this ambition with the past year seeing a number of firsts, including our first-ever summer programme, *Curious*. Running alongside the Edinburgh Fringe, *Curious* created new opportunities to engage with leading scientists and researchers on a range of topics covering everything from forensic science to phrenology, memory to menstruation.

Visitors to our home in Edinburgh were also able to see our first touring exhibition. Featuring 26 fellows, our *Women in Science in Scotland* exhibition aims to raise the profile of female scientists and show that science is a career choice open to anyone from any background with multiple possibilities to make a difference. A version of the exhibition at Edinburgh Airport attracted significant positive attention, helping celebrate Scotland and its scientific expertise; while a portable version moved around the country, from Belladrum to Borders College, Glasgow Women's Library to the Scottish Seabird Centre.

The expertise within the Fellowship underpins the RSE's work, no more so than in our policy work. This past year, along with providing advice papers on a breadth of issues such as immigration and the creation of the Scottish National Investment Bank, we concluded a two-year inquiry into Scotland's Energy Future. Drawing on a range of evidence and discussions, the report highlighted the challenge of developing energy policy in the context of often-competing needs: addressing climate change; ensuring affordability; providing energy security; and supporting social and economic well-being – the so-called energy quadrilemma.

As an organisation, underpinned by evidence and expertise, we are keen to understand the impact of our work and this year saw two important pieces of work which provided evidence of the difference RSE is making



Rebekah Widdowfield.

Dr Rebekah Widdowfield FRSA

Chief Executive

14th September 2020

to individuals, society and the economy. Firstly, an in-house survey of former awardees highlighted the impact of these awards in helping develop research careers, support collaboration and leverage funding into Scotland. Secondly, an independent evaluation of our Enterprise Fellowships programme, which supports emerging entrepreneurs, highlighted the significant benefit the scheme has brought to the economy and society, with over 200 new businesses created addressing a whole range of challenges from disease prevention and treatment to environmental sustainability.

The survey of research awardees also demonstrated the importance of the RSE in supporting international engagement and partnerships. The RSE is part of a family of national academies across the world and over the past year we have supported 37 international meetings, helping promote Scotland and its research base overseas and facilitating long-term relationships between Scotland and international partners.

Partnership and collaboration are key features of the RSE's work. Over the past year, we have benefitted immensely from the input of many friends and colleagues and I would like to conclude by thanking our Fellows, funders and partner organisations for their ongoing support in helping us deliver our mission of knowledge made useful.

Aims and Objectives

RSE: Knowledge Made Useful

The 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 wellbeing of Scotland and its people and the nation's wider contribution to the global community.

We deliver on this mission through our strategic objectives and impacts to:

Inspire

Inspire and support Scotland's most promising young talent across the research, business and public sectors, in order to create value for the economy and society.

Enhance research capacity and leadership in Scotland.

Strengthen Scotland's cross-sector connections and its ability to realise benefits from its research and innovation.

Engage

Engage on key contemporary issues by providing an impartial forum for public debate and discussion.

Enhance the public's contribution to and engagement with contemporary national and global scientific, cultural and economic issues.

Provide Expertise

Provide expertise to ensure that Scotland's policy makers and influencers have access to the best national, and indeed global, expertise.

Inform and influence public policy.

Promote

Promote Scotland's interests and reputation on the global stage.

Raise Scotland's profile and strengthen its connections with the world.

Achievements and Performance

The Royal Society of Edinburgh (RSE), Scotland's National Academy, was established in 1783 for 'the advancement of learning and useful knowledge'. Today, our mission remains the same – the use of knowledge for public good.

We are passionate about making sure **knowledge** improves society's economic and social wellbeing, supports Scotland's people and increases our shared contribution to the wider, global community.

In 2020, we describe our mission as "**knowledge made useful**". This is our core driver. It shapes everything that we do.

We organise our knowledge-based work under four objectives:

1. **Inspire** and support Scotland's most promising young talent across the research, business and public sectors, in order to create value for the economy and society
2. **Engage** on key contemporary issues by providing an impartial forum for public debate and discussion
3. **Provide expertise** to ensure that Scotland's policy makers and influencers have access to the best national, and indeed global, expertise
4. **Promote** Scotland's interests and reputation on the global stage.

In this 2019–2020 Annual Report, we share examples of how we have made knowledge useful across Scotland and internationally over the past 12 months. You will read how we have:

- strengthened Scotland's research capacity and leadership
- created new innovative links between research and industry
- influenced public policy
- raised Scotland's profile in the world
- enabled the public's contribution to debates on issues of national and global significance.

Our achievements are supported via core funding from the Scottish Funding Council (SFC). We are also underpinned by other sources including our own income.

The RSE's 1,600+ Fellows volunteer their time and expertise across a substantial breadth of knowledge and experience from academia, business and public sector, contributing between £1m and £1.5m a year in free support for the RSE's public benefit activities. Their significant contribution supports us in delivering its mission of "knowledge made useful".

We hope you enjoy learning more on the following pages, and if you're reading this online, clicking on links to see and hear podcasts from key speakers in the report.

Thank you for sharing our passion for "knowledge made useful"!

Lauren Leisk, RSE Unlocking Ambition Enterprise Fellow and Founder of Fodilicious; an innovative food business, providing allergen-free, vegan, FODMAP-friendly snacks.



Inspire and
support
Scotland's
most promising
young talent
across the
research,
business and
public sectors,
in order to
create value for
the economy
and society.

Inspire

Every year, the RSE inspires researchers and entrepreneurs. We provide support, guidance, networks and mentoring to help people reach their goals. We achieve this via research grants, by enabling translation of research into businesses, and by supporting the Young Academy of Scotland (YAS). These three leading-edge programmes bring to life our commitment to "knowledge made useful", improving economies and livelihoods.

The following few pages give you an overview of how we inspire talented people for the wider good. Please also click on the short podcasts to learn a bit more from the researchers and entrepreneurs themselves.

RSE Research Programmes

Our competitive **Research Awards Programme** creates research capacity and leadership, supporting Scotland to be at the forefront of new research challenges and opportunities. The variety of Fellowships, Grants and Scholarships enables the RSE to mobilise Scotland's rich research base for public good at home and internationally.

In 2019–2020, the RSE awarded eight **Sabbatical Grants** to early-career researchers. These cover a breadth of subjects ensuring delivery to societal needs and science breakthroughs:

- understanding anxiety in autism disorder
- ultrafast imaging of the online neural control of movements
- reducing the burden of multi-drug-resistant infections faced by the NHS
- addressing emerging problems associated with wastewater microplastics as vectors for potent drugs
- understanding and mitigating the security risks of thermal imaging
- developing comprehensive risk analysis of space exploration through Monte Carlo method for detecting orbital collisions
- animal agriculture in contemporary India
- moving towards carbonless engines.

Creating resilience to fire

International exchange of ideas is central to the RSE's core mission. Those who are in the early stages of exploration can learn face-to-face from researchers who are more advanced. "Early-career researcher" Martina Manes, a third-year PhD student at the University of Edinburgh, benefitted from the John Moyes Lessells Scholarship. She was able to travel to the University of Queensland (UQ), Australia, to work with world-leading researchers in fire resilience.

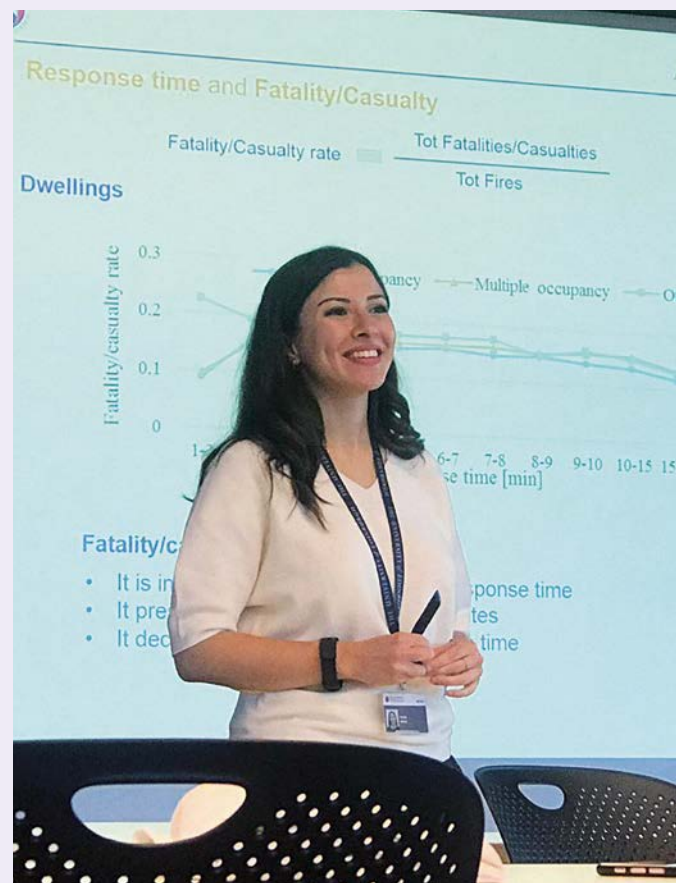
The RSE's support enabled Martina to work for three months with Dr David Lange and his UQ Fire Group. Dr Lange is one of the most influential international experts in structural fire safety engineering and resilience. His team has world-leading knowledge in fire risk assessment of timber, bamboo, concrete and facades of various materials.

Impacts:

- the creation of a Fire Resilience Assessment Framework for educational buildings
- the Framework supports Prepare, Respond, Absorb and Recover from potential/actual fire incidents
- on-going collaboration between University of Edinburgh and UQ Fire Group to develop new international breakthroughs in fire safety engineering.

"As an ECR, I have strengthened the depth of my analysis, plus have created a Fire Resilience Framework that's been applied to educational buildings. I've created new collaborations internationally, supervised a UQ Master's student, and am bringing back new knowledge to Scotland. It was wonderful being part of the UQ Fire Group family, and this experience has helped me grow professionally and personally."

Martina Manes
University of Edinburgh



Supporting art for conflict recovery

The RSE is helping Dr Oscar Odena from the University of Glasgow to work with researchers in Mexico, Colombia and Brazil. Together they're exploring the role of performing arts for peace education in conflict settings.

Through the RSE's **Arts and Humanities Research Network Grant**, the group are now able to work together across their international borders for two years. They are looking at:

- how performing arts are already being used in conflict settings
- peoples' stories of performing arts for peace in conflict in Colombia, Mexico and Brazil
- what more could be done, based on newly-created practical learning and experiences.

Impacts:

The international team is developing the capacity of early-career researchers (ECRs) who are co-creating performing arts together with victims/displaced people in conflict settings.

Outcome: The team is developing a framework for others to use. This will help organisers and practitioners to see how to use performing arts in conflict and conflict recovery.



First "The Arts of Inclusion" (TAI) Workshop held in Bogota, 28-29 July, 2019

The RSE's **Personal Research Fellowships** create opportunities for exceptional researchers to build their research careers, becoming leaders in their area. For example, in 2019–2020, the RSE supported leading researchers to:

- shape future health programmes by improving understanding of how health outcomes vary between different geographic areas
- apply new knowledge on embryonic development to clinical infertility studies.

The RSE is building new research, collaboration and knowledge exchange in Scotland's **Arts and Humanities**. In 2019–2020, we awarded 12 Grants, 12 Workshop Grants and seven Network Grants, as well as providing further on-going support for Networks that received their awards in 2018–2019. The RSE is directly generating new understanding and impact from researchers' work on:

- ending period poverty in Scotland
- black families' fight for freedom in the USA and Canada (1732–1936)
- Scotland's global engagement with human rights issues and how they might be embedded within Scotland's approach to foreign affairs.

RSE Enterprise Fellowships

Now in their 23rd year, the RSE's Enterprise Fellowships have been leading the way in enabling science and technology researchers to become world-class entrepreneurs by commercialising their research.

Through cutting-edge business development and training, these entrepreneurs have been developing innovative new enterprises since 1997, significantly benefiting Scotland's economy and society. They have created highly-skilled jobs, bringing international talent and investment to Scotland. They have also provided solutions to local, national and global challenges in health, environment and energy. Their impact has been felt not only in Scotland, but also in universities across the UK and internationally.

In 2019–2020, the RSE funded 11 Enterprise Fellowships, hosted by ten Higher Education Institutions (HEIs) across the UK. These new Enterprise Fellows will be supported to develop their businesses to a point where they can start them up or spin them out.

The **Enterprise Fellowship Award** offers a tailored, equity-free support package of:

- funding and training worth up to £90,000, including a one-year academic salary
- tailored, cutting-edge business training
- mentoring from RSE's network of partners in the business community
- up to £10,000 business support funding
- membership of the RSE Entrepreneurs' Club, with access to networking events.

"I think the Enterprise Fellowship has compressed a few years of learning into just one, and massively accelerated the pace at which I'm able to grow and scale the business... The programme has delivered the most value out of anything that I have been involved with since the inception of the business. It's been a real privilege."

Paul McGinley

Founder and CEO Pyramid WiFi, Enterprise Fellow 2019/20

Our impact

In 2019, the RSE commissioned BiGGAR Economics to evaluate the Enterprise Fellowships, who found that the Programme:

- added almost £170m to annual global gross value added (GVA), including £77 million in Scotland
- led to the creation of more than 3,000 jobs, nearly half (1,395) of which are in Scotland
- helped establish over 200 businesses
- delivered an impressive return on investment (ROI): for every £1 investment, the programme generated almost £10 for UK economy and £6 for Scottish economy
- created more sustainable businesses: over 81% of Enterprise Fellows' businesses are still operating beyond five years, compared with average survival rate for start-ups and spin-outs of 45% reaching their fifth year
- encouraged 'serial entrepreneurs', with 25% of Enterprise Fellows founding more than one business.

In the space race: shooting for the stars

**Steve Greenland, Director and Founder
Craft Prospect Ltd. Scottish Enterprise-
funded RSE Enterprise Fellow 2019–20**

Host Institution: University of Strathclyde

Cheaper access to space - or “NewSpace” - is the next big frontier. Private aerospace companies are developing innovative technologies to create opportunities within this growing, new market of engineering.

The RSE’s Enterprise Fellowships are also in the space race. Steve Greenland used his Fellowship opportunity to develop his space engineering company “Craft Prospect”.

Steve identified a niche: taking new and emerging technologies (such as nanosatellites, satellites with direct alerts and direction-controlled cameras, and/or high-resolution imagery cameras), then delivering them into the space environment for use in missions and delivery of services from space.

The Enterprise Fellowship enabled Steve to:

- accelerate the expansion of his company
- create jobs, growing his team from 3.5 to 12 full-time employees
- increase the number of partnerships, research and development collaborations, and paid contracts
- double the company’s turnover in 12 months.

Craft Prospect was then awarded £1M in-kind support from the UK Space Agency. This meant Steve could provide a satellite platform to demonstrate cybersecurity services to major telecommunications providers, including British Telecom.

“I do not believe the business would be where we are without the Enterprise Fellowship support. It has allowed me to present our business proposition clearly and build a sustainable enterprise into the future.”

Steve Greenland
Director and Founder Craft Prospect Ltd.



Unlocking Ambition Enterprise Fellowships

Building on the success of the Enterprise Fellowships, in 2019–2020 the RSE — with support from the Scottish Government — supported early-stage entrepreneurs across Scotland for one year, to **unlock their ambition** and establish new businesses with high-growth potential.

The entrepreneurs succeeded in bringing benefits to Scotland's economy, through:

- forming start-up companies
- developing products via market research
- creating scalable business models
- generating prototypes before product launch
- identifying new commercial markets.

“None of the company's achievements, or the plans we now have, would have been possible without the support provided by the RSE Unlocking Ambition Enterprise Fellowship. It has truly been game-changing.”

Thomas Farrugia
CEO of Beta Bugs

Through delivering this exciting one-year programme, the RSE played its part in delivering the “Nation with Ambition” goal. In just 12 months through the scheme, we attracted individual talent and business start-ups to Scotland, helping to ensure that Scotland is a hub for world-class entrepreneurship.

The **Unlocking Ambition Fellows** received:

- £25,000–50,000 maintenance grant
- up to £20,000 business support funding
- tailored, cutting-edge business training
- a dedicated mentor
- hosting status at a Scottish University or Research Institute
- free Membership of Entrepreneurial Scotland (plus business mentoring)
- free Membership of Scotland House
- access to the GlobalScot network and the Scottish Investment Bank
- membership of the RSE's Entrepreneurs' Club, with access to business networking opportunities.

Our impact

The RSE's Unlocking Ambition Fellows are improving people's wellbeing in Scotland and internationally, including through:

- a web-based physiotherapy platform for remote monitoring and delivery of personalised physiotherapy programmes for people with long-term or palliative care conditions
- a digital companion to support carers of people living with dementia
- insect breeding to create high-performance genetics for the insects-as-feed industry, supporting our ability to support the world's growing population.

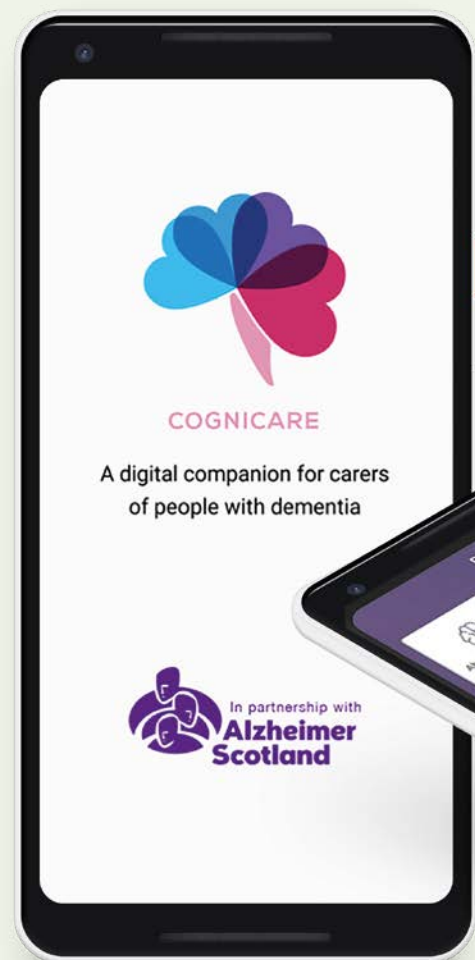
Unlocking Ambition Fellows are also creating employment and investment for the Scottish economy. Through this fast-track programme, in one year alone, these Fellows:

- employed 50+ people
- secured 2,700+ customers, contracts and users
- negotiated 16 investment deals
- won 19 award nominations
- appointed 37 new board members.

"The RSE Unlocking Ambition Enterprise Fellowship has allowed Fodilicious to grow massively over the past year. Without the support of the programme, we would not be where we are today."

Lauren Leisk

Founder and CEO of Fodilicious



Improving quality of life for carers

Pooja Jain, Director and Founder, CogniHealth. Unlocking Ambition Enterprise Fellow 2018–19

Host Institution: Edinburgh Innovations Ltd. at the University of Edinburgh

Every three seconds, someone in the world develops dementia. By 2050 the number of people with dementia is expected to exceed 130 million. There is currently no cure for dementia; however, those with the disease can still live a good life. CogniHealth's mission is to improve the lives of people affected with dementia.

Pooja used her Unlocking Ambition Enterprise Fellowship to develop her company and launch its app CogniCare. This is a digital companion that supports families and friends who are carers of people with dementia, enabling them to access the best quality of life possible.

CogniCare uses machine learning to create personalised support that reduces the financial, physical and psychological burden of the disease.

"Comparing where the company was when I began the Unlocking Ambition Enterprise Fellowship to where we are today, what we have achieved is massive! The company would not have survived without it – both the expertise and financial support – we would be lost without it! It helped grow the team; it used to be just me and now we have a team of three full-time employees. It also helped me grow personally, and gave me the skills required to run a business."

Pooja Jain

Director and Founder, CogniHealth

Impacts:

- as a digital companion app, CogniCare transforms the way carers look after people with dementia at home
- CogniCare provides holistic and personalised support which did not previously exist
- in 12 months, CogniCare has grown its user base by five times to engage 1,000+ carers across the world, having been launched on the App store and as a skill on Amazon Alexa
- the prestige of the RSE award has led to acceptance onto multiple programmes, including: RBS Accelerator; Wayra UK; University of Edinburgh AI & Blockchain Accelerator; and Nesta Healthier Lives Data Fund.



Mentoring for confidence

A new YAS Scheme was launched in 2019–2020 whereby YAS members mentored 15 undergraduate students, bringing great benefits to both students and mentors.

The Scheme is in collaboration with the Robertson Trust, as part of the Trust's "Journey to Success" programme for students from disadvantaged backgrounds. The mentoring relationship gives support for:

- developing CVs
- building confidence
- thinking through future career choices
- accessing a new network of contacts.

Benefits to students:

"Having a mentor has really allowed me to see past the present time. It's made me prepare and have contingencies in place. It's allowed me to look further in terms of my career, networks and legacy and has really broadened my perspective of what I think I'll be able to achieve while in university and afterwards."

Dorcas Baah

a third-year Law student at the University of Edinburgh



Benefits to mentors:

The experience of mentoring has been hugely rewarding and has motivated me to seek out more similar opportunities. When I first met my mentee I wasn't sure what I would have to offer, as he already seemed very focused and self-motivated; I was therefore both moved and humbled several months later when, in a presentation at reception for mentors and mentees, he described how much our chats had helped him clarify his career plans... The mentoring experience has given me the opportunity to share things I often take for granted – my knowledge of what's needed to progress in academia, and my network of professional contacts – with a young person to whom these can make a real difference."

YAS member Dr Kitty Meeks

Research Fellow, Computing
Science, University of Glasgow

Young Academy of Scotland (YAS)

The RSE supports the Young Academy of Scotland (YAS) to drive change within Scotland and internationally.

YAS is committed to addressing social issues and informing public debate, making sure they listen to those who are marginalised.

To support this commitment, YAS' 120 members are diverse, aged from mid-20s to early 40s, coming from all areas of business, third sector, public life and academia.

To structure their work and maximise impact, YAS created and published their new Strategic Plan in 2019–2020. This contains five key "Grand Challenges".

The following three Challenges show the breadth of YAS' work in the past year:

Ending health inequalities: in collaboration with the University of Edinburgh, YAS launched a new HOPE website: "Healthy, Optimal Periods for Everyone". This is a resource to educate and tackle social taboos. It is for people who menstruate, their families, clinicians, employers and policy makers.

Zero carbon by 2045: in preparing for climate change in Scotland's marginalised communities, YAS held an international workshop to begin a programme of work.

Increasing Scotland's positive role in the world: a joint lecture series between Cara Scotland (the Council for At-Risk Academics), YAS and the RSE has been established. The first lecture was on the topic of Human Rights during the Scottish Enlightenment.

Disagreeing responsibly

In 2019–2020, YAS started to develop their Charter for Responsible Debate. YAS members want to be clear about how we can disagree with each other while also creating common ground.

The YAS Charter has nine principles. Using the headings “Informed, Respectful and Inclusive”, the Charter:

- encourages people to rethink what it means to be ‘right’ or ‘wrong’
- aims to build consensus among a wide group of people from different backgrounds, experiences, abilities, and knowledge.



YAS members developed the Charter through:

- a first workshop to develop an initial version
- events to discuss and refine the charter, at: Festival of Politics; Edinburgh Festival Fringe; and Millenifest
- a public consultation.

In 2020–2021, the priority is to finalise the principles and encourage the Charter’s adoption as widely as possible.

“It is succinct and encapsulates the approach that is necessary if we are to work together... We all need to sign up to the Charter and keep it in mind at all discussions and decision-making groups.”

Public consultation respondent



Engage on key contemporary issues by providing an impartial forum for public debate and discussion.

Engage

The RSE's engagement with wider society is central to our mission of "knowledge made useful". We achieve this across Scotland through:

- creating opportunities for all members of the public to learn from world-leading experts in science, economy, arts and culture
- inspiring school students, particularly in Science, Technology, Engineering and Mathematics (STEM) subjects
- supporting discussion and shared learning on issues of national and international importance
- providing a safe space for debate on challenging subjects.

Our reach: In 2019–20, we reached community groups, families, adults and school-aged children through a mix of interactive science events, informative family days, talks and debates on important current issues, and taking part in Scottish festivals. We were "on the road" from Edinburgh to Elgin and Aberdeen to Annan, with 92% of our activities held outside Scotland's central belt.

Our expertise: the RSE's 1,600+ Fellows come from a wide range of backgrounds. This means we can cover a broad spread of subjects, often in one event, for example: from philosophy of science to weather forecasting; and from the ancient world to the science behind *Star Wars*' famous light sabres.

Our activities with school-aged children

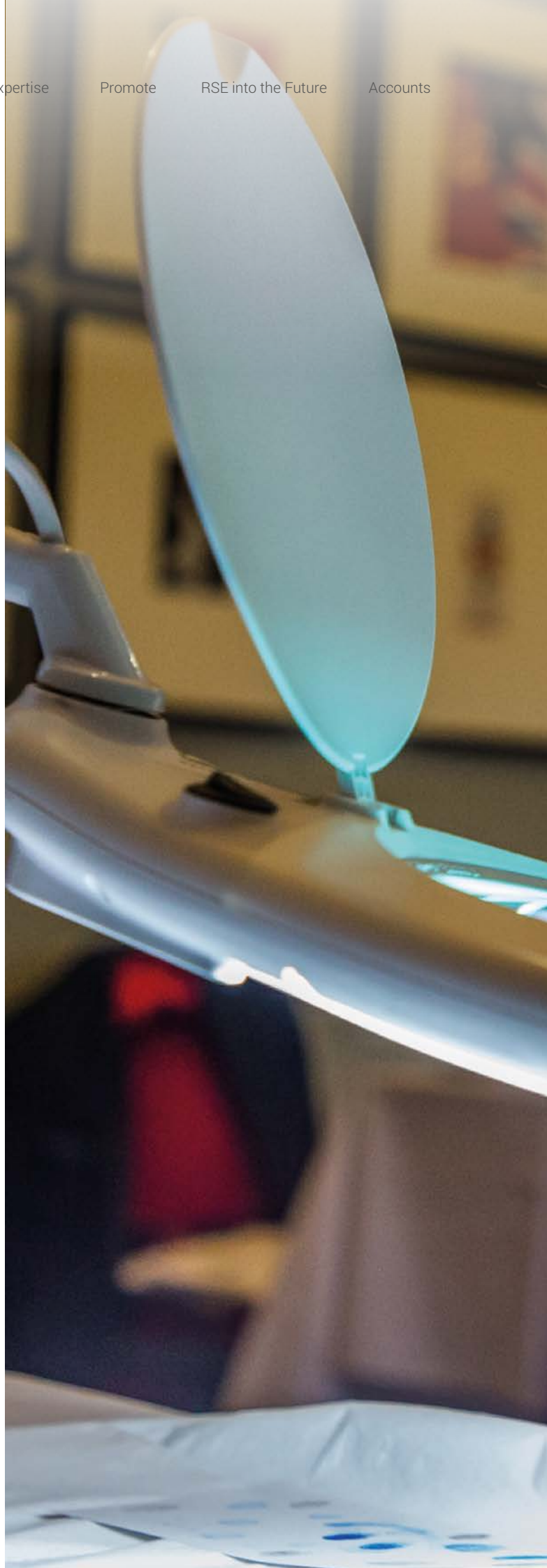
Scotland's children are inspired by our work in schools. We help them to see science and arts brought to life and talk first-hand with world-leading researchers. Schoolchildren see new career possibilities that they may not have previously considered as being "for them". In 2019–2020, we were busy:

- in schools across Dumfries and Galloway, including Glenluce, Castle Douglas, Moffat, Canonbie and Annan, as part of our RSE @ The Holywood Trust School Talks
- at Festivals, including Inverness Science Festival, an annual festival organised by the University of Highlands and Islands
- delivering weekend science masterclasses to 200 young people at the universities of Aberdeen, Dundee and Glasgow.

Our activities with the wider public

We bring the public closer to science, research and expert knowledge on key contemporary issues. People mix with RSE Fellows through a variety of events across Scotland, including:

- a *Fascinating Futures* family day
- a 'Bella Boffinarium' science area in the Belladrum family music and arts festival
- an Edinburgh Science Festival discussion panel on "Being a Woman in Science: Changed Times?", plus activities to inspire girls and young women.



2019–2020 RSE public engagement in figures:

Schools:



3,000+ school
-aged children



47 school talks
across Scotland

Public:



73 interactive
activities

9,000

people, including:



589 for Doors
Open Day at RSE
in Edinburgh



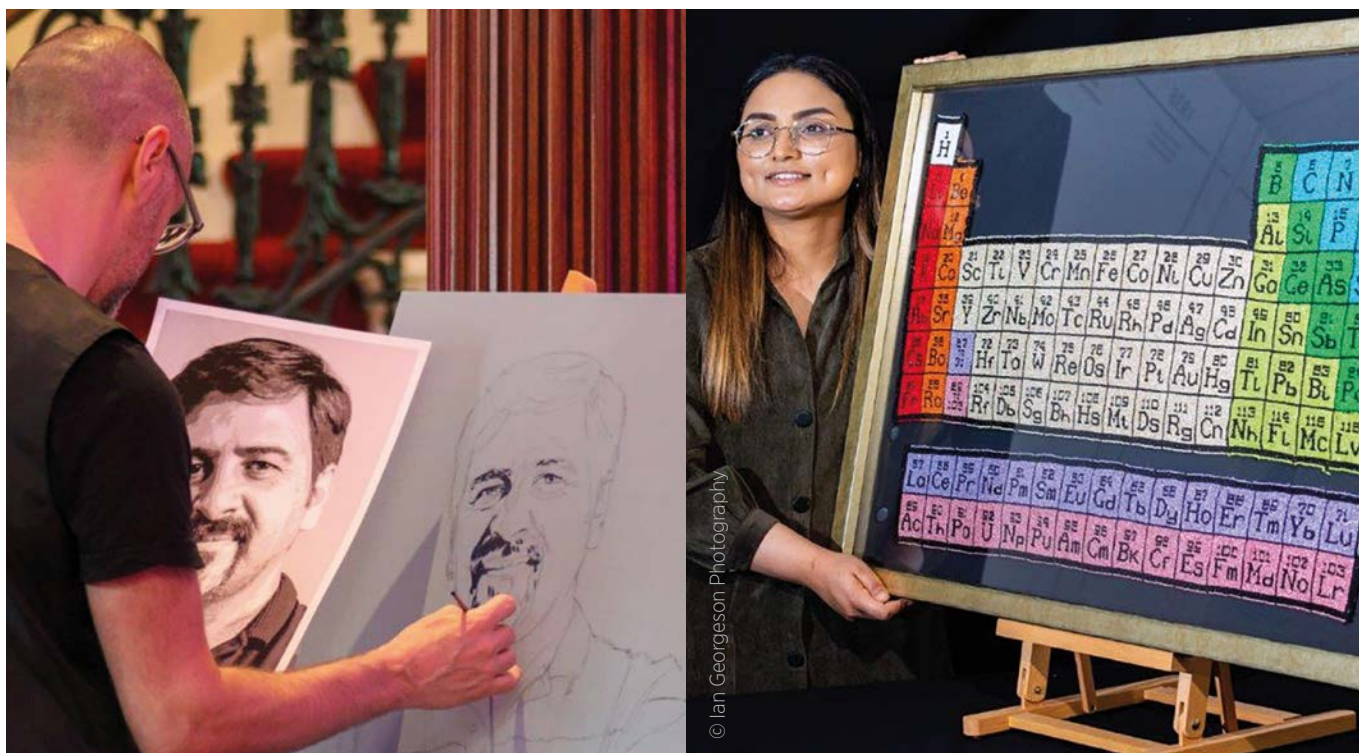
800 for a two-
day programme
at Belladrum
family music
and arts festival



1,400 at
our *Curious*
summer
programme

69%

69% of those that
joined our public
engagement activities
told us they want to
engage further or know
more about the RSE



Being **curious**

In August 2019, the RSE launched its own unique summer events programme: *Curious*, joining in with Edinburgh's Festival buzz.

We hosted an exciting, energy-filled mix of performances, workshops, exhibits and talks. RSE Fellows were joined by specialist input from: Edinburgh Skeptics; Edinburgh College; and The Royal Conservatoire of Scotland.

People of all ages were enticed into the RSE's building with a wide range of topics including:

- Science of gin
- Investigating the paranormal
- Fake news
- Murder, maggots and MRI
- Phrenology
- Macramé periodic table
- At risk academic refugees
- Blackbox: conversations from the flight deck
- Tackling taboo: menstrual misery.



Number of events: 77



Number of speakers: 34
(19 female / 15 male)



Number of people who came to events: 1,369

Impacts:

- 1,369 people had first-hand access to world-leading researchers and artists, through small Tea & Talk conversations, larger events and exhibitions
- "Knowledge made useful" was brought to life for the public across the arts, sciences, business and social studies.

Confronting mortal remains... in Dumfries and Galloway

People in Dumfries and Galloway:

- accessed cutting-edge research on their doorstep
- debated face-to-face with a world-leading forensic science researcher and PhD students
- were inspired by a leading female scientist
- learned new facts, including how forensic science works plus novel scientific criminal investigation techniques
- met innovative young researchers and saw new career possibilities.

As Scotland's National Academy, the RSE is committed to making knowledge useful across the country. In Spring 2019, almost 200 people joined world-leading expert in forensic science, Professor Dame Sue Black, in Dumfries and Galloway at an RSE-hosted event.

RSE Fellow Sue Black is no stranger to travelling in the service of forensic science (the use of scientific techniques in the detection of crime). Sue has investigated fatal outcomes of war and natural disaster in Kosovo and Thailand. Her expertise is also crucial to many high-profile criminal cases.

Sue shared how forensic science works, including the use of bones and vein-patterns in investigations. She also talked about "facing death daily" – in her laboratory and out in the field. Sue has written an autobiography *All That Remains*; and she shared with the audience, young and old, the very personal challenges of writing about death and dying, and of committing her life to paper.

Those who came to the event were also treated to a showcase of forensic anthropology activities from University of Dundee PhD students, including how to: identify human and non-human bones; estimate sex, age and trauma from skeletons; and use biometrics.



Women scientists as world-leading role models

In April 2019, following our 2018 Report on *Tapping all our Talents*, we launched our *Women in Science in Scotland* exhibition at the RSE in Edinburgh, featuring photographic portraits of 26 of our Fellows. Our aims were to:

- raise the visibility of women in science who are either working in, or have a connection to, Scotland
- highlight their different careers plus the networks that science can unlock; and
- inspire young women to consider Science, Technology, Engineering and Mathematics (STEM) as a career.

The exhibition was on display until the end of 2019. It then moved to the Mitchell Library in Glasgow.

Women in Science in Scotland led to so much interest that we produced a portable version which travelled around Scotland. It has been used at the Festival of Politics at the Scottish Parliament, Glasgow Women's Library, Borders College, the Scottish Seabird Centre and in the central offices of the Royal Bank of Scotland. Due to demand, a second portable version was commissioned in early 2020.

We were really pleased when a version of the exhibition was installed at Edinburgh Airport in December 2019. Social media was buzzing with very positive feedback as people were

inspired by Scotland's women scientists as they left from, or arrived in, the capital city.

We also created a digital version of the exhibition to increase national and international access and provide a learning resource to inspire more people:

www.womeninscienceinscotland.com

Recognition: we were delighted when our exhibition was shortlisted for a Chartered Institute of Public Relations (CIPR) "Excellence in STEM" Award 2020.

The RSE's exhibition in numbers:

- Exhibition at the RSE: 14,200 visitors
- Exhibition at Mitchell Library: 22,000 visitors
- Travelling exhibition: 5,000 visitors
- RSE digital channel reach: 60,000 audience
- Edinburgh Airport: 3M+ passengers
- Social media and visitors books: hundreds of positive comments.



Provide Expertise
to ensure that
Scotland's
policy makers
and influencers
have access
to the best
national, and
indeed global,
expertise.

Provide Expertise

The RSE plays a key role in making sure that Scotland's policy makers have access to the best expertise.

We draw on our 1,600+ Fellows, who regularly and freely give their independent, up-to-date expertise from their diverse backgrounds across business, practice and academia. We capture their expertise through hosting wide-ranging debates on contemporary issues of national importance to policy and society. We also distil knowledge into papers and reports, which we then use as evidence at committees and meetings with Members of the Scottish and UK Parliaments (MSPs and MPs), plus civil servants within Scottish and UK Governments.

We are driven by making knowledge useful. We translate complex ideas, evidence and perspectives into clear messages that inform and shape policy for the good of the Scottish economy and society.

RSE's policy impact and engagement

The RSE's policy work combines quick turnaround responses to urgent policy questions with longer-term engagement on larger, national shifts in policies or resources. Both approaches rely on the RSE's expertise and evidence being mobilised either rapidly or in a sustained way over time.

In 2019–2020, our expert, reactive advice, responses to consultations and Policy Advice Papers included:

- Post-Brexit: design of UK funding schemes for international research, road-testing environmental governance options for Scotland, exploring Immigration Policy and Structural Funds
- UK's intergovernmental relations, Common UK Frameworks, and UK Internal Market
- Artificial Intelligence (AI) and data
- Scotland's Curriculum for Excellence
- Economic Impact of Scotland's Universities and Colleges, and the value of international students to Scotland's educational institutes
- Future of Primary Care.

Shaping Scotland's energy future

In June 2019, the RSE published the conclusions of its two-year Energy Inquiry: *Scotland's Energy Future*. The report looked at how Scotland's energy supply and demand system could function within the bigger picture of climate change. We explored moral and environmental responsibilities, as well as Scotland's energy needs and options.

As a National Academy with a history of giving objective guidance, our priority is to sift through evidence and bring varied voices to the table. We also consider social justice aspects of Scotland's future energy use.

"We welcome the Royal Society of Edinburgh's detailed contribution to what is a complex but vitally important policy area."

Paul Wheelhouse MSP

Scottish Government Minister for Energy, Connectivity and the Islands

Impacts:

- we provided Scottish Government and Members of the Scottish Parliament (MSPs) with in-depth critical information and context, through our Report and by engaging across political parties
- our Report's recommendations were debated by Ministers, industry and academics at a party conference event with 100+ attendees
- the issues in our Energy Report underpinned the Scottish Parliament Economy, Energy and Fair Work Committee's own Energy Inquiry.

Becky Lunn speaking at the Energy Inquiry





"This RSE's report is timely and welcome, identifying as it does a number of important questions for the future of the energy sector in Scotland."

Dr Jamie Stewart

Energy Spokesperson for
Citizens Advice Scotland



On-going engagement during 2019–2020: Our breadth of policy coverage on longer-term issues this year included: Energy; Scottish Science, Technology, Engineering and Mathematics (STEM); interdisciplinary learning (IDL); the Scottish National Investment Bank; and Artificial Intelligence (AI).

We continued to support Scotland's STEM Learned Societies' Group (LSG) with a debate on recruiting and retaining STEM teachers. We are establishing an IDL online practitioner forum, led by teachers, to share experiences and resources, supported by our Advice Paper and Conference outcomes.

Finally, the RSE has long recommended that Scotland should have a national AI strategy. We were therefore delighted when Kate Forbes MSP, Cabinet Secretary for Finance, launched the Scottish Government's plans for Scotland's AI Strategy at the RSE in September 2019. We look forward to continuing to contribute to the nation's strategic plans.





© The Scottish Parliament

Advising Scotland's newest bank

In 2017, the **Scottish National Investment Bank** was announced by the Scottish Government. The Bank's mission is to support Scotland's shift to "net zero" carbon emissions. In 2019/2020, the Scottish Parliament passed the Bill that brought the new Bank into Scottish Law.

For the past three years, the RSE has been giving policy advice on the new Scottish Bank. In 2019–2020, we:

- presented written and verbal evidence to the Scottish Parliament's Economy, Energy and Fair Work Committee
- hosted evidence-meetings with Members of the Scottish Parliament (MSPs)
- wrote a briefing paper for all MSPs which they used during Bill debates
- hosted a meeting involving the Cabinet Secretary for the economy, Scottish Government officials and other key stakeholders to support the development of the Bank's Strategic Framework.

"The RSE was integral to the Scottish Parliament's Economy, Energy and Fair Work Committee's scrutiny of the Scottish National Investment Bank (Scotland) Bill. The RSE gave evidence twice to the Committee, and briefed MSPs individually, so helping to focus the Committee's work on the simplifying of the Bank's Strategic Missions and concerns over the proposed running costs of the Bank."

Dean Lockhart

MSP, Shadow Cabinet Secretary for Economy and Finance

Promote

Scotland's
interests and
reputation
on the global
stage.

Promote

The RSE's mission of "knowledge made useful" is brought to life across the globe through our showcasing of Scotland's research, working with 26 other national academies, and collaborating with individuals and groups worldwide.

Over the past year, we have welcomed international visitors and experts, with Scotland's researchers also being hosted by national academies and universities overseas. Together we have delivered workshops, debates and projects, focusing particularly on those that lead to longer-term, innovative relationships.

In 2019–2020, the RSE:

- organised, hosted and supported more than 27 international meetings
- enabled input from, and networking between, 195 international and 150 of Scotland's stakeholders
- supported RSE Fellows to give 600 hours of their expertise on a voluntary basis
- raised awareness of world-class research and innovation from Scotland
- informed the Commonwealth Academies Statement on Climate Change, Biodiversity and Sustainable Energy.

Our shared activities focus on creating opportunities for: individual or community development; a more resilient economy; and protecting Scotland's environment for future populations. As a National Academy, we achieve these outcomes mainly through using research methods and evidence to address shared national and international challenges.

In addition to delivering such opportunities through our many partnerships, we fund individuals and groups to carry out international research. An assessment of those who received our international research awards in 2019–2020 shows the following percentages:

- 95% established or developed collaborations
- 54% carried out research through international partnerships (rather than just in their own countries)
- 42% combined international work with working across disciplines (so crossing multiple boundaries)
- 90% created wider international partnership opportunities after receiving the initial research award
- 28% secured almost £4M further research funding for in-country and international partnership research.



Group photograph of symposium participants, 6th Scotland-Norway Waves Symposium (Waves & Marine Hydrodynamics), Royal Society of Edinburgh, 8 – 10 May 2019



Target partner-country:
Norway



Countries represented:
Norway, Germany, Canada, USA, Australia, Netherlands



Stakeholders:
3 Fellows involved and approx. 8 hours each



Total participants:
60+



Number of Fellows and Time Commitment:
4 FRSEs and approx. 35 hours each



Funding:
65% funded by RSE and DNVA, 35% external sources funding

Supporting sustainable seas

Our oceans are a vital resource for our planet. Scotland has over 10,000 miles of coastline; Norway more than 63,000 miles. It is no surprise then that the health of the oceans remains a key priority for these two countries, driving world-leading research within the Arctic Region. The RSE has therefore been investing to support research into Waves and Marine Hydrodynamics with the Norwegian Academy of Science and Letters (DNVA).

Waves and Marine Hydrodynamics research helps us to:

- understand the effects of waves and ocean currents
- track changes in the Arctic currents and how these affect our climate, ecology, fisheries, aquaculture (farming of fish such as in the ocean), coastal communities and offshore renewable energy
- understand, monitor and react to changes from natural causes and human activity, and develop sustainable solutions.

In May 2019, the RSE hosted a joint RSE/DNVA symposium. All Scottish and Norwegian researchers in the fields of Water Waves and the Marine Environment were invited. Over three days, 30 lectures described recent research — from theory to the laboratory to the seas. Leading international experts also joined to share this feast of oceanic learning — from England, the Netherlands, Germany, Canada, the United States and Australia.

Impacts:

- new joint research programmes between Scottish and Norwegian Universities with significant new research funding secured
- new training opportunities for Norwegian and Scottish graduate students
- new industry-relevant research issues identified in Norway and Scotland
- improved communication of research findings with industrial (offshore) sector
- water waves research in Scotland and Norway strengthened and showcased, making global collaboration easier
- new research from Scotland/Norway shaping strategic marine research programmes in both countries.



Seeing the world through other people's eyes

The RSE's international work covers many research fields. Most recently, we have strengthened our collaborations in the Humanities and Social Sciences. One exciting example is our strategic partnership with the University of Chinese Academy of Social Sciences (UCASS).

Our partnership helped explore links with the newly-formed CASS University as one of a number of new RSE-supported international networks. This link focuses on hermeneutics, and provides the opportunity for Scottish Higher Education Institutes to connect around this important area of study. In April 2019, two days of delegation visits and business meetings were held at the Universities of Glasgow (UoG) and Edinburgh (UoE) led by two RSE Fellows, Professors Natascha Gentz and David Jaspar.

The RSE:

- achieved agreement to co-establish a hermeneutics research institute in Scotland between UoE and UCASS
- successfully arranged start-up meetings that have established partnerships for future Scottish exchange programmes
- encouraged initial inward investment to Scotland to jointly fund the new research institute, research projects and exchanges.

Impact:

Hermeneutics research creates ways to understand and interpret biblical texts. The new joint institute will help us become more aware of how we make sense of information, including the assumptions we make and the processes we follow. We can apply this awareness across society by using a new common language to make sense of each other's perspectives. This will help us to change our behaviour and attitudes, reflect on why we hold certain opinions and think through how we're connected with our environment for future generations.



Target partner-country:
China



Stakeholders:
2 International and 4 Scottish



FRSE contribution:
3 Fellows involved and approx. 8 hours each



"The RSE enabled a promising visit by an institution (UCASS) which is prestigious, expands quickly, and is keen to invest substantially in internationalisation."

Dr Anselm Heinrich

International Dean, College of Arts,
University of Glasgow



Signing of agreement between the University of Edinburgh and the University of Chinese Academy of Social Sciences, Abden House (Edinburgh), 26 April 2019

RSE into the Future

The previous pages have highlighted a few of the RSE's achievements, activities and impacts for the year 2019–2020. Our extensive programme of Inspiring, Engaging, Providing Expertise and Promoting Scotland would not be possible without an internal programme which underpins and enables our successful public-facing work and helps us build towards a resilient future.

Our priorities for 2019–2020 were: being more strategic; communicating better; engaging differently; and diversifying the RSE's Fellowship. We briefly describe how we have approached each of these, before looking at how we will build for 2020–2021 and beyond.

1. Taking a more strategic approach

The RSE is a small organisation with a broad remit, delivering a wide-ranging programme of activity. We must therefore focus our resources so that we can continue to make a unique contribution based on our strengths, while delivering impact for public good. To support this, we have undertaken three significant reviews:

- Research Awards: we assessed the effectiveness and reach of our current £1.7 million awards programme, and gaps in the research funding landscape. We used this to develop a revised programme of awards to support research capacity and leadership and the effective application of research for greater impact
- Enterprise Fellowship Programme: building on an independent evaluation, we began work on the future strategy, governance and resourcing of the programme
- Governance: we continued work on organisational governance with the aim of increasing effectiveness and efficiency.



2. Better communicating our work

We continue to improve and modernise our external communications; for example, through:

- revamping our magazine, *ReSource* to increase its appeal
- reviewing our digital and social media audiences to help us engage and channel our digital content across multiple channels (e.g., Twitter, Facebook, the RSE website)
- increasing our marketing of events using a more professional approach
- delivering our first public exhibition, *Women in Science in Scotland*, with a portable pop-up version that has moved around Scotland, along with a digital version with short videos.

3. Engaging differently

It is important for us to reach more people and move beyond what might be considered our “typical” audiences. We have therefore started to review our Young People’s Programme to improve its “pull”, plus trial activities in different places using a variety of new approaches, such as:

- the Belladrum Festival near Inverness
- our first summer programme, *Curious*, during August - a mix of workshops, exhibitions, shows and ‘tea and talks’ which allowed us to share expertise in informal settings.

4. Diversifying our Fellowship

Our 1,600+ Fellows volunteer their time to support the RSE’s mission of “knowledge made useful”. We wish to increase the diversity of the Fellowship so that it reflects more closely the richness of Scotland’s population and talent. A number of changes have been made over the past year to support that objective, including: revising election criteria; simplifying nomination forms; and outreach activity to identify a broader base of candidates.

The RSE's priorities for 2020–2021

We remain ambitious to enhance the impact of our work. Key to delivering that ambition will be implementing the findings of the reviews and changes outlined above, including:

- finalising and implementing the new Research Awards Programme
- finalising and delivering the new Enterprise Fellowship Strategy and seeking additional funding to put the scheme onto a sustainable footing
- taking forward recommendations from the governance review
- continuing to develop a more inclusive approach to our public engagement
- continuing to take steps to diversify the RSE's Fellowship.

In addition to these strategic commitments, we will also take forward two priority operational priorities: the redevelopment of our website for more effective engagement; and implementation of a new customer relationship management (CRM) system.

2020–2021 will also see us begin two new pieces of strategic work:

- the development of a regional strategy, which directly underpins our role as Scotland's National Academy. We are thinking through how we might strengthen our engagement for the whole of Scotland, enhancing our relevance and impact
- beginning the process for developing our next Strategic Framework 2021–2026, including discussions with Fellows, funders, stakeholders and the wider public.

Implications of Covid-19

Impact on the RSE's operations: the Covid-19 outbreak has had a significant impact on the operation of the RSE that will continue throughout the coming year and potentially beyond. At the time of writing (June 2020) most of the team are working from home and as an organisation we have adapted to doing things in the digital rather than physical space. While we have had to cancel some of our bigger planned events, we have accelerated existing plans to move to, and test out, more digital ways of working, including running more events online and developing more digital content.

At present, while we do not see an imminent return to the building – which has been closed since March 23rd – work is in hand to consider how many colleagues could work safely in the building and what measures we would need to put in place to enable them to do so safely, as well as considering what we might offer as a socially-distancing venue. The pandemic has also had an impact on RSE finances, with a reduction in income from venue hire and investments. A re-budgeting exercise has been undertaken to take account of those implications, which indicated that those losses can be absorbed.

The RSE's offering as Scotland's National Academy: the RSE has a key role to play in supporting Scotland's move towards post-crisis recovery from Covid-19. The RSE is well placed to help identify and address some of the immediate policy implications and challenges arising from Covid-19, drawing on our breadth of expertise, independence of purpose and strong convening power. We will lead and support thinking and discussion around some of the bigger questions the pandemic raises, including around the response, the structure of the economy and the kind of society we wish to see. To ensure we deliver on this commitment, we have established a **Post-Covid-19 Futures Commission** made up of leading practitioners and thinkers from across society, who will inform and guide the RSE's work, bringing benefits to Scotland's economy and society.

RSE Prizes and Medallists 2019–2020

In 2019–2020, the RSE awarded its prestigious medals to eminent scientists and researchers in recognition of their contributions and achievements in their selected fields of study.

The **RSE Lord Kelvin Medal** and **Sir Walter Scott Medal** are presented to exceptional individuals who have demonstrated lifelong dedication and made outstanding contributions to their area of research, business or public service.



The RSE Lord Kelvin Medal:

Professor David Manlove (University of Glasgow) received his medal for his outstanding contribution to computing science. Professor Manlove has enabled a significant increase in living kidney transplants, thereby improving public health, through pioneering work in matching algorithms and software.

"Whilst being very honoured and proud to have been selected for this, to me, it is recognition not just of my work, but of all the people who have worked with me on algorithms for kidney exchange. This includes colleagues at the University of Glasgow who have worked with me since 2007, as well as the excellent team at NHS Blood and Transplant who are directly involved with the UK Living Kidney Sharing Scheme."

Professor David Manlove

Professor of Algorithms and Complexity, School of Computing Science, University of Glasgow



Sir Walter Scott Medal:

Professor Kathryn Rudy (University of St Andrews) was awarded her medal for her outstanding contribution to art history. Professor Rudy's capacity for lateral thinking has meant she has been able to examine a large corpus of manuscripts in ways unexplored by previous scholars.

"None of this work has taken place in a vacuum and I so grateful to everyone who has nurtured my work: funders, librarians, cataloguers, editors, publishers, the University of St Andrews for its generous leave enabling me to hike, think and write of course my friends, colleagues and students in Scotland and beyond".

Professor Kathryn Rudy FRSE

School of Art History, University of St Andrews

The **Sir Thomas Makdougall Brisbane Medal** and **RSE Dr Patrick Neill Medal** are for early-career researchers and business leaders for their outstanding contribution to their field of research or business.

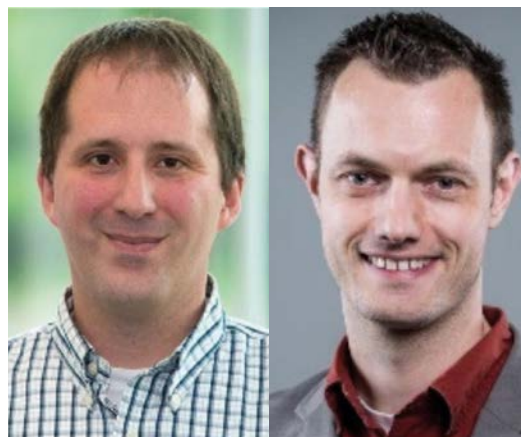


Sir Thomas Makdougall Brisbane Medal:

Dr Martin Lavery (University of Glasgow) was awarded his medal for his outstanding contribution to photonics, working on a diverse range of ongoing experiments including free-space optical communications and underwater optical communications.

"It was a fantastic surprise to receive this honour. The RSE Sir Thomas Makdougall Brisbane Medal is an incredibly prestigious award and I'm very grateful to the committee for their recognition of my work."

Dr Martin Lavery
University of Glasgow



RSE Dr Patrick Neill Medal:

the joint recipients of this medal are **Dr Joe Marsh** (University of Edinburgh) for his outstanding research in human genetics, which is key to the success of personalised and precision medicine; and **Dr Ferry Melchels** (Heriot-Watt University) for his outstanding contribution to the field of biomaterials and tissue engineering.

"It's a great honour for me to receive the Patrick Neill Medal – it's a reflection of the fantastic research environment provided by the MRC Human Genetics Unit and the University of Edinburgh that has allowed me to do this research".

Dr Joe Marsh
University of Edinburgh

"I'm honoured to receive this prestigious Medal. It not only celebrates my research career thus far, but also acknowledges the importance of the young field of biofabrication for the life sciences".

Dr. Ferry Melchels
Associate Professor, Heriot-Watt University



The RSE Innovator's Prize for Public Engagement was awarded to:

Dr Senga Robertson-Albertyn

(University of Dundee) in recognition of her contribution to communicating science in a fun and interactive way.



The RSE Senior Public Engagement Prize was awarded to:

Dr Simon Gage OBE (Edinburgh International Science Festival), for his work in expanding the reach and international reputation of the Edinburgh International Science Festival.

Professor Dame Anne Glover,
RSE President, stated:

"My congratulations to the medallists, who are all uniquely pushing the boundaries of knowledge and expertise. This list confirms to me yet again what an academic powerhouse Scotland is and how proud we should be that such an impressive pool of talent chooses to base its research here".

RSE New Fellows 2020



Honorary:

Mr Alan Cumming OBE

Actor, Producer, Singer, Author and Activist

Professor Niall Ferguson

Milbank Family Senior Fellow, Hoover Institution, Stanford University

Corresponding:

Professor David Bates

Chief of the Division of General Internal Medicine, Brigham and Women's Hospital, Boston MA

Professor Joan Cordiner FREng

Professor of Process Engineering and External Engagement, University of Sheffield

Professor Alan Cowman FRS

Deputy Director - Science, The Walter and Eliza Hall Institute of Medical Research

Professor Tom Curran FRS

Executive Director and Chief Scientific Officer, Children's Research Institute

Professor Malik Dahlan

Principal and Chief Lawyer, Institution Quraysh for Law & Policy

Dr Mwapatsa Mipando

Principal of the College of Medicine, University of Malawi

Dr Viswanathan Mohan

Director, Madras Diabetes Research Foundation

Professor Mari Ostendorf

Professor of Electrical & Computer Engineering, University of Washington

Fellow:

Professor Lynn Abrams FBA

Professor of Modern History, University of Glasgow

Professor Rosalind Allen

Professor of Biological Physics, University of Edinburgh

Professor Annie Anderson

Professor of Public Health Nutrition, University of Dundee

Professor Keith Bell

Scottish Power Professor of Smart Grids, University of Strathclyde

Professor David Borchers

Professor of Statistics, University of St Andrews

Ms Christine Borland

Artist

Mr Melfort Campbell OBE

Director, Imes Group Limited

The Right Honourable Lord Menzies Campbell of Pittenweem CH, CBE, PC, QC

Chancellor, University of St Andrews

Professor David Crossman

Dean of Faculty of Medicine, University of St Andrews

Professor Simon Dobson

Professor of Computer Science, University of St Andrews

Professor Penny Fielding

Grierson Professor of English Literature, University of Edinburgh

Professor Robert Frost FBA

Burnett Fletcher Professor of History, University of Aberdeen

Professor Sebastian Geiger

Energi Simulation Chair and Director of the Institute of GeoEnergy Engineering, Heriot-Watt University

Professor Ian Gilbert

Head, Division of Biological Chemistry and Drug Discovery, and Professor of Medicinal Chemistry, University of Dundee

Professor Thomas Gillingwater

Chair of Anatomy, University of Edinburgh

Professor Rebecca Goss FRSC

Professor of Organic Chemistry, University of St Andrews

Professor Bruce Guthrie

Professor of General Practice, University of Edinburgh

Dr Katie Hampson

Wellcome Senior Research Fellow, University of Glasgow

Dr David Hare

Independent Non-Executive Director

Professor Ailsa Henderson

Professor of Political Science and Head of Politics & International Relations, University of Edinburgh

Mr Dominic Hill

Artistic Director, Citizens Theatre

Professor Mark Huxham

Professor of Teaching and Research in Environmental Biology, Edinburgh Napier University

Professor Ralf Kaiser FInstP

Professor of Physics, University of Glasgow

Dr Deborah Keith

Chair, James Hutton Ltd.

Mr Fergus Linehan

Festival Director & Chief Executive, Edinburgh International Festival

Professor Margaret Lucas

Director, Centre for Medical & Industrial Ultrasonics, University of Glasgow

Professor Rory McCrimmon

Dean, School of Medicine, University of Dundee

Sir Iain McMillan CBE

Member, Competition Appeal Tribunal

Professor Nasar Meer FAcSS

Professor of Sociology, University of Edinburgh

Dr Lindsay Montgomery CBE

Visiting Professor, School of Law, University of Strathclyde

Professor Jill Morrison

Clerk of Senate and Vice-Principal, University of Glasgow

Dr Joe Morrow CBE

President, Mental Health Tribunal for Scotland

Professor Simon Mudd

Professor of Earth Surface Processes, University of Edinburgh

Professor Miratul Muqit

Professor of Experimental Neurology, University of Dundee

Professor Scott Murray MBE

Emeritus Professor of Primary Palliative Care, University of Edinburgh

Professor Francisc Mutapi FAAS, FZAS

Professor of Global Health Infection and Immunity, University of Edinburgh

Dr Sandy Naim

Investment Partner and CEO/Chairman, Edinburgh Partners

Mr Neil Oliver

Historian, Broadcaster, Writer and Archaeologist

Ms Francesca Osowska OBE

Chief Executive, Scottish Natural Heritage

Professor Beatrice Pelloni

Professor of Mathematics and Head of School, Heriot-Watt University

Professor José Penadés Casanova

Director of the MRC Centre for Molecular Bacteriology and Infection and Chair of Microbiology, Imperial College London

Professor Aidan Robson

Professor of Particle Physics, University of Glasgow

Professor Alexandra Rowe

Professor of Molecular Medicine, University of Edinburgh

Dr Alison Sheridan FBA

Emerita Principal Archaeological Research Curator, National Museums of Scotland

Professor Chris Soulsby

Professor of Hydrology, University of Aberdeen

Professor Chris Speed

Chair of Design Informatics, University of Edinburgh

The Right Honourable Colin Sutherland

Lord President and Lord Justice General of Scotland

Professor Stephen Tierney

Professor of Constitutional Theory, University of Edinburgh

Professor Lesley Torrance

Professor of Virology, University of St Andrews

Professor Pieter van West

Director of the International Centre for Aquaculture Research and Development, University of Aberdeen

Professor Nicholas Watson

Chair of Disability Research and Director of Centre for Disability Research, University of Glasgow

Professor Nick Weston

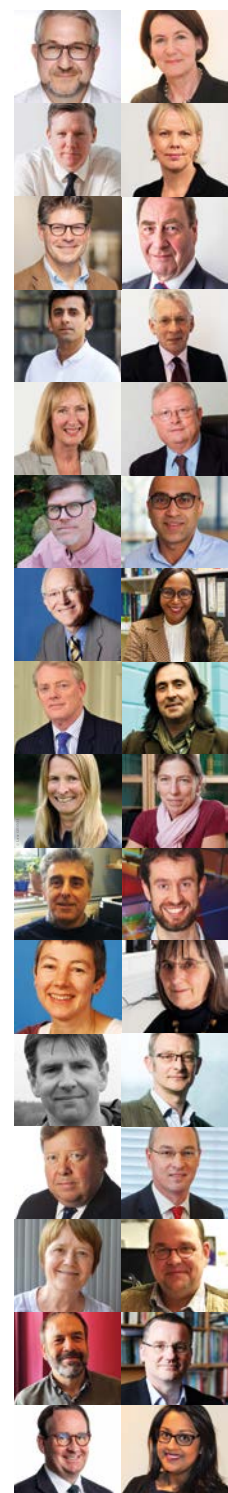
General Manager, Renishaw Plc

Mr Andrew Wilson

Founding Partner, Charlotte Street Partners

Ms Talat Yaqoob

Independent Consultant and Researcher



Corporate Governance and Management

The Royal Society of Edinburgh is an educational charity, registered in Scotland as Scottish Charity No. SC000470. The Trustees are the Council Members elected during the Financial Year (1 April 2019 to 31 March 2020).

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Professor Ineke De Moortel

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Dr Rebekah Widdowfield

Director of Development

Mr Gordon Adam (retired 22.08.19)

Director of Programmes

Mr Graeme Herbert (retired 31.10.19)

Professor Sarah Skerratt (appointed 03.02.20)

Director of Finance

Mr Rob Conner (resigned 20.12.19)

Mr Gordon Laidlaw (interim appointed 17.02.20)

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Professor Marcel Jaspars (VP)

Professor Andrew Porter (VP)

Professor David Bell OBE (VP)

Dr John Brown CBE

Professor Mandy MacLean MBE (VP)

Mr Rob Conner (resigned 20.12.19)

Mr Gordon Laidlaw (interim appointed 17.02.20)

Financial Review

Result for the year

The Group statement of financial activities records the net movement in funds for the year as a £3.24m reduction, as compared to a £2.66m increase in 2019. This principally arose due to the reduction in the value of the investment portfolios at the end of the year as financial markets reacted to the impact of the Covid-19 pandemic. The prior year also benefitted from a £3.08m gain on the initial valuation of investment property. The operating result for the year was a deficit of £232k, compared to a surplus of £79k in 2019, with part of this reduction being a pensions' £160k charge for the "McCloud ruling" and "Guaranteed Minimum Pension" adjustments.

In 2019, as part of a review of Governance, the Trustees agreed that the original rationale for the RSE Scotland SCIO was out of date and that the SCIO be closed, with all activities transferring into the RSE. As at the year end, the SCIO was wound up and remaining reserves, £33k, were transferred as a donation to the RSE.

Income and Expenditure

Income

Total income was £5.7m — this was down £1.4m on the prior year.

Donations and smaller legacies of £438k, including Fellows' subscriptions and donations from Friends of the Society, increased from the prior £298k following the £148K transfer from the USA of the capital balance held in the John M Lessells Trust.

Both investment income and property rental income remained at levels similar to 2019.

Income from charitable activities, which includes the Government grant and funding from Scottish Enterprise and UK Research Councils, decreased to £4.04m from £5.54m. Income for the Unlocking Ambition Enterprise Fellowship programme funded by the Scottish Government fell £717k as the programme ended during the year and Scottish Enterprise (Enterprise Fellows) funding fell by £249k. Venue income fell by £193k, although this was offset by a reduction in costs as client billing for catering moved from the RSE to the catering company.

Expenditure

Total expenditure fell from £7.0m to £5.9m. Costs in the area of Enterprise and Innovation fell £726k in line with reductions in funding and fell £116k in International Relations.

Income by Source

Scottish Funding Council - research funding	42.19%	
Dividends and interest	16.85%	
Public sector bodies	15.92%	
Scottish Funding Council - other	5.90%	
Fellows	4.55%	
Rental income	4.31%	
Charitable trusts	3.54%	
Conference facilities	3.40%	
Journal publications	2.78%	
Individuals	0.22%	
Companies	0.21%	
Legacies	0.11%	

Expenditure

Research & Prizes	31.88%	
Enterprise & Innovation	24.28%	
Public Engagement	12.86%	
Costs of raising funds	10.73%	
Policy	9.33%	
Events & Conference Hire	4.16%	
International	4.07%	
RSE Young Academy of Scotland	1.78%	
Publications	0.64%	
Development	0.27%	

In line with the Strategic Framework development aim of extending outreach and impact, the expenditure on policy, events and outreach, both in Scotland and internationally, increased during the year.

Support costs of charitable activities included planned expenditure on staff and buildings maintenance and improvements, the latter funded by reserves from previous years.

Costs of raising funds increased from £514k to £635k, largely in the area of building management costs. This category of expenditure comprises investment management fees; the cost of the Fellowship office and support of membership activities; the costs of building management in respect of income from letting of surplus space; and fundraising costs including management time in securing funding.

Investment Asset gains and losses included in net income largely reflect the significant reduction in the performance of the UK equity market at the end of the year, with an unrealised loss on investments of £3.5m (2019 – £19k gain).

Transfers between funds shown in the Statement of Financial Activities comprise the recurring transfers from the Capital Asset unrestricted reserve of a total of £102k to match the depreciation of buildings and the capital repayment of the loan to the Foundation; and a transfer on consolidation from the Foundation restricted fund balance to the General Fund, equivalent to the net inter-entity income received in the RSE. In addition, £598k in respect of the Dryerre Fund was transferred out of restricted to unrestricted funds in the year, following a review of the original terms of the Fund.

Balance sheet

Consolidated net assets have decreased by £3.2m, principally due to the reductions in market value of investments at year end.

Fixed assets, including the property in George Street, amounted to £5.8m, the decrease on the prior year being in the main due to the £265k reduction in revaluation of investment properties required by FRS102. At year end, investments were valued at £21.3m, of which £19.1m related to restricted funds or designated funds, such as the BP Research Fund, the Development Fund and the Pension Reserve Fund. Net current assets remained relatively unchanged at £2.1m.

At a Group level, the RSE's Balance Sheet contains unrestricted reserves of £15.3m as at the year end. Going forward, Covid-19 is expected to adversely impact the RSE's financial position; however, with this level of unrestricted reserves there is flexibility within that amount to offset pandemic-related reductions in income and support the preparation of these accounts on a going-concern basis. The organisation's Budget for 2020/21 was revised to take account of emerging pandemic impacts on investment returns and trading income, and while projections will have to be regularly updated, the process showed the financial impact could be sustained.

The calculated FRS102 pension liability of £1,236,000 at 31 March 2019 decreased by £422,000 to £814,000. Favourable movements in the calculation of scheme liabilities more than offset the reduction in asset valuations seen at the end of the year. The FRS102 accounts valuations, which reflect market conditions at a point in time, can fluctuate materially and changes in liabilities may be reversed.

The FRS102 reported outcome for the RSE's membership of the Lothian Pension Fund showed a net asset position of £101,000 compared to a net liability of £193,000 in 2019. However, as this asset is not recoverable as a refund or through reduced contributions, these accounts reflect a break-even funding position for FRS102 purposes, showing a decrease in liability of £193,000 since 2019.

For the Universities Superannuation Scheme (USS) the calculated FRS102 liability decreased, from £1,043,000 to £814,000. The main changes in the calculations, other than asset values, are the actuarial assumptions, principally the discount rate applied to the liabilities.

The FRS102 liabilities are accounting estimates and actual liabilities would only be realised if the RSE left either of the defined benefit schemes. The basis of calculation differs from the potential cash cost that would arise if the liabilities were crystallised. It is possible that the USS liability may crystallise in the foreseeable future, as the active membership of the scheme has reduced. The Trustees have previously obtained estimates of the potential exit liabilities and plans remain in place to build a pension reserve equivalent to these amounts.

Group Statement of Financial Activities

(INCORPORATING THE INCOME & EXPENDITURE ACCOUNT)
FOR THE YEAR ENDED 31 MARCH 2020

	Note	Unrestricted £	Restricted £	2020 Total £	2019 Total £
Income					
Legacies		6,309	-	6,309	82,687
Other donations		268,935	169,194	438,129	297,827
Donations and legacies	4	275,244	169,194	444,438	380,514
Charitable activities	5	39,192	3,998,325	4,037,517	5,544,865
Rental income	6	-	244,843	244,843	255,454
Investment income	6	451,652	506,368	958,020	906,484
Total income		766,088	4,918,730	5,684,818	7,087,317
Expenditure					
Raising funds	7	(448,171)	(186,471)	(634,642)	(514,288)
Charitable activities	7	(1,080,816)	(4,201,700)	(5,282,516)	(6,493,905)
Total expenditure		(1,528,987)	(4,388,171)	(5,917,158)	(7,008,193)
Net operating (deficit)/surplus		(762,899)	530,559	(232,340)	79,124
Gains / (losses) on Investment Assets					
Realised gains on investments	14	23,868	16,139	40,007	217,204
Unrealised (losses)/gains on investments	14	(1,637,867)	(1,849,932)	(3,487,799)	19,182
Unrealised (losses)/gains on investment property	13(a)	(265,000)	-	(265,000)	3,083,141
Net income / (expenditure)		(2,641,898)	(1,303,234)	(3,945,132)	3,398,651
Transfers between funds	19,20	806,866	(806,866)	-	-
Other recognised gains / (losses)					
Actuarial gains/(losses) on defined benefit pension funds	22	705,000	-	705,000	(735,000)
Net movement in funds		(1,130,032)	(2,110,100)	(3,240,132)	2,663,651
Reconciliation of funds:					
Balance brought forward at 1 April 2019	19,20	16,427,368	15,437,523	31,864,891	29,201,240
Balance carried forward at 31 March 2020	19,20	15,297,336	13,327,423	28,624,759	31,864,891

There were no acquired or discontinued activities in the year other than the agreed closure of the RSE Scotland SCIO as at 31 March 2020.

Balance Sheets at 31 March 2020

	Note	GROUP 2020 £	GROUP 2019 £	RSE 2020 £	RSE 2019 £
Fixed assets					
Tangible fixed assets	13(a)	5,764,147	6,092,867	4,416,851	4,737,545
Heritage assets	13(b)	46,920	46,920	46,920	46,920
Intangible fixed assets	13(c)	182,548	68,111	182,548	68,111
Investments at fair value	14	21,340,551	24,669,863	12,983,123	14,963,072
Loans Receivable	15	-	-	1,235,824	1,282,632
Total fixed assets		27,334,166	30,877,761	18,865,266	21,098,280
Current assets					
Debtors	16	295,972	168,984	268,647	131,672
Cash at bank and in hand		368,706	291,566	259,725	163,322
Deposits		3,585,882	3,542,923	3,585,882	3,542,923
Total current assets		4,250,560	4,003,473	4,114,254	3,837,917
Current liabilities					
Creditors: amounts falling due within one year	17	(2,145,967)	(1,780,343)	(3,628,265)	(3,127,167)
Net current assets		2,104,593	2,223,130	485,989	710,570
Net assets excluding pension fund		29,438,759	33,100,891	19,351,255	21,809,030
Defined benefit pension schemes liability	22	(814,000)	(1,236,000)	(814,000)	(1,236,000)
Net assets after pension fund liability		28,624,759	31,864,891	18,537,255	20,573,030
Funds					
Restricted Funds	20	13,327,423	15,437,523	3,239,919	4,145,662
Unrestricted Funds					
Designated Funds	19	14,670,068	16,305,625	14,670,068	16,305,625
General Fund	18	627,268	121,743	627,268	121,743
		15,297,336	16,427,368	15,297,336	16,427,368
Total funds	21	28,624,759	31,864,891	18,537,255	20,573,030

The accounts were approved by the Council on 14th September 2020 and signed on its behalf by:

Dr John Brown CBE FRSE
Treasurer

Legal and Administrative Information

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Bankers

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Brooks MacDonald (*formerly Cornelian Asset Managers Limited*)
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The accounts set out on pages 45 to 46 have been extracted from the full financial statements of the RSE, copies of which can be obtained from the address below.

Further information about the activities of the Royal Society of Edinburgh and additional copies of the Annual Report and Accounts may be obtained from:

The Royal Society of Edinburgh

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The Royal Society of Edinburgh is registered in Scotland as Scottish Charity No. SC000470

The RSE Scotland Foundation is a connected charity, registered in Scotland as Scottish Charity No. SC024636

The RSE Scotland SCIO is a connected charity, registered in Scotland as Scottish Charity No. SC043194

Inland Revenue Claim Board Reference CR 18102

ISSN 2515-737X (print), ISSN 2515-7388 (online)



CREATED IN 1783 BY ROYAL CHARTER
SCOTTISH CHARITY NO. SC000470

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