Institution: University of Dundee

REF2021

1. Context and mission

The University of Dundee is a medium-sized civic institution with a compact and thriving city campus and a University hospital. The University received its Royal Charter in 1967 and its origins date back to 1881. Through collaborations and mergers, the University has evolved into a multi-disciplinary institution spanning medical, health and life sciences, engineering and physical sciences, social sciences, humanities, art and design.

The University's core purpose is to **transform lives locally and globally** through the creation, sharing and application of knowledge. In 2012, we codified our 25-year vision, entitled **Transforming Lives**, seeking to become world-leading in our priority areas. Phased in five-year implementation plans, the current **Strategy to 2022** emphasises the mutuality of our research, teaching, and knowledge exchange endeavours (Figure 1). Its central pursuit is the creation of a **high-performance community** defined by excellence, integrity, valuing people, working together and making a difference. We achieve scale and amplify impact by organising around four interdisciplinary themes - *Health and Wellbeing*, *Creativity and Design*, *Innovating Technology* and *Social Justice* – all congruent with the UN's Sustainable Development Goals.

Our commitment to translational research through industry partnerships, especially in both basic and applied biomedical research, has earned us recognition as one of Europe's most innovative universities. We are known for major technological breakthroughs from keyhole surgery to space technology, health informatics, new treatments for neglected tropical diseases and design-led innovation. In 2014, we received our third Queen's Anniversary Prize for excellence in forensic anthropology and victim identification. We are globally connected and a member of the European Universities Association whilst locally anchored in the regional growth agenda and being pivotal in bringing the V&A Museum of Design to Dundee.

Our 3,280 staff include a research community of 461 Category A FTE and 667 research staff, complemented by c. 770 postgraduate researchers (PGRs). Restructuring four Colleges into 10 academic Schools in 2015 has created greater internal connectivity. Schools are the academic engines of the institution with considerable autonomy but porous boundaries promoting cross-School collaboration. School research strategies are led by Associate Deans for Research (ADRs) combining with Impact Champions, Directors of Doctoral Studies and Research Integrity Leads, all benefitting from a centrally resourced **Research and Innovation Service (RIS)** and other Directorates supporting research. University research strategy is led by the Vice Principal for Research, Knowledge Exchange and Wider Impact (VPR) who sits on the University Executive Group and Chairs the University Research and KE Committee (URKEC), which meets five times per year and reports to the Senate.

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Figure 1: Visualisation of the **Strategy to 2022** integrating research, knowledge exchange and impact endeavour throughout the institutional mission

2. Strategy

The University's *Strategy to 2022* sets out **five strategic priorities** across the research, KE and wider impact continuum. These have driven activities within the current assessment period and will inform the next five-year plan to 2027.

Priority 1: Build on research excellence to enhance performance and reputation

We are committed to enabling all our 16 UoAs submitted to REF2021 to deliver world-leading research and impact. We were ranked in the World top 100 for research quality (Nature Index, 2019) and 14th in the world for the proportion of publications per FTE achieving citation rates in the top 1% of their field (CWTS Leiden Ranking 2020). Excellence and critical mass is gained by targeted investment and promoting interdisciplinary themes and external partnerships.

An Annual Research Review (ARR) was introduced in 2016 to ensure transparent and consistent management of research excellence across the University. School-based ARR panels evaluate output and impact quality, funding profiles, PGR supervision, engagement and esteem indicators.



Discipline-specific benchmarks are used in line with the Declaration on Research Assessment (DORA) to which we are signatories. Developmental feedback is given to all staff whether supporting promotion processes or prompting support interventions.

Targeted investment in our Baxter Fellowships Programme (2019) enabled 18 outstanding earlycareer researchers to be appointed across eight UoAs - according to growth, capacity-building and regeneration criteria. This programme is trialling the creation of a fast-track academic cohort, who with augmented support and mentoring, are expected to achieve promotion to Reader or Chair level within 10 years.

Priority 2: <u>Embedding interdisciplinarity</u> – promoting a vibrant research culture

All Schools are research active and contribute to one or more UoAs. Our flat structure and compact campus promote a **OneDundee approach** of shared commitment to triple-intensity across research, teaching and engagement. **Embedding interdisciplinarity** brings together complementary perspectives orientated to real-world thematic challenges, viz:

- Understanding and improving health and well-being;
- Life-enhancing creativity and design;
- Innovating technological solutions to tomorrow's problems;
- Promoting **social change** to enhance diversity, **justice** and socio-economic prosperity.



Figure 2: Composition, size and relationships of UoAs submitted to REF2021, mapped against University's interdisciplinary themes



Our research portfolio maps across these themes, with UoAs leading in their respective domain areas and always alert to collaborative opportunities across the University (Figure 2). Promoting synergies across disciplines has yielded numerous exciting new collaborations, such as:

- Significant expansion of translational and interdisciplinary research, particularly in neglected disease drug discovery, exemplified by the opening of the Discovery Centre for Translational and Interdisciplinary Research in 2014. This in turn enabled the creation of the Wellcome Centre for Anti-Infectives Research (*W*CAIR) in 2017 (£13.6 million).
- The Leverhulme Research Centre for Forensic Science since 2015 (£10 million) has stimulated collaboration across four Schools, and attracted further investment of £15 million through the Tay Cities Deal.

We launched the **Dundee Interdisciplinary and Innovation Forum** in 2017 seeking to mainstream enterprise across the University. DIIF hosts 10-16 events with 300–450 participants per year, which facilitate trust, confidence and formation of new consortia. An early exemplar of this approach is the AHRC-funded InGAME (Innovation for Games and Media Enterprise) consortium (£11.5 million, 2018-2023) centred on the Dundee computer games cluster forging a new template for UK-wide games sector innovation. Greater critical mass has also been achieved through new cross-unit research fora, such as the *Arts and Humanities Research Institute* (UoAs 27, 28, 30) and the *Institute of Social Science Research* (UoAs 3, 4, 14, 17, 18, 20, 23) with funded seminars, international scholars exchange, pump-priming funding and an Annual Research Forum. Reflecting our commitment to policy engagement nearly a fifth (18.5%) of our outputs for REF2021 are co-authored with corporate, government or professional bodies.

Priority 3: Embracing a One Dundee approach – strengthening partnerships

We are strengthening our research portfolio through success with programme grants and collaborative projects. Engagement with Scottish Funding Council Research Pools, Innovation Centres and UK Catapults supported capital investment in facilities such as the National Phenotypic Screening Centre (NPSC) built on extant collaborations between the Scottish Universities Life Sciences Alliance (SULSA) and the University of Oxford.

We are committed to fostering an open research environment through increased advocacy, and centralised support for all staff, including PGRs. Our **Open Research Policy** ensures that all outputs, datasets and PGR theses are open access via the **Discovery Portal**, the University's online Research Information System. We promote the accessibility of outputs through dedicated social media channels, embedding training, skills, and KE through information sessions complementing annual Open Access Week events. Data management is key to the open research policy, guided by compliance with the **Concordat for Open Research Data**, centrally supported with tailored storage solutions and advice underpinned by the University's Policy to Govern the Management of Research Data.

Integrity is one of the University's core values, and we are guided by the principles of the *Concordat to Support Research Integrity* with oversight by the Research Governance and Policy Sub-Committee. We have developed online research integrity training, which is mandatory for PGRs and new supervisors and since 2016 has been licensed across the sector. Research Integrity Leads have been appointed in all Schools with Deputy Leads and a network of Research Integrity Advisors in larger Schools. In 2019, we co-founded the Scottish Research Integrity Network and, in 2020, hosted one of five Wellcome Trust 'Re-imagine Research Culture' events.



Priority 4: <u>Advance our Values</u> – enhancing engagement through knowledge exchange We aim to grow our global reputation for innovative translational research as the world's most influential scientific research institution in pharmaceuticals (Clarivate Analytics 2017), and 5th in the UK for turning research into world-changing companies (Octopus Ventures 2020). We achieve this by nurturing a culture of innovation, invention, IP protection, licensing and investment in spinout companies, such as Exscientia Ltd, an internationally significant high-growth spinout. An exemplar of our approach to synergising discovery research and translational partnerships is the Drug Discovery Unit (DDU), a unique facility akin to a biotech company within a university, helping to treat neglected diseases such as malaria and visceral leishmaniasis.

Widely regarded as a model of academic-industry collaboration, the Division of Signal Transduction Therapy (DSTT) within the MRC Protein Phosphorylation and Ubiquitylation Unit (PPU), has thrived for over 20 years. In this time, it has attracted over £65 million of investment and helped develop dozens of drugs for clinical use, including cancer and Parkinson's Disease. This innovation culture is fostering new advances, such as entirely new modalities of therapeutics based on PROteolysis TArgeting Chimeras (PROTACS) through a significant and expanding collaboration with Boehringer Ingelheim, the world's largest private family-owned pharmaceutical company.

Over the latest REF period, the University achieved commercialisation income (licencing and trade sales of spinouts) of £14.4 million, raised £100 million of investment in our spinout portfolio, created four new spinouts, three staff and 27 student start-ups and agreed 57 licence deals. The establishment of a **dedicated Centre for Entrepreneurship in 2016** embedded a culture of entrepreneurship by providing staff and PGRs with training and access to the first Scottish university-based business accelerator programme. It has seed-funded five research staff and 13 PGR ventures whilst developing skills of 100+ staff and students every year through the eightweek extra-curricular Enterprise Challenge programme.

Priority 5: Intensify our impact locally and globally through wider engagement

The University is anchored in the Dundee city-region driving over £740 million a year of economic impact and supporting 1 in every 12 jobs in <u>Tayside</u> with our activities. This priority positions the University as an agent of transformation, locally and globally, contributing to prosperity and wellbeing, maximising cultural, societal and economic benefits.

We are aligned to the *Research to Recovery* ambitions of the UK R&D Roadmap by connecting local strengths to global opportunities. This includes delivering on the £40 million investment won through the **Tay Cities Deal** to create a Biomedical Innovation Hub enabling a step change in innovation-led growth in the regional economy through new spinout companies, job creation and inward investment in the biotech and medtech sectors. This will be complemented by JustTech, the world's first innovation hub for forensic science, creating a new growth sector enabling reliable science to be used in the delivery of justice worldwide. Finally, we will continue our long-term strategic partnership with the James Hutton Institute, one of the UK's largest land-based research facilities, where our Division of Plant Sciences is co-located, which will see us engaged with the establishment of a world-leading International Barley Hub and Advanced Vertical Plant Growth Centre (£62 million), tackling food security and contributing to the Net Zero agenda.

The **V&A Museum of Design** opened in 2018 as the centrepiece of a £1 billion waterfront redevelopment in Dundee, the UK's only UNESCO City of Design. The University of Dundee was a leading actor in bringing the V&A project to fruition, building on the long-standing reputation of our leading School of Art and Design, and flagship programmes such as the AHRC KE Hub *Design in*



Action, (£5 million, 2012-2017). As founding partners in V&A Dundee we ensure continued engagement through Board membership and joint curatorial and research-design manager appointments. In 2020, we signed another strategic partnership agreement with the Dundee-based **Michelin Scotland Innovation Parc**, endowed with £50 million investment funds promoting businesses supporting sustainable mobility and pursuit of Net Zero.

In relation to the UN's **Sustainable Development Goals** we ranked 20th worldwide in the inaugural 2019 'THE Impact Rankings' based on indicators reflecting research, outreach and stewardship. We were recipients of the **UN's Risk Award 2019** for the impact achieved in advancing flood-resilient floating homes in coastal Bangladesh through the Centre for Water Law, Policy and Science, the **UK's only Category 2 UNESCO Centre**, and the only interdisciplinary water centre of its kind in the world. We hosted the WHO Oral Health and Craniofacial Anomalies Collaborating Centre until 2018 and continue to inform WHO policy as an expert advisory partner.

Our global reach has been boosted by Global Challenges Research Funding (GCRF). We were awarded a £ 7 million NIHR Global Health Unit in 2017 to set up a major UK-India clinical partnership to combat diabetes. Our GCRF block grant enabled us to build capacity and partnerships for future ODA-related research and supported 70 projects involving over 100 academic staff from all 10 Schools working in 26 Low- and Middle-Income Countries. Our GCRF block grant enabled us to build capacity and partnerships for future ODA-related research and supported 70 projects, including Global Scholarships, exchanges and pilot projects, involving over 100 academic staff from all 10 Schools working in 26 Low- and Middle-Income Countries.

3. People

3.1 Staffing Strategy – Enable our people to flourish

People are at the heart of the University Strategy's to be a High-Performance Community (Figure 1). We aspire to attract, nurture and retain the brightest talent from across the globe and have designed our research environment accordingly. The annual Objective Setting and Review (OSaR) process is the centrepiece of our staff development process. It draws together multiple inputs, including the ARR, enabling colleagues and line managers to evaluate contribution against the excellence agenda and inform personal development plans.

Across most Schools new academic staff are appointed on a three-year probation contract, which is made permanent (confirmed) with the demonstration of satisfactory progress. Reflecting Principal Investigators and research group cultures in the Schools of Life Sciences and Medicine both employ an alternative five year 'Fellowship-based' tenure-track process. In all cases academic and research staff are provided with clear objectives, resources, and support. All staff have access to TRAM (Teaching, Research & Academic Mentoring Scheme) a cross-institutional mentoring scheme established jointly by the Universities of Dundee and St Andrews 14 years ago whose success has grown to incorporate six HEIs.

The University has a 'Periodic Leave' policy, which provides one semester for each three-year period of service, subject to a maximum of one year's leave on any one occasion. Recognition for sustained contribution to the University's research mission is considered through Annual Review (Academic Promotion) and Merit Awards for professional services staff. Over the assessment period, a TRAC-compliant Workload Allocation Model was introduced ensuring that all Teaching and Research staff have at least 30% of protected research time.



We support the promotion and improvement of the health, safety and wellbeing of our staff and students through a suite of University Work-Life Balance policies, procedures and guidance, which are regularly reviewed. Flexible and remote working is institutionally supported and managed by Schools involving tools such as a resilience package, sickness absence and ill health policies, carer's leave and in-house occupational health support. We are committed to equal opportunities for staff on part-time and fixed-term contracts and provide relevant training and Careers Advice Service. Our fixed term compared to permanent staff contracts in the researcher category have decreased from 56% to 42% between 2014/15 and 2019/20. We engage Capita biennially to survey levels of staff satisfaction biennially and most recently ranked 6th out of 31 HEIs as an *Employer of Choice*.

3.2 Equality, Diversity and Inclusion (EDI) – Advance our values

The University's commitment and advancement of EDI is inspired by our core purpose and values framework, informed and supported by our Equality Outcomes Plan. We have focussed on the Protected Characteristics of gender, race, disability and LGBT equality as recognised by Athena SWAN awards achieved at both institutional and school levels (Institutional Bronze 2014 and 2017). We are a member of the Race Equality Charter and will submit for an award in July 2021. We have been a Stonewall Diversity Champion since 2016 and have evidenced significant progress in the benchmarking Stonewall Workplace Equality Index for LGBT inclusion in the workplace. Sharing experiences across these various networks is critical to progressing our Equality Outcomes.

We promote EDI by mandatory online training for all staff and by recording protected characteristics as part of the recruitment, probation and promotion process. Our Dignity at Work and Study policy codifies our commitment not to tolerate discrimination, harassment or bullying. Support is provided through our Harassment Advisers Network. The **REF2021 Code of Practice** was developed in accordance with the aims and objectives of the University's Equality Outcomes Plan 2017–2021 and SFC Outcome Agreement meeting the Public Sector Equality Duty. Consistent with our REF Code of Practice bespoke training relating to unconscious bias was developed for all staff involved in REF management.

3.3 Early Career Researcher (ECR) Support – Grow & diversify our researcher community Reflecting our commitment to growing talent within the University, 22% of our Category A staff meet the REF definition of ECR. The University has held the **HR Excellence in Research** award since 2011 and our Year-8 renewal was achieved in February 2020. We recently signed the revised **Concordat to Support the Career Development of Researchers** and are compliant with the **QAA Code of Practice for Research Degree Programmes**. Implementation plans are driven by the Career Development for Research Staff (CDRS) Steering Group, chaired by the VPR, which includes representatives from the Research Staff Association. Two dedicated development officers support compliance with the Concordat and harmonise training and employability provision.

The University endorses UKRI recommendations of the minimum number of 80 hours annually for development activities. We are a member of **Vitae**, **UKCGE** and **Advanced HE**, which provides access to career support and broader experiences complementing the University's Researcher Development Programme within the comprehensive programme provided by the Occupational & Professional Development (OPD) unit. The range of face-to-face and online training maps to Vitae's Researcher Development Framework with excellent levels of uptake since 2016 from PGR (almost 50%) and research staff (over 35%).



Bespoke careers training is available through our Careers Advice Services and wider development opportunities are offered by Schools and Professional Services, as well as access to external Writing Retreats, Vitae events and national programmes such as Voice of Young Science, Converge Challenge, and the interdisciplinary Scottish Crucible. The QAA Enhancement-led Institutional Review (ELIR, 2018/19) commended support for the PGR experience through initiatives such as the *Thesis Bootcamp*.

The University's research degree programmes are underpinned by the **Research Degree Quality Code**. This includes mandatory training and accreditation of research degree supervisors, and monitoring through structured annual programme reviews, enhanced by feedback from PGRs through the Postgraduate Research Experience Survey (PRES). All PGRs have a second supervisor and meet with a Thesis Monitoring Committee at least once every semester and have opportunities and training for teaching and demonstrating duties. Support and representation systems are in place in partnership with the Dundee University Students Association (DUSA) to ensure effective student welfare and engagement with policy development.

We have a large, diverse and vibrant community of PGRs, and host **Doctoral Training Programmes** (MRC, Wellcome), **Partnerships** (BBSRC, ESRC, AHRC) and **Collaborative Centres** (EPSRC, NERC) as well recruiting top international talent through the China Scholarship Council Programme. In 2018/19 we created a suite of new Doctorates in Professional Practice, presently available in 8 out of 10 Schools, and began the '100 Projects' campaign to enhance quality and volume of PGR recruitment to the University's interdisciplinary themes. We funded 'Global Citizens' Scholarships through our GCRF award. To build a more cohesive interdisciplinary connected community, increase PGR numbers and enhance the student experience, we established a **Doctoral Academy** in 2019 coordinating all aspects of the research lifecycle of PGRs and supervisory support. The investment has created designated offices and training space and a secretariat (3.7 FTE) led by a professorial Academic Director.

4. Income, infrastructure and facilities

To achieve our vision, we provide the infrastructure, physical, digital and human, for researchers to achieve excellent research and innovation outcomes. It contributes to our institutional strategy (Figure 1) and enables us to achieve our strategic research priorities to intensify our impact, enhance our reputation and performance, enhancing our One Dundee approach.

4.1 Physical Infrastructure

The University has world-class facilities, from laboratories to studios and exhibition space, archives, collections and libraries. Capital investment of £30.6 million has increased access to state-of-the-art laboratory space across the institution since 2014. This includes £13 million to upgrade the School of Art & Design studios and library and over £2 million investment in the main Library and Learning Centre (LLC) for dedicated PGR space. Along with capital investment, both locations benefit from co-location of LLC and IT Services research support teams. The co-location of physical, computational and biological sciences in the Discovery Centre (previous UK Research Partnership Investment Fund) received further University capital investment of £3.1 million expanding capabilities in anti-infectives drug development. We have also generated significant income of £10.5 million from philanthropic donations enabling targeted infrastructure investment for ECRs in the Jacqui Woods Cancer Centre, to purchase magnetic resonance guided focused ultrasound (MRgFUS) technology treating essential tremor caused by neurological disease and for



facial reconstruction facilities based in the Centre for Anatomy and Human Identification supporting collaboration with forensic scientists and dentists.

Our specialist facilities and services are available to all staff and external users, exemplified by the Centre for Advanced Scientific Technologies hosting cutting-edge technology platforms including the Dundee Imaging Facility, proteomics, microscopy, oligonucleotide synthesis, flow-cytometry and X-ray crystallography, which has enabled our world-leading cell signalling and drug development research and our biomedical and imaging research in engineering. The proteomics platform, for example, has been a key enabler of industrial partnerships (GSK, DSTT consortium, Boehringer Ingelheim) and creation of one related spin-out company.

4.2 Digital Infrastructure

To improve access for the internal and external research community, some facilities and areas of technical support have been centralised, such as the High-Performance Computing facilities, achieving more consistent technical support and enhancing technical staff retention and career development. The Health Informatics Centre (HIC) specialises in health data linkage and is the first centre in Scotland to offer an ISO27001-accredited Safe-Haven for secure collaborative research using sensitive eHealth data. This supports personalised (precision) medicine research and underpins our involvement with UK-Health Data Research (UK-HDR) uniting health data across the UK.

Since 2017, we have invested c. £20 million to strengthen digital capability and cyber security by integrating our many information systems and digital workflows into a single cloud-based solution (**OneUniversity**). Phase 1 of the '*Research & Pro*jects' workstream is now live and when phase 2 is completed, it will provide an end-to-end capability for funding opportunities and supporting bid submission, ethical approval, post-award grant management, engagement and commercialisation. Researchers will be able to monitor their projects as they progress through their lifecycle, with associated strategic planning benefits provided through real-time reporting and dashboards.

Our online Research Information System, *Discovery*, led by LLC, integrates Registry, HR and research finance data in a public institutional repository, linked to staff and PGR webpages to present a comprehensive picture of outputs, data, activities and media interactions evidencing worldwide collaborations and impact. We have established a Digital Roadmap Working Group recognising more can be done to enable sharing, storage and integration of research data and enhance our digital research infrastructure in line with the UK National Data Strategy. This has gained further momentum in step with the digital learning environment created in response to COVID-19 working practices.

4.3 Human Infrastructure

Following restructuring in 2015 an integrated University Research Office (URO) was established to coordinate Schools and Directorates research support under the strategic leadership of the VPR. The URO supports research strategy, consortia building for strategic bids, funder liaison, industry engagement, IP protection, licensing, spinouts, contract negotiation and commercialisation. The research support team concentrates on open access, digital resources and responsible use of research metrics. It supports award set-up and management, research policy, integrity, ethics and the Code of Practice underpinning our REF submission. HR & OPD provide staffing strategy, researcher career development and EDI functions, whilst External Relations coordinate the Public Engagement Forum.



To enable clinical research in collaboration with NHS Tayside, the Tayside Medical Science Centre (TASC) brings together facilities and expertise, including the Clinical Research Imaging Facility, the Tayside Biorepository and the Tayside Clinical Trials Unit, fully registered with UKCRC, supporting approximately 20 trials at any one time. It underpins the work of the Academic Health Science Partnership established in 2014 as a catalyst to deliver healthcare improvement research in collaboration with the NHS. Achievements include NHS-university-industry partnerships such as with Storz and Medtronic to advance medical devices development and surgical skills training.

4.4 Income

We have the third highest proportion of research-related income (c. 40% to total income) of any UK university, with research grants and contracts income averaging c. £75 million per year over the last 5 years and Quality-Related (QR) research funding, in Scotland equating to Research Excellence Grant, exceeding £25 million per year. To support our ambitions for sustainable growth of our research economy we aim to further diversify our funding sources and prioritise large-scale opportunities aligned to our interdisciplinary themes and so selectively consolidating existing strengths and targeting investment in priority growth areas (e.g. as set out by the UKRI R&D roadmap and Horizon Europe). We aim to achieve similar successes as the WCAIR, working in partnership with UK-HDR, the AHRC InGAME cluster and as part of UK/Scottish Government regional investments such as the Tay Cities Deal.

4.5 Impact

To support the University's strategic focus on research with impact, the University has invested in a centralised role of Research Impact Manager working closely with Impact Champions in Schools, who coordinate informal support. RIS provide cradle-to-grave support for commercialisation and industry engagement to continue to grow our translational potential. We provide business incubator space and fund academic salaries during the development phase of their spinouts.

Public engagement is essential to our vision to transform lives locally and globally, supported by the Public Engagement Forum to share knowledge and best practice and our Public Engagement Strategy. We provide training and recognition through our promotions criteria, in workload allocation modelling and in appraisal and promotion processes.

We have long-standing Public Engagement platforms and awards, including the University's annual Stephen Fry Awards for Public Engagement, established in 2012, which are presented during the Discovery Days, a large annual programme of engagement through public talks, activities in primary and secondary schools, and open-door events. Our Saturday Series is the longest running public lecture series in Scotland.

Our long-term investment was recognised in 2020, when we became the first university in Scotland, and only the third in the UK, to receive a **Gold Engage Watermark** from the National Co-ordinating Centre for Public Engagement (NCCPE). Awarded for exceptional strategic leadership and partnership working, this institutional award builds on Faculty-level Gold awards received by the School of Life Sciences (2017) and the Leverhulme Research Centre for Forensic Science (2019).